



Geoff Ninnes Fong & Partners

Saint Dominic's School
21 Copeland Street, Kingswood NSW

Site Contamination Assessment

Our ref: 5410-2-E1
29 October 2019



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21 Copeland Street, Kingswood NSW
Site Contamination Assessment

Prepared for Geoff Ninnes Fong & Partners

Our ref: 5410-2-E1
 29 October 2019

For and on behalf of

AssetGeoEnviro



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1. EXECUTIVE SUMMARY

1.1 Background

AssetGeoEnviro were engaged by Geoff Ninnies Fong & Partners to conduct a Site Investigation at 21 Copeland Street, Kingswood NSW (the site). The site area is described in this report and is shown in Figure 1 (**Appendix A**).

St. Dominic's College intend to re-develop the site for a new school building. Proposed redevelopment is to include demolition of existing shed and demountable classrooms, and construction of new permanent buildings (Block E) with a partial undercroft carpark (**Appendix C**). Details of proposed structural loads have not been made available at this stage, but large spans could lead to relatively heavy foundation loads which may require large footings or rock-socketed piles. The only proposed excavations will be for carpark and services. The development is proposed for the southern part of the school (Copeland St.) over an area which was estimated to be approximately 900 m² (Figure 2).

The objective of this work was to establish extent of contamination from impacts by potential Chemicals of Concern (COC) to underlying soil related to the identified potential sources of COCs at the site. This site investigation was aimed at fulfilling Council's requirements to provide recommendations in accordance with the provisions of State Environmental Planning Policy No. 55 (SEPP 55) and National Environmental Protection Measure (NEPM 2013) regarding site's suitability for the proposed development.

Based on the desktop study, it appears that the site area was occupied by currently present school buildings since establishment in 1970. Some minor refurbishments and additions were noted for the site since that time. Review of historical business listings identified no previous uses at the site that may potentially cause contamination. The PSI search conducted did not identify any sources of potentially contaminating activities on the site. However, in the neighbouring premises, some industrial related activities were confirmed based on the information provided from historical business directories.

Preliminary waste classification investigations were conducted on this site by AssetGeoEnviro on 16.4.2019 during the geotechnical investigation. Please refer to report REF:5410-1-E1-Soil Assessment & Preliminary Waste Classification for the details and results of these investigations. 14 (6 + 8) locations were selected in total in accessible areas across of the site where most of the excavation works and exposure of underlying soil/fill material is to take place as part of the proposed development.

1.2 Previous Investigation Findings

1.2.1 Preliminary Waste Classification Results

Preliminary waste classification investigations were conducted on this site by AssetGeoEnviro on 16.4.2019. Please refer to report *REF:5410-1-E1-Soil Assessment & Preliminary Waste Classification* for the details and results of these investigations. Please see below the brief outcome of the waste classification investigations:

The indicative waste classification of the in-situ fill material tested at the site is:

- **Restricted Solid Waste** at the location of BH1 due to **Pb/Lead** detection;
- **Special Waste** at the location of BH3 due to Potential **Asbestos Presence**;
- **General Solid Waste (non-putrescible)** in all other sampled locations.

Lead in Previous Investigations

During the previous investigations (report 5410-1-E1), the concentration of Lead analysed for all of the sampling locations on site were below the adopted human health risk and ecological criterion. However, an elevated concentration of Lead in sample BH1 (2000 mg/kg) collected at a depth of 0.5 to 0.6 mbgl was above the CT1 as well as CT2 criteria values for solid waste. This sample was subject to further testing using NATA approved TCLP for lead which revealed leachable lead concentration (0.61 mg/L) in conjunction with the SCC value (2000 mg/kg) to be above the SCC1 / TCLP1 criteria and below the SCC2 / TCLP2 criteria values.

Response (Current Investigation)

For the scope of this work, further 18 samples were collected and analysed for any potential Lead concentrations. None of the samples had a Lead concentration that exceeded the adopted human health risk and ecological criterion. Overall, (13 + 18) samples were analysed for Lead on this site during the total environmental investigations. Excluding the BH1, none of the samples had a Lead concentration that exceeded the adopted criterion.

Asbestos in Previous Investigations

During the previous investigations (report 5410-1-E1), 5 sample were collected from 6 locations and analysed for asbestos presence. Chrysotile asbestos was detected and confirmed by laboratory only on topsoil on borehole BH3 at depth 0.1 to 0.2 mbgl, bounded within the cement fragments.

Response (Current Investigation)

To further delineate the potential presence of asbestos in soil, another 8 samples were taken from 8 locations on site for the scope of this work. Three out of eight samples were concentrated around the BH3 where the original bounded asbestos cement was found on topsoil. Asbestos was NOT detected for any of the collected soil samples for the scope of this work.

1.2.2 Current Investigation Findings

This study was conducted to investigate the extent of the potential COC identified on site based on the results of previous soil investigations. Laboratory analysis undertaken on samples collected as part of this investigation identified concentrations for CCs as below:

- Concentrations of all potential COCs within soil samples analysed were either below the Laboratory Limit of Reporting (LOR or EQL) or below the adopted human health risk and ecological criterion.
- No detectable concentrations of PAHs and TRHs were identified within the samples of fill collected from a number of boreholes that exceed the adopted human health and ecological guidelines criteria.
- Asbestos was NOT detected in the surface/shallow fill sample within any of the collected samples.
- Concentrations of all pesticides tested (i.e. OCPs, OPPs plus others) were all below the laboratory limit of reporting.
- Concentrations of all other COCs within soil samples analysed were either below the laboratory limit of reporting or below the adopted human health risk and ecological criterion.
- A minor trace of some metal detected in some soil samples such as Arsenic and Copper, however they were below the adopted human health risk and ecological criterion. Generally, arsenic exists in soils in many parts of Australia at a very low background concentration.

It is important to say that these results reflect the nature of soil in the investigated areas ONLY. Hence, the presence of any Asbestos Containing Materials (ACMs) or any other type of contaminants in other part of the site which were not investigated/sampled is UNKNOWN.

AssetGeoEnviro considers that the site area where new buildings are being proposed and described in this report CAN be made suitable for the proposed development and ongoing/proposed uses following the completion of the recommendations below.

1.3 AssetGeoEnviro Recommendations

- A suitable remediation strategy should be developed in support of the proposed works outlining remedial methodology to address any potential identified contamination (esp. asbestos and lead) during excavation and to ensure the site is suitable for the proposed development and ongoing uses.
- The remedial strategy should include an Unexpected Find Control (UFC), which provide a procedure for the management of any potential unexpected contamination should such be discovered/exposed during construction/earthworks.
- Based on the findings of this study, it was concluded that identified asbestos impacts appeared to be isolated in only the area where the cement fibre/fragment found on top of fill material layer. The extent of identified asbestos impacts should be fully delineated/inspected further during excavation and areas where excavation earthworks are to occur as part of the proposed development should be remediated to an acceptable standard. This should include excavation, classification and offsite disposal of all potentially asbestos impacted surficial fill material from the areas of anticipated earth works, and areas where underlying fill material is expected to be exposed to eliminate any future liabilities.
- The remediation strategy should also outline the details to further delineation (limited sampling) on BH1/BH3 locations during the construction phase, and also for the areas under the now/future building structure (to be excavated down to 1.2mbgl).
- Any materials proposed to be excavated and disposed offsite during proposed remediation/development works must be classified in accordance with the NSW EPA (2014) Waste Classification Guidelines, prior to offsite disposal to an appropriately licenced waste management / landfill facility.
- Consideration should be given to the separation of all identified potentially impacted fill materials from the remainder of excavated materials across the site during the proposed development works, for further waste classification purposes.
- Following completion of remedial activities, a Validation Assessment Report should also be prepared to confirm the remedial objectives have been met and the site has been rendered suitable for the intended land use.
- A Construction Environmental Management Plan (CEMP) to be prepared to avoid or mitigate potential adverse environmental impacts on site, surrounding human and environmental receptors. Moreover, to ensure that all works are conducted in accordance with regulatory requirements. The CEMP should provide the details on management requirements and procedures to be implemented during construction/excavation/development phase.

2. OBJECTIVE AND SCOPE OF WORK

2.1 General

AssetGeoEnviro were engaged by Geoff Ninnes Fong & Partners (Event) to conduct a DSI at an St. Dominic's College located at 21 Copeland Road, Kingwoods NSW (the site). The site area is described in the next section and is shown in Figure 1 (**Appendix A**).

Based on the provided proposed development plans presented in **Appendix C**, we understand that the project involves demolition of existing shed and demountable classrooms, and construction of new permanent buildings (Block E) with a partial undercroft carpark. Details of proposed structural loads have not been made available at this stage, but large spans could lead to relatively heavy foundation loads which may require large footings or rock-socketed piles. The only proposed excavations will be for footings and services.

As there have been no known previous intrusive environmental site assessments conducted across any parts of the site area, the levels of potential COCs in different medium such as air, soil and groundwater at the site were unknown. The PSI recommended completion of a DSI prior to demolition/construction. The PSI search conducted did not identify any significant sources of potentially contaminating activities at the site.

2.2 Scope of Work

The objective of this work was to establish the extent of contamination from impacts by potential COCs to underlying soil related to the identified potential sources of COCs at the site as per the findings presented within the REF:5410-1-E1. This assessment was aimed at fulfilling Council's requirements to provide recommendations in accordance with the provisions of State Environmental Planning Policy No. 55 (SEPP 55) and National Environmental Protection Measure (NEPM 2013) regarding site's suitability for the proposed development.

The following scope of work was carried out:

- Review of available information, proposed development plans and previous environmental reports for the site;
- Review of historical aerial photographs in order to identify past site uses and configuration and confirm potential sources of identified contamination;
- Review of relevant NSW EPA government databases to identify any existing environmental notices for the site or nearby properties;
- Review relevant soil, geological and hydrogeological information to assess for potential mobility of the COCs (if present);
- Derivation of the preliminary conceptual site model (CSM) of contamination and exposure for the site users under the proposed development, including undertaking of the data gap analysis;
- Preparation of the Sampling Analysis and Quality Plan (SAQP) including justification for the proposed scope of field investigation to fill in the data gaps, including sampling methodology, and proposed laboratory analysis schedule;
- Development of data quality objectives (DQOs) and preparation of data quality assurance and quality control (QA/QC) procedures;
- Discussion of proposed human health and environmental guidelines to undertake the appropriate risk assessment for proposed land use;

Fieldwork Component

- Sampling of fill and natural material from an additional eight (beyond those undertaken for geotechnical investigation and waste classification) locations across the site area, targeting previously identified areas of concern, down to a maximum depth of 3m below ground level (mbgl);
- Detailed description of the material by our experienced field personnel;

- Allowance made for collection of a total of eighteen soil samples (including quality control samples) to assess potential risks to human health and ecological receptors as well as for preliminary waste classification purposes, including from any fill, disturbed or visually impacted layers and of underlying natural material;
- Submission of soil samples to a NATA accredited laboratory for analysis of COCs including:
 - Heavy Metals (Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel and Zinc);
 - Total Recoverable Hydrocarbons (TRHs);
 - Benzene, Toluene, Ethyl Benzene, Xylenes and Naphthalene (BTEXN);
 - Polycyclic Aromatic Hydrocarbons (PAHs);
 - Organochlorine/organophosphate pesticides (OCP/OPPs) and Polychlorinated Biphenyl (PCBs); and
 - Asbestos in soil (ID only);
- Field works and sampling will include standard quality assurance including the collection and analysis of duplicate samples for quality control purposes (allowance made for a total of two soil quality control samples to be analysed).

Reporting Component

- Produce a DSI report detailing the summary of the findings of our investigation including all fieldworks and laboratory analysis;
- Tested soils will be assessed against nominated human health and environmental guidelines in order to undertake the appropriate risk assessment for the proposed land use. The final report will provide conclusions regarding the suitability of the site for the proposed development and will provide recommendations for any additional investigation, remediation or management if required.
- This report was prepared in general accordance with the NSW OEH (2011) *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* and NEPC (2013) *National Environmental Protection (Assessment of Site Contamination) Measure 1999 - Amendment 2013*.

This report must be read in conjunction with the attached “Important Information about your Environmental Report” in **Appendix G**. Attention is drawn to the limitations inherent in site investigations and the importance of verifying the subsurface conditions inferred herein.

3. SITE IDENTIFICATION AND HISTORY

Site details are summarised in the Table 2 below:

Table 1 - Site Details

Location	21 Copeland Street, Kingswood NSW 2747
Cadastral Description	Lot X DP76600
Land Area	~5.25 ha
Proposed Development Area	~950 m ²
Local Government Authority	Penrith City Council
Current Zoning	R2 – Low Density Residential
Adjoining Land Uses	North – residential properties across Gascoigne Street. East – Industrial properties (Rex Andrews Heavy Haulage) South – commercial or industrial properties (Hungry Jacks, warehouses, pub/hotel) West – residential properties across The Northern Road.
Site Location	Figure 1
Site Layout	Figure 2

3.1 Site Walkover Observations

The following observations were made during the site inspection. Photographs are included in **Appendix D**.

At the time of the initial inspection the site was occupied by Saint Dominic's School. School Buildings located at the western side of the site and the large grassland/sport field located at the east. The proposed future work area is under the current structures (demountable metal clad classrooms + area over the concrete sitting area) at the southern side-Copeland St. Most of the pavement appeared to be in good condition with no major cracks noted. Landscaping was noted predominantly along the site's boundary which was overgrown with various trees and vegetation. The site overall was noted to be relatively flat, except on the southern part near to fence (Copeland St.). No evidence of disturbed coloured or stained soil was observed. No trace of any potential fill (potential source of contamination) materials was noted to have been present at the time of inspection. The public school is still operational since established in 1970. Site features observed are presented on Figure 2.

3.2 Soil, Geology and Hydrogeology

The geology underlying the site, as described in the Geological Survey of NSW (1991) – Penrith 1:100,000 Geological Map Series Sheet 9030 consists of Triassic-aged Bringelly Shale (Rwb) subgroup which comprises shale, carbonaceous claystone, claystone, laminite, fine to medium-grained lithic sandstone, rare coal and tuff. The site was noted to be situated at an elevation of between 55 and 57 metres above Australian Height Datum (mAHD).

The soil stratigraphy in the locations investigated on site as part of this assessment was identified as comprising:

- **TOPSOIL / FILL:** Clayey SAND (topsoil), sandy CLAY, silty CLAY, down to a maximum depth of about 2.1 metres below ground level (bgl); overlying.
- **RESIDUAL NATURAL:** sandy silty CLAY/ shaley CLAY, typically encountered from between 0.8 and 2.1 m bgl;
- **BEDROCK:** SHALE, low to extremely weathered, typically encountered from 4.1 to 6.1m bgl

Based on the soil, geological and hydrogeological review, the site is expected to be situated over an area with up to 2.1 m of fill in places overlaying residual clay type soils, which in turn overlay a relatively shallow shale bedrock. The depth to groundwater is unknown, however based on the available information it is expected to be encountered at greater depths most likely within the underlying bedrock lenses/fractures.

Groundwater was not observed in the boreholes during auger drilling to depths of 1.3m to 2.0m bgl. No significant sign of seepage was observed on the surface.

3.3 Groundwater Boreholes

There are no registered groundwater boreholes on this site. The next closest registered Groundwater bore is almost 300 meters away (refer **Appendix B**, Page 70).

3.4 NSW EPA Registers

A search of the NSW EPA Contaminated Land database for the property was conducted as part of this PSI. The NSW EPA does not hold records of notification of this site to NSW EPA as a contaminated site under Section 60 of the CLM Act (1997).

It is important to mention that, an absence of a site from the EPA contaminated land registry list does not necessarily mean the site is not contaminated.

3.5 Industrial and Manufacturing Processes

The historical data review did not indicate that manufacturing processes had occurred at the subject site. There is no evidence of historical or current industrial processes on the site.

3.6 Search of Public Register of POEO Licenses

A search of the public register of licenses issued under the Protection of the Environment Operations Act 1997 (POEO) did not identify any licences or notices issued for the site.

3.7 Review of Historical Aerial Photographs

A review of historical aerial photographs from 1943 to 2019 was undertaken as part of this assessment. Details of the photographs reviewed, and the key findings of our review are given in **Table 2** with reviewed aerial photographs presented as part of the LOTSEARCH Report (**Appendix B**).

Table 1 – Historical Aerial Photographs Review

Source	Photograph Details	Onsite Uses	Offsite Uses
LOTSEARCH	Date: 1943	PARK + trees + vegetation	Scattered building structures at the eastern side are existed.
	Date: 1955	Nothing changed from the 1943 aerial photograph, less vegetation + one structure appeared on site (west)	Further developments at the western side. More established dirt roads occurrence.
	Date: 1961	Nothing changed from the 1955 aerial photograph, except the eastern side of the site was cut, compacted with zero vegetation in compacted area.	Further developments at the western side. More established dirt/paved roads occurrence. No other significant changes.
	Date: 1965	Nothing changed from the 1961 aerial photograph, a couple of more building structure added to west.	Further developments at the southern side. More established dirt/paved roads occurrence. No other significant changes.
	Date: 1970	School/college established plus a new structure Nothing changed from the 1965 aerial photograph.	Further developments at the southern side. More established dirt/paved roads occurrence. development at the southern side is starting to expand. No other significant changes.
	Date: 1982	School/ college structure (3-6 buildings & a car-park area) appeared at the site. Significant de-vegetation occurred (sport field) No other discernible changes noted at this site.	Residential to the north, Further non-residential development was noted for the neighbouring properties esp. at west and south. More Neighbouring properties to the west appeared. No other significant changes.
	Date: 1991	School/ college No other discernible changes noted at this site from the 1982 photograph.	Mainly Residential and commercial Further commercial development was noted for the neighbouring properties esp. at west and south. More earthwork/development to the west appeared. No other significant changes.
	Date: 2000	School/ college No significant changes from the 1991 aerial photograph. Metal covered concrete sitting area appeared to the south.	Mixed industrial (south) / Residential (north) No other discernible changes noted at this site from the 1991 photograph. North and west = mainly residential, South and east = mainly industrial
	Date: 2007	School/ college No significant changes from the 2000 aerial photograph. Classroom building right near to the metal covered concrete sitting area appeared to the south.	No other discernible changes noted at this site from the 2000 photograph. North and west = mainly residential, South and east = mainly industrial
	Date: 2014-18	School/ college No significant changes from the 2007 aerial photograph.	No other discernible changes noted at this site from the 2007 photograph.
LOTSEARCH	Date: 2019	School/college No other discernible changes noted at this site from the 2018 photograph.	No other discernible changes noted at this site from the 2018 photograph.

3.8 Historical Business Directories

The school is the only Point of Interest (POI) on this site since 1970.

The review of historical business listings between 1950, 1961, 1970, 1892, 1986, 1991 for the neighbouring properties reveal the information below:

- 1950: NA
- 1961: Groceries & General Storekeepers
- **1970: St. Dominic's College (Boys), Parker St. Penrith**
- 1982: Motor Panel beaters/Spray Painter, Motor Garages
- 1986: Mainly Motor Panel beaters/Spray Painter, Motor Garages and Concrete Mixer/supplier
- 1991: Motor Garage and service Stations, Fuel injection services, auto-electrician and general motor services

Review of the historical business listings for Dry Cleaners, Motor Garages & Service Stations (1948-1993) revealed the information below:

- East: Motor Garages & Service Stations.

Please refer to **Appendix B** for details of all of the Historical business activities on the neighbouring lands

3.9 WorkCover NSW Dangerous Goods Search

Due to the nature of the site (Public school), no dangerous goods search was undertaken. The presence of historical storage of significant quantities of dangerous goods is considered very low.

3.10 Acid Sulfate Soil

Atlas of Australian Acid Sulfate Soils Data Source-CSIRO- (**Appendix B**, page. 80) states that the probability of occurrence of Acid Sulfate Soils (ASS) on this site is Extremely Low (1-5%) Moreover, the probability of ASS occurrence within the 683 m of this site is Low too (1-5% chance of occurrence with occurrences in small localised areas).

3.11 Naturally Occurring Asbestos Potential

No records of potential Naturally Occurring Asbestos (NOA) found in the dataset buffer.

3.12 PFAS Investigation

This site is not included in any of the PFAS Investigation Sites register under EPA, Department of Defence (DoD) and/or Air services Australia National PFAS Management Program.

3.13 Conceptual Site Model (CSM)

A Conceptual Site Model (CSM) summarises the expected site conditions at and surrounding the Site, as they relate to Site contamination and potential risks to human health and the environment. In summary, the CSM for the Site identified a range of potentially contaminated media and exposure pathways.

If required, a CSM will be developed based on the findings of the background information review, field observations, COC and Area of Environmental Concern (AEC). The CSM involves the assessment of environmental/human health risk based on a contaminant (source) – pathway – receptor methodology. Where there is a complete linkage between the source-pathway-receptor, then there is potential for a risk to exist. Where the linkage is not present, there is no potential for a risk to exist. The SPR for the conceptual site model is summarised in **Table 3**.

Table 3 – General Conceptual Site Model (CSM)

Conceptual Site Model (CSM)	
Source of Contaminant	A substance that has the potential to cause harm to a receptor. In a broader sense, sources can include particular ground conditions, for example, redundant footings within the ground, which have the potential to impact on redevelopment proposals. Other sources include former industrial activities, contaminated soil and groundwater, vapours derived from these sources, buried waste and from historical use of substances such as pesticides and herbicides
Exposure Pathways	The route by which the source is brought into contact with the receptor. This can include the transport of contamination via water and subsequent ingestion, inhalation of dust and vapour and through dermal contact. The exposure to a contaminant may consist of one or more pathways, but in general, a single pathway will dominate.
Potential Receptors	Human beings, other living organisms, physical systems and built structures that could be affected by the source. A receptor will only be affected if a pathway from the source to the receptor is complete and a pollutant linkage established. Groundwater and surface water systems can be considered as receptors in their own right as their quality is regulated by statutory bodies, as well as being pathways for contaminant migration to other receptors.

3.13.1 Sources of Contamination

Potential current and historical sources of Chemical of Concern (COCs) that may have resulted in COC impact at the site include:

- Hazardous building materials and fibre cement fragments if found on site/buildings.
- Potential presence of uncontrolled fill material beneath the site.
- Internal and external painted surfaces in relation to any building structure on site.
- The potential presence of the underground or aboveground fuel storage system.

Current site activities are considered to pose a low environmental risk with no significant sources of COCs identified apart from the above items.

Please see the table below for potential COCs associated with the above source include (Soil and water):

Table 4 – Contaminants of Potential Concern

COC	Context
Asbestos Containing Material (ACM), Asbestos Fines (AF) and Fibrous Asbestos (FA)	Due to the long history of ACM use in Australia, and the persistence of ACM in the environment, there is a potential for ACM on Site, particularly within the illegally dumped stockpiles and the hut or any fill materials.
Metals and Heavy Metals	Anthropogenic impacts may be associated with the deterioration of metallic objects and application of pesticides/herbicides (arsenic). Elevated metal concentrations may be present in fill associated with practices described above due to some historical industrial activities on neighbouring sites.
Organochlorine Pesticides (OCP), Organophosphorus Pesticides (OPP), Herbicides and Pesticides	OCPs are persistent and bioaccumulative in the environment. They were formerly used as pest control for crops, livestock and buildings. OPPs are slightly less persistent and have been used since the banning of OCP in Australia. OCP/OPPs may have been potentially used on the Site to manage weeds.
Benzene, toluene, ethylbenzene, xylenes (BTEX) and other Volatile Organic Compounds (VOCs)	Volatile organic compounds (VOC) present in petroleum-based fuels, oils and solvents in general solvents, paint strippers, rubber cements and other industrial compounds. Potential for impacts vis spills/leaks from vehicles/machinery operating within the Site.
Polycyclic aromatic hydrocarbons (PAH)	PAHs can occur naturally in crude oil, coal and incompetently oxidised carbon materials (wood, coal, diesel etc.) and ash. Used in the production of bitumen and asphalt material.
Total Petroleum and/ Recoverable Hydrocarbons (TPH/TRH)	TRHs are predominantly present in fuels (petrol, diesel, and kerosene) solvents, oils, fats and other organic matter. Potential for TPH impacts vis spills/leaks from vehicles/machinery operating within the Site.

3.13.2 Exposure Pathways

There is a potential for inhalation, dermal contact or ingestion of potentially impacted materials on site.

3.13.3 Potential Receptors

The potential receptors of COCs onsite include:

- Site users including workers, visitors, occupants (human health risk) – there is a potential to be affected by COCs via any of the exposure pathways (dermal, ingestion or inhalation) during the proposed development and associated excavation works as well as during future anticipated site uses.
- The risk to the Terrestrial and aquatic ecological receptors (be a potential receptor of significant concern) are considered to be low due to the nature of proposed development and relatively small proposed unsurfaced areas upon completion as well as the lack of significant onsite vegetation (excluding the surrounding areas) and highly disturbed urban environmental setting. However preliminary screening against the ecological criteria should be considered.

3.13.4 Potential Risk

Risk will be assessed by using the source, pathway and receptor model. A risk can only be present for a specific scenario if there is a complete, source, pathway and receptor linkage onsite. That is, if there is a source of contamination (if existed) in excess of the nominated investigation level and if there is a complete pathway of exposure to that contamination by a receptor, then there is a potential risk. The magnitude of risk depends on the consequence of the exposure.

Based on the general conceptual site model (CSM) there considered to be a low potential risk to human health and ecological receptors due to the historical uses across the site.

3.14 PSI Data Gaps

Following completion of this assessment a number of data gaps still exist for this site which are summarised as follows:

- Lack of information available regarding the history of Hazardous Chemicals and Dangerous Goods which may have potentially been kept on site.
- A search of Stored Chemical Information Database (SCID) held by WorkCover NSW for any Underground Storage Tanks (USTs) presence needs to be conducted even if the risk of any potential historical storage of significant quantities of dangerous goods is considered unlikely.
- No soil chemical data available for the areas of the site currently overlayed by buildings.
- A land title search, also to be conducted through NSW Land and Property Information to review any previous site uses other than public school if ever existed.
- No groundwater chemical data available for the site.
- No preliminary or detailed site investigations have been conducted for the area covered prior to this work. As such, there are no reports available with site-specific information which may have assisted with us the PSI drafting.
- As there were no known previous environmental investigations which have been conducted on the site, there were no specific areas of COCs to target.
- The PSI was prepared assuming that no other potentially contaminating activities were occurred on site that have not been documented/recorded.
- The PSI was prepared assuming that other potentially contaminating activities such as illegal dumping, importing contaminated fill, industrial business activities could potentially occurred /occurred on the neighbouring sites.

4. SAMPLING, ANALYSIS PLAN & SAMPLING METHODOLOGY

AssetGeoEnviro undertook intrusive field works with limited sampling at the site on 4 October 2019. The sampling and laboratory analysis were undertaken in order to establish the presence and nature of COCs within soil beneath the site associated with the identified potential sources of COCs based on the preliminary CSM which may pose risk to human health in the context of the proposed development.

As there were no previous environmental investigations which have been conducted on the site, there were no specific areas of COCs to target, therefore the general area of the site where new buildings are being proposed and excavation earthworks associated with their construction are expected to occur was subjected to further characterisation through limited intrusive investigation. Grid/judgemental based sampling was therefore selected in accordance with Schedule B2 of the NEPM (2013) as the aim was to adequately characterise all of the site except the area where now/new buildings and associated excavation works are being proposed (due to access issue). 26 samples from eight locations were therefore selected in accessible areas across the site. These locations have been selected in accordance with Australian Standard AS4482.1-2005 sampling guidelines to allow for the determination of a potential contamination hotspot diameter of ~27.0 m. The final soil borehole locations are depicted in **Appendix A**.

4.1 Data Quality Objectives

Development of data quality objectives (DQOs) for each project is a requirement of National Environment Protection Council (NEPC) (1999) National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amended 2013) (NEPC NEPM). This is based on a DQO process established by the United States Environmental Protection Agency (USEPA) for contaminated land assessment and remediation. The method provides guidance for a consistent approach in understanding site assessment and remediation requirements.

There are seven steps to the DQO process. Each step has been given due consideration in conducting this investigation. These steps are as follows:

- Step 1: State the problem and establish the DQO team.
- Step 2: Determine the possible and probable actions that will resolve the problems.
- Step 3: Identify the informational inputs to assist in the problem resolution.
- Step 4: Define the boundaries of the study (geographical, temporal, etc.).
- Step 5: Develop and define decision rules.
- Step 6: Specify tolerable limits to reduce probability of incorrect decisions.
- Step 7: Ensure the quality of the information obtained.

4.2 Step 1 - State the Problem

It is understood that School are proposing re-development across the southern side (Copeland St.) which involves demolition of demountable classroom structures and the seating area, and construction of three new self-storage unit buildings across western and central parts of the site area, including ancillary site works and provision of new car parking areas and access (**Appendix C**).

The PSI did not identify any of sources of potentially contamination activities at the site. However, Preliminary waste classification investigations were conducted on this site by AssetGeoEnviro on 16.4.2019. Please refer to report *REF:5410-1-E1-Soil Assessment & Preliminary Waste Classification* for the details and results of these investigations. Elevated Pb concentration only in one location and also presence of bounded asbestos was detected on single surface location. Preliminary CSM for the site identified risk to human health from potential exposure to COCs during excavation works as part of the proposed development works. The groundwater beneath the site is not expected to

be impacted by the proposed development. As there have been no known previous intrusive environmental site assessments, the levels of COCs in potentially affected underlying soil across the site were unknown.

A DSI with Limited Sampling was required to be produced to fulfil Council's requirements to establish the presence of contamination from potential impacts by COCs to underlying soil or groundwater related to current and/or historical uses at the site and on the surrounding land which may pose risk to human health or ecological receptors in the context of the proposed development.

Depending on the results of this investigation, remediation or management of impacts to soil at the site may be required.

4.3 Step 2 - Determine Decisions to Resolve the Problem

The key decisions to be made are:

- what are the nominated COCs potentially present within soil beneath the site?
- what are the potential transport pathways for these COCs?
- what are the appropriate human health and ecological criteria values for the proposed land use?
- what are the concentrations of these COCs within the soil?
- are concentrations of the nominated COCs within soil above the adopted site criteria when evaluated using the nominated decision rules?
- is the site suitable for the proposed development from the perspective of protection of human health and the environment?
- if not suitable for the proposed land use, what further assessment works are required to make the site suitable?

4.4 Step 3 - Identify the Information Inputs to the Decision

The study inputs comprised existing information and information collected during the site investigation which included:

- review of previous environmental site investigation reports for the site;
- review of site characteristics;
- review of known site history;
- review of proposed development plans;
- observations made during the field investigation;
- laboratory analysis using NATA accredited methods;
- consideration of laboratory results with reference to relevant guidelines.

4.5 Step 4 - Define the Boundaries of the Study

Temporally the study is limited to site conditions at the time of the inspection. The scope of the study is limited to that described earlier in this report. The physical boundary of the study area is defined in and is described in Figures 1 and 2 (**Appendix A**).

Practical constraints to the collection of data include:

- the availability and content of information;
- physical constraints posed by such factors as buildings, site structures, underground services and owners access restrictions;
- the financial budget approved by the client.

The nominated COCs for soil are based on a range of COCs potentially associated with identified on and off-site sources as per the preliminary CSM. The following groups of primary COCs have been derived from this information:

- Heavy metals

- PAHs
- TRHs
- BTEXN
- OCPs/OPPs/PCBs
- VOCs
- Asbestos

Individual sample results will be discussed in terms of site impact and directly compared to the nominated site criteria to assess if they are at concentrations suitable for proposed land use.

4.6 Step 5 - Develop and Define Decision Rules

Under the DQO process, it is important to nominate action levels for decision making.

In order to make a valid decision, the input laboratory data obtained needs to be confirmed to be suitable. Acceptable limits for field data analysis -Relative Percent Differences (RPDs) for primary and duplicate results- are less than 70%, however a range of up to 150% can be acceptable. Acceptable limits for laboratory duplicate analysis will be set based on site specific information such as background concentrations. These are summarised in as the measurement data quality indicators (MDQIs) (Table 5), which will be used to establish whether the DQOs have been met.

It should be noted that NEPM ASC references Standards Australia AS 4482.1–2005 *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: non-volatile and semi-volatile compounds*, which specifies MDQIs for precision should be $\leq 50\%$ RPD. However, they also acknowledge that low concentrations and organic compounds in particular, can be acceptably outside this range. AS 4482.1 suggests that $\leq 50\%$ RPD be used as a 'trigger' and values above this level of repeatability need to be noted and explained.

Once laboratory data for the COC has been deemed suitable for use, based on the indicators presented in Table 5, the following decision rules will be used to make an assessment if concentrations of COCs are acceptable levels from a human health and ecological risk perspective as suggested by National Environment Protection Council (1999) *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)* (Amended 2013).

Proposed decision rules for soil (where there is considered to be sufficient data):

- the 95% upper confidence level (UCL) of the mean of the COC must be below the nominated investigation level
- the mean concentration of the COCs must be below the nominated investigation level
- no single sample concentration can exceed 250% of the nominated investigation level
- the standard deviation of the COC population must be below 50% of the investigation level.

The nominated investigation levels are discussed further down and are presented within the summary laboratory tables as part of **Appendix E**.

As such, if statistical analysis of concentrations of individual COCs are in agreement with the decision rule then concentrations of COCs onsite will be considered to be below the investigation criteria. If the contrary occurs, then further investigation, remediation or risk assessment may be warranted.

Statistical analysis will only be warranted when elevated concentrations of COCs are detected and if there is an adequate number of samples to conduct meaningful statistical assessment.

4.7 Step 6 - Specify Tolerable Limits on Decision Errors

There are two types of decision errors. If it is assumed that the site is impacted by COCs (the null hypothesis):

(a) deciding that the site is not impacted when it actually is (Type I error). The consequence of this error may be unacceptable human health or ecological risk for current or potentially future users of the site

(b) deciding that the site is impacted when it is not (Type II error). The consequence of this error is that site may unnecessarily be deemed unsuitable for ongoing uses or potential redevelopment for more sensitive land use and costly / time consuming remedial works will be undertaken.

If the null hypothesis position that the site is impacted is adopted, the estimation of a 95% UCL will reduce the occurrence of decision error (*a*) errors to 5%.

4.8 Step 7 - Ensure the Quality of the Information Obtained by Design Optimisation

During the DQO process the sampling design was optimised through several iterations. Optimisation of the design included evaluating Steps 1-6 of the DQO process. The following are the key steps taken to optimise the sample design:

- sampling design based on the proposed development area coverage, available information on infrastructure and soil/fill conditions within the investigation area
- allowance for the determination of a hotspot diameter of ~27.0m (used to determine remediation boundaries if required).
- revisions of sampling locations on site prior to the construction of boreholes taking into account access constraints, location of underground services, infrastructure and health and safety considerations
- adjustment of sample analysis plan based on field observations.

The final field program and sampling pattern is considered optimal taking into account the purpose of the investigation, access constraints, budget and temporal limitations. A detailed discussion on the sampling program is presented at the end of this report.

5. QUALITY ASSURANCE (QA) & QUALITY CONTROL (QC)

The quality assurance and quality control (QA/QC) procedures undertaken as part of this project were designed to ensure the data delivered is precise, accurate and representative of actual conditions as well as to prevent/minimise cross-contamination and analyte loss. Overall two soil quality control samples were collected and analysed as part of this investigation. Two intra/intra-laboratory quality control field duplicate samples (Dup 1 and Trip 1) were submitted to SGS Australia and Eurofins MGT Laboratory respectively for analysis together with all primary samples (i.e. BH3-0.3-0.7 sample) for analysis in order to verify laboratory's methods accuracy and precision. Some of the laboratories' QA/QC was already presented in section 1.27, for more information please refer to **Appendix E**.

The analytical results of the quality control samples were compared to those of primary samples as a measure of method precision. Results for field duplicates and corresponding primary samples together with calculated relative RPDs are presented in Table 5 below.

Table 5 – Soil RPDs

Analyte	MDL (mg/kg)	BH3 (0.3-0.7) (mg/kg)	Dup 1 (mg/kg)	RPD (%)	Trip 1 (mg/kg)	RPD (%)
Arsenic	1	5	4	22	5.9	16.5
Cadmium	0.3	0.3	<0.3	NC	< 0.4	NC
Chromium	0.5	8.6	11	24.4	16	60
Copper	0.5	14	13	7.4	22	44
Lead	1	19	25	27	31	48
Mercury	0.05	0.07	<0.05	NC	<0.1	NC
Nickel	0.5	4.4	3.7	17	9.1	69.6
Zinc	2	32	31	3.17	45	33.7
Benzene	0.1	<0.1	<0.1	NC	<0.1	NC
Toluene	0.1	<0.1	<0.1	NC	<0.1	NC
Ethylbenzene	0.1	<0.1	<0.1	NC	<0.1	NC
Total +ve Xylenes	0.3	<0.3	<0.3	NC	<0.3	NC
vTPH C6 - C10 less BTEX (F1)	25	<25	<25	NC	<20	NC
TRH >C10 - C16 less Naphthalene (F2)	25	<25	<25	NC	<50	NC
TRH >C16-C34 (F3)	90	<90	<90	NC	<100	NC
TRH >C34-C40 (F4)	120	<120	<120	NC	<100	NC
Notes: 1 MDL - method detection limit (SGS Lab) 2 RPD - relative percentage difference 3 N/A - not analysed 4 ND - non detect 5 NC - RPD not calculable 6 all units for soil are mg/kg, groundwater µg/L 7 Acceptance Criteria - no limit applies to < 10x MDL 8 Acceptance Criteria - 80-150% for low level (<10 x MDL) 9 Acceptance Criteria - 50-130% for medium to high level (>10 x MDL)						

All RPD values for associated inter- and intra- laboratory duplicates were within the acceptable range. The variances for some of the analytes could potentially be due to the heterogeneous nature of fill material strata from which these samples were collected with variations considered to be associated with the 'nugget effect' which can mean some spatial variation between locations due to poor distribution of COCs. In general, the quality of the data set was considered to be reliable and acceptable.

5.1 QA/QC Summary

The following QA/QC procedures were undertaken onsite:

- Each sample container was clearly labelled with a waterproof marker with the project number, sample location and date of sample collection. All samples were given a unique identification number, written on chain of custody documentation and were submitted to NATA accredited laboratories which included SGS Australia (primary laboratory) and Eurofins MGT (secondary laboratory) for analysis.
- All samples dispatched using chain of custody forms and received within appropriate holding time. (**Appendix E**).
- The number of duplicate (two) samples met the sampling requirement 1:19.
- Borehole locations were cleared of underground services with assistance of a service locator using passive and active methods including ground penetrating radar.
- AssetGeoEnviro constructed fifteen soil boreholes (BH1–B8) across the accessible parts of the site where new buildings are being proposed. Sampling locations are presented as **Appendix A**.
- The majority of boreholes were drilled using a Geoprobe 7822 DT rig using direct push Dual Tube sample tooling to collect undisturbed soil cores within disposable sample liners, to reduce the potential for cross contamination.
- Laboratory LOR/EQL were less than the assessment criteria for all COC.
- Detailed logging of the stratigraphy encountered was undertaken by a suitably qualified and experienced consultant. Bore logs depicting the site stratigraphy are presented in **Appendix F**.
- Soil samples were collected at varying depths including from fill, disturbed or visually impacted layers as well as natural soil strata (where encountered). In general, one sample per horizon / strata at each borehole location was collected or where visual or olfactory indicators suggested the presence of contamination. As a minimum, laboratory analysis was undertaken on three sample per borehole location.
- Soil samples were collected using disposable nitrile gloves. All samples were collected from a minimum of 0.1 mbgl, placed in sterile laboratory supplied 250mL glass jars with Teflon seal and were immediately stored in a chilled cooler to avoid potential loss of volatile chemicals which may be present.
- Laboratory Matrix spikes generally met the recovery value of 70-130% (**Appendix E**).

No olfactory or visual signs of contamination were identified in any of the borehole locations during fieldwork.

6. BASIS FOR ASSESSMENT CRITERIA

The National Environment Protection (Assessment of Site Contamination) Measure 1999 – Amendment 2013 (NEPM 2013) *Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater* is a document which outlines a framework for the adaptation of investigation and screening levels for soil, soil vapour and groundwater. The framework is based on human health, ecological and groundwater investigation and screening levels outlined in conjunction with specific guidance notes for selected COCs. The investigation levels and screening levels are the concentrations of COCs above which further investigation and evaluation would be required with potential subsequent remedial works necessitated. The guidelines include:

- Health Investigation Levels (HILs) – The HILs are conservatively derived and are designed to be protective of human health under the majority of circumstances of contaminants, soil types and human susceptibilities. are generic and apply across Australia to all soil types generally to a depth of 3 m below surface. They are derived for four generic land-use categories as follows:
 1. **HIL A** Standard residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry), includes children's day care centres, preschools and primary schools.
 2. **HIL B** Residential with minimal opportunities for soil access, includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats.
 3. **HIL C** Includes developed open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. Does not include undeveloped public open space which should be subject to a site-specific assessment where appropriate.
 4. **HIL D** Commercial/industrial includes premises such as shops, offices, factories and industrial sites.
- Health Screening Levels (HSLs) – for petroleum hydrocarbons depend on physicochemical properties of soil as it affects hydrocarbon vapour movement in soil and the characteristics of building structures. They apply to different soil types, land uses and depths below surface to >4 m and have a range of limitations.
- Ecological Investigation Levels (EILs) – for selected metal and organic substances, applicable for assessing ecological risks (i.e. to terrestrial ecosystems), depend on specific soil physicochemical properties and land use scenarios and generally apply to the top 2m of soil.
- Ecological Screening Levels (ESLs) – for petroleum hydrocarbon materials broadly apply to coarse- and fine-grained soils and various land uses. They are applicable to the top 3m of soil.
- Petroleum hydrocarbon '**management limits**' are limited to petroleum hydrocarbon compounds. They are maximum values that should remain in a site following evaluation of human health and ecological risks and risks to groundwater resources and apply to all soil depths based on site-specific considerations. These limits are to consider the formation of phase separated hydrocarbons, fire and explosion risks, damage to buried infrastructure and aesthetics.

Application of these investigation and screening levels form the basis of this indicative soil risk assessment.

Due to current and proposed on-going site use the following EILs, ESLs, HILs, HSLs and Management Limits were deemed applicable as part of the indicative human health and ecological risk assessment:

- HILs for Residential land use garden/accessible soil (HIL A);
- HSLs for low-high density Residential land use (HSL A-B);
- EILs/ESLs for protection of terrestrial ecosystem;
- Management Limits for Residential and industrial land use.

All adopted criteria values are presented in multi-coloured tables for the ease of reader use in **Appendix E**.

7. RESULTS

7.1 Laboratory Analysis & Results

A total of 26 soil samples (including asbestos samples, one intra-laboratory and one inter-laboratory quality control field duplicate samples) were collected from eight borehole locations on site and submitted for analysis using NATA accredited laboratory methods for chemical analysis of the COCs.

A summary table of laboratory results (including exceedance tables), Chain of Custody and SRN is provided in **Appendix E** where they are compared to the applicable investigation levels together with copies of laboratory transcripts. The results of the previous investigations (waste classification) are also included where exceeded Pb and detected asbestos were observed.

Laboratory analysis undertaken on samples collected as part of this investigation identified concentrations for CCs as below:

- Concentrations of all potential COCs within soil samples analysed were either below the Laboratory Limit of Reporting (LOR or EQL) or below the adopted human health risk and ecological criteria.
- No detectable concentrations of PAHs and TRHs were identified within the samples of fill collected from a number of boreholes that exceed the adopted human health and ecological guidelines criteria.
- Asbestos was NOT detected in the surface/shallow fill sample within any of the collected samples.
- Concentrations of all pesticides tested (i.e. OCPs, OPPs plus others) were all below the laboratory limit of reporting.
- Concentrations of all other COCs within soil samples analysed were either below the laboratory limit of reporting or below the adopted human health risk and ecological criteria.
- A minor trace of some metal detected in some soil samples such as Arsenic and Copper, however they were below the adopted human health risk and ecological criteria. Generally, arsenic exists in soils in many parts of Australia at a very low background concentration.

8. DISCUSSIONS AND CONCLUSIONS

If the results of the detailed site investigation indicate that the site poses unacceptable risks to human health or the environment – on-site or off-site, and under either the present or the proposed land use – then a remedial action plan needs to be prepared and implemented.

Based on the findings of this study, it was concluded that identified contamination impacts appeared to be isolated in a single segment (Asbestos) and localised (Lead). Also, this were only confined predominantly to the top of fill material layer. It is crucial to say that these results reflect the nature of soil in the investigated locations only. Hence, the presence of any Asbestos Containing Materials (ACMs) or any other type of contaminants in other part of the site which were not investigated/sampled is UNKNOWN.

Further detailed investigation required especially during the construction phase, for the areas mentioned below. Based on our understanding these areas will be excavated 1.2mbgl. These areas did not fit into the scope of this study due to the access issue. Hence, potential presence of contamination in these areas is UNKNOWN.

- *area under the demountable metal clad classrooms, and*
- *area over the concrete sitting area*

8.1 Asbestos

Asbestos is the fibrous form of mineral silicates belonging to the serpentine and amphibole groups of rock-forming minerals. The most significant types include chrysotile, crocidolite and amosite (white, blue and brown or grey, respectively). As a naturally occurring rock fibre, asbestos was mined, and then broken down from mineral clumps into groups of loose fibres.

During the 1950s, 1960s and early 1970s it was common to use asbestos as fire insulation on structural members and as fire rating of penetration core holes. The thermal energy conservation properties of asbestos were used to insulate hot and cold-water pipes and ducting. Asbestos was also used at a later date in products to increase their compressive and tensile strength. These products include asbestos/cement sheeting, bituminous mastic and membrane, vinyl tiles, bakelite and Zelemite boards and many other products.

The health effects associated with asbestos exposure relate to the inhalation of airborne respirable asbestos fibres. In general, asbestos fibres cannot be released or become airborne in significant quantities unless the asbestos-containing material is disrupted, for example in the case of excavating, breaking, cutting and other material disturbing activities.

Bonded ACM is any material that contains asbestos bound into a stable matrix. It may consist of cement or various resins/binders and cannot be reduced to a dust by hand pressure. As such it does not present an exposure hazard unless cut, abraded, sanded or otherwise disturbed. Therefore, the exposure risk from bonded ACM is negligible during normal building occupation. It is important to note that if bonded ACM is damaged or otherwise deteriorated, the risk assessment must be reviewed to reflect a higher potential for exposure to asbestos fibres. An asbestos assessor or equivalent should perform the risk assessment.

Friable ACM can be crumbled or reduced to a dust by hand pressure when dry and can represent a significant exposure hazard. Examples of friable asbestos are hot water pipe lagging, severely damaged asbestos cement sheet, limpet spray to structural beams and electrical duct heater millboard.

(BH3)

Although the BH3 -where the asbestos fragment was identified- was already delineated during this investigation (BH3, BH6 and BH7), however, the extent of identified asbestos impacts should be fully delineated during construction phase where excavation/earthworks are to occur as part of the proposed development. This should include excavation, classification and offsite disposal of all asbestos impacted fill material from the areas of anticipated earth works, and areas were underlying fill material (where contaminants potentially exist) is expected to be exposed to eliminate any future liabilities.

8.2 Lead

Lead compounds were used as antiknock agents in gasoline until 1989. It is estimated that 4.5 to 5.5 million tons of lead used in gasoline remain in soil and dust in Australia. Soils adjacent to heavy traffic volume areas in cities and busy roadways have the highest concentrations of lead. The other major source of lead in residential soils is leaded paint. It is estimated that leaded paint was used on about 75% of houses built before 1978, when it was banned. Chalking, leaching, flaking, weathering, scraping, and sandblasting of leaded paint result in lead deposits in the soil near the base of these houses, creating a "halo" of lead contamination. Although less widespread, airborne lead from industrial sources also may have contaminated some nearby residential soils.

(BH1)

Occasionally, the heterogenous nature of the soil could potentially be the reason behind the outlier data points. In this case, unusual/unexpected elevated concentration of Pb, was reported. No visual/olfactory evidence or peculiar inclusions was ever observed/ recorded on this location, photos are available. Considering the clear site history plus the results of this investigation, the reason behind this isolated elevated Pb concentration could be potentially the neighbouring historical/industrial activities. The Area within the vicinity of the borehole to be further delineated during excavation.

AssetGeoEnviro considers that the site area where new buildings are being proposed as described earlier this report CAN be made suitable for the proposed development and ongoing/proposed uses following the completion of the recommendations below.

9. RECOMMENDATIONS

- A suitable remediation strategy should be developed in support of the proposed works outlining remedial methodology to address any potential identified contamination including asbestos and lead) during excavation and to ensure the site is suitable for the proposed development and ongoing uses.
- The remedial strategy should include an Unexpected Find Control (UFC), which provide a procedure for the management of any potential unexpected contamination should such be discovered during construction/excavation.
- Based on the findings of this study, it was concluded that identified asbestos impacts appeared to be isolated in only the area where the cement fibre fragment found on top of fill material layer. The extent of identified asbestos impacts should be fully delineated/inspected further during excavation and areas where excavation earthworks are to occur as part of the proposed development should be remediated to an acceptable standard. This should include excavation, classification and offsite disposal of all potentially asbestos impacted surficial fill material from the areas of anticipated earth works, and areas where underlying fill material is expected to be exposed to eliminate any future liabilities.
- The remediation strategy should also outline the details to further delineation (limited sampling) on BH1/BH3 locations during the construction phase, and also for the areas under the now/future building structure (to be excavated down to 1.2mbgl).
- Waste generators (client) must chemically assess their waste in accordance with Step 5 of the Waste Classification Guidelines to determine the waste's classification where it has not been classified under Steps 1–4 of the Waste classification Guidelines. Any materials proposed to be excavated and disposed offsite during proposed remediation/development works must be classified in accordance with the NSW EPA (2014) Waste Classification Guidelines, prior to offsite disposal to an appropriately licenced waste management / landfill facility. If the waste generator does not undertake chemical assessment of the waste, the waste must be classified as hazardous waste. Waste classified as hazardous waste cannot be disposed of in NSW and must be treated prior to disposal.
- Consideration should be given to the separation of all identified potentially impacted fill materials from the remainder of excavated materials across the site during the proposed development works, for further waste classification purposes.
- Following completion of remedial activities, a Validation Assessment Report should also be prepared to confirm the remedial objectives have been met and the site has been rendered suitable for the intended land use.
- A Construction Environmental Management Plan (CEMP) to be prepared to avoid or mitigate potential adverse environmental impacts on site, surrounding human and environmental receptors. Moreover, to ensure that all works are conducted in accordance with regulatory requirements. The CEMP should provide the details on management requirements and procedures to be implemented during construction/excavation/development phase.

10. LIMITATIONS

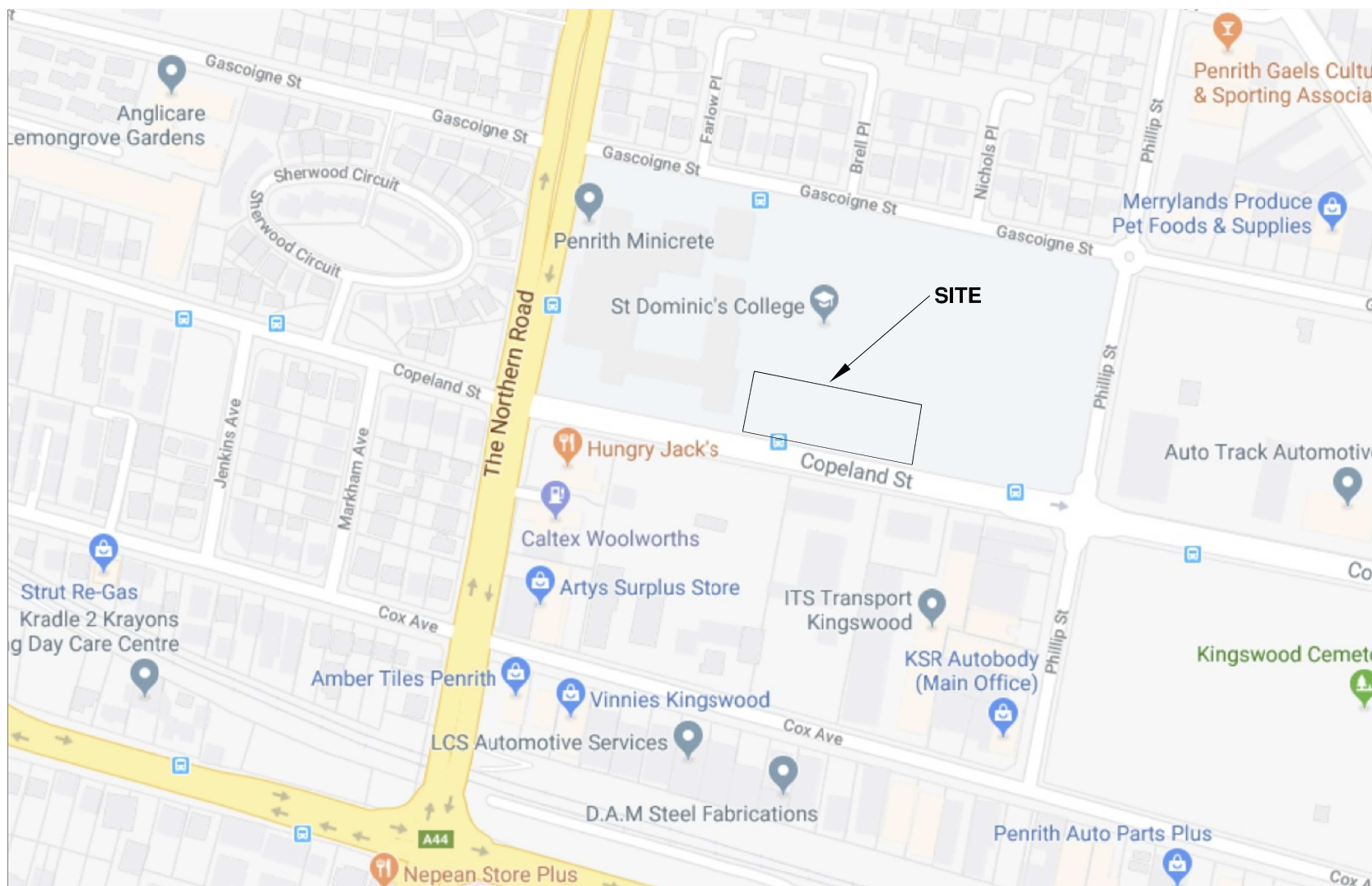
This report has been prepared by AssetGeoEnviro in response to and subject to the following limitations:

- The specific instructions received from Geoff Ninnes Fong & Partners.
- The Proposal document (AssetGeoEnviro ref: 5626-P1) dated 5 July 2019 including the Terms of Agreement for Professional Services contained within.
- The report has been prepared to a specific scope of works as set out in Section 2.2 of this report.
- May not be relied upon by any third party not named in this report for any purpose except with the prior written consent of AssetGeoEnviro (which may or may not be given at the discretion of AssetGeoEnviro).
- This report comprises the formal report, documentation sections, tables, figures and appendices as referred to in the index to this report and must not be released to any third party or copied in part without all the material included in this report for any reason.
- The report only relates to the site referred to the site located at 21 COPELAND STREET, KINGSWOOD NSW which was the subject of this investigation ("the site") and further described in **Appendix A**.
- The report relates to the site as at the specified date of investigation as conditions may change thereafter due to natural processes and/or site activities.
- It is crucial to mention that these results reflect the nature of soil in the investigated areas ONLY (sampling locations/Boreholes). Hence, the presence of any Asbestos Containing Materials (ACMs) or any other type of contaminants including Lead in other part of the site which were not investigated/sampled is UNKNOWN.
- No warranty or guarantee is made in regard to any other use than as specified in the scope of works and the Proposal document.
- This report and details for the proposed development should be submitted to relevant regulatory authorities that have an interest in the property (i.e. Cumberland Council) or are responsible for services that may be within or adjacent to the site (e.g. Sydney Water), for their review.
- Asset accepts no liability where our recommendations are not followed or are only partially followed. The document "Important Information about your Environmental Report" in **Appendix G** provides additional information about the uses and limitations of this report.
- In addition to the limitations inherent in site investigations (refer to **Appendix G**), it must be pointed out that the recommendations in this report are based on assessed subsurface conditions from limited investigations. To confirm the assessed soil and/or groundwater properties beneath the site, further investigation would be required involving higher sampling density, deeper exploration drilling depth and installation of groundwater monitoring wells and should be carried out if the scale and provisions / requirements of the development warrants, or if any of the properties are critical to the design, construction or performance of the development.

APPENDIX A

Figure 1 – Site Locality

Figure 2 – Test Locations



APPROXIMATE ONLY –
SUBJECT TO DETAIL SURVEY.

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issue	date	description
A	16.10.19	INITIAL ISSUE



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PROPOSED ALTERATIONS & ADDITIONS
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NSW.

for
ST DOMINIC'S SCHOOL c/o GEOFF
NINNES FONG & PARTNERS

SITE LOCALITY

drawn: WY

date: 16.10.2019

checked: MAG

scale: 1:4,000 A4

job no.:

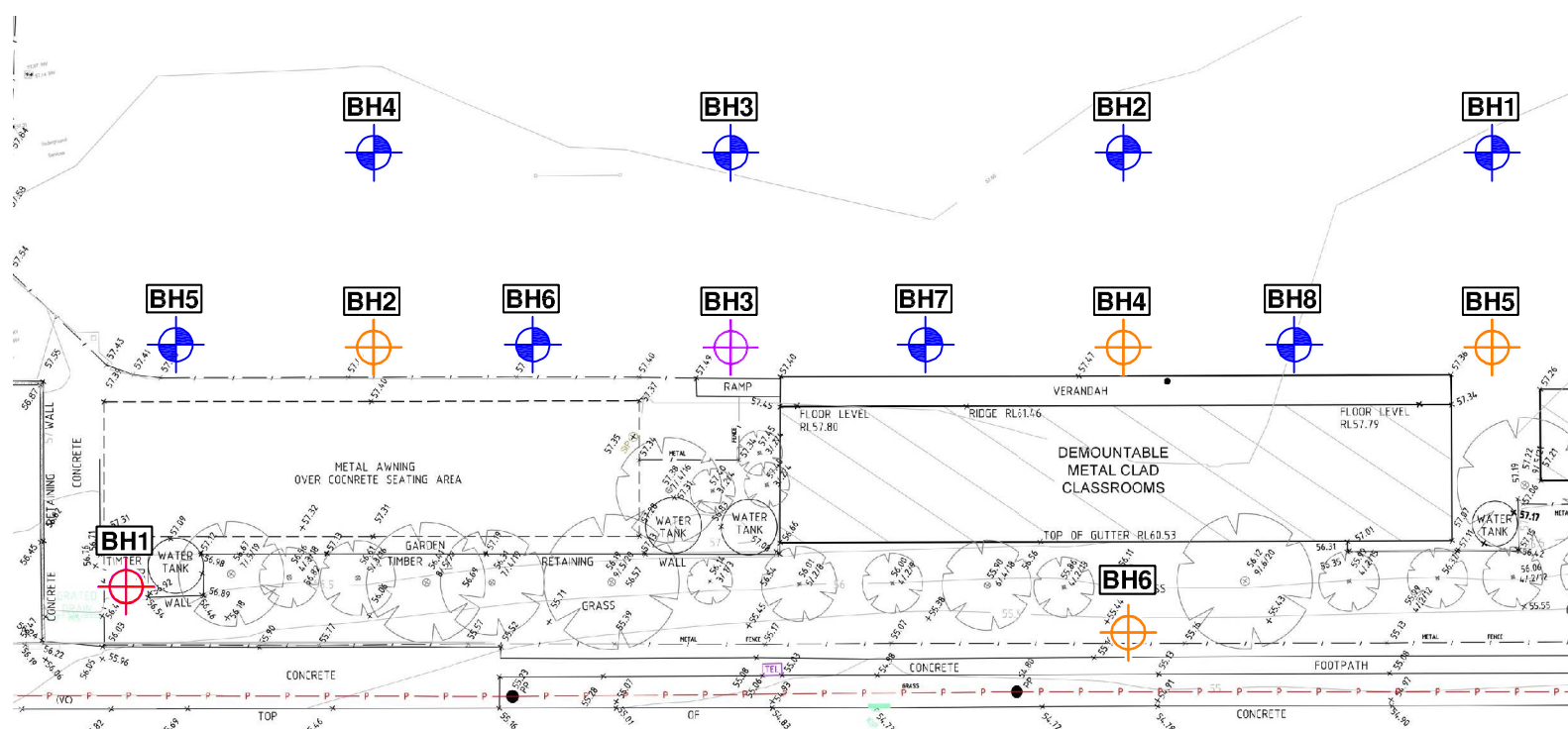
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A



KEY

- Previous Investigations (16.4.19)
- ACM fragment found
- Pb/Lead detected
- Current Investigations (4.10.19)

APPROXIMATE ONLY — SUBJECT TO
DETAIL SURVEY.

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issue	date	description
A	16.10.19	INITIAL ISSUE



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e: info@assetgeotek.com.au

PROPOSED ALTERATIONS & ADDITIONS
21 COPELAND STREET, KINGSWOOD
NSW.

for
ST DOMINIC'S SCHOOL c/o GEOFF
NINNES FONG & PARTNERS

TEST LOCATIONS

drawn: WY	5410-2	
date: 16.10.2019		
checked: MAG	fig: 2	issue: A
scale: 1:500 A4		

COPELAND

STREET

APPENDIX B

Lotsearch Report



LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 23 Oct 2019 28:28:03

Reference: LS009152 EP

Address: 21 Copeland Street, Kingswood, NSW 2747

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.

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Location Confidences

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

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

Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Finance, Services & Innovation	22/10/2019	22/10/2019	Daily	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	15/10/2019	15/10/2019	Monthly	1000	0	0	1
Contaminated Land Records of Notice	Environment Protection Authority	14/10/2019	14/10/2019	Monthly	1000	0	0	0
Former Gasworks	Environment Protection Authority	02/10/2019	11/10/2017	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	06/08/2019	07/03/2017	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	02/10/2019	02/10/2019	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program	Department of Defence	02/10/2019	02/10/2019	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	02/10/2019	02/10/2019	Monthly	2000	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	02/10/2019	02/10/2019	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	13/12/2018	13/12/2018	Annually	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	26/09/2019	26/09/2019	Monthly	1000	0	0	1
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	26/09/2019	26/09/2019	Monthly	1000	0	0	2
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	26/09/2019	26/09/2019	Monthly	1000	0	0	3
UPSS Environmentally Sensitive Zones	Environment Protection Authority	14/04/2015	12/01/2010	As required	1000	1	1	1
UBD Business to Business Directory 1991 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	24	34
UBD Business to Business Directory 1991 (Road & Area Matches)	Hardie Grant			Not required	150	-	11	11
UBD Business to Business Directory 1986 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	40	51
UBD Business to Business Directory 1986 (Road & Area Matches)	Hardie Grant			Not required	150	-	35	35
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	27	39
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	26	26
UBD Business Directory 1970 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	2
UBD Business Directory 1970 (Road & Area Matches)	Hardie Grant			Not required	150	-	5	5
UBD Business Directory 1961 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	1	1
UBD Business Directory 1961 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	1
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	3	3
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	27	64
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	43	108

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Points of Interest	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	Quarterly	1000	1	1	59
Tanks (Areas)	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	Quarterly	1000	0	0	1
Tanks (Points)	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	Quarterly	1000	0	0	0
Major Easements	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	Quarterly	1000	0	0	0
State Forest	NSW Department of Finance, Services & Innovation	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	16/01/2019	14/11/2018	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	2
Botany Groundwater Management Zones	NSW Department of Primary Industries	15/03/2018	01/10/2005	As required	1000	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	0	13
Geological Units 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	1	-	2
Geological Structures 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	0	-	0
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Soil Landscapes	NSW Office of Environment & Heritage	12/08/2014		None planned	1000	1	-	2
Atlas of Australian Soils	ABARES	19/05/2017	17/02/2011	As required	1000	1	1	2
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning and Environment	18/10/2019	11/10/2019	Weekly	500	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	1	2
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	0
Dryland Salinity Potential of Western Sydney	NSW Office of Environment & Heritage	12/05/2017	01/01/2002	None planned	1000	1	2	4
Mining Subsidence Districts	NSW Department of Finance, Services & Innovation	11/04/2019	11/04/2019	Quarterly	1000	0	0	0
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning and Environment	18/10/2019	07/12/2018	Weekly	1000	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning and Environment	18/10/2019	11/10/2019	Weekly	1000	1	10	79
Commonwealth Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	31/07/2018	Unknown	1000	0	0	0
National Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	28/09/2018	Unknown	1000	0	0	0
State Heritage Register - Curtilages	NSW Office of Environment & Heritage	14/10/2019	09/11/2018	Quarterly	1000	0	0	0
Environmental Planning Instrument Heritage	NSW Department of Planning and Environment	18/10/2019	11/10/2019	Weekly	1000	0	1	17
Bush Fire Prone Land	NSW Rural Fire Service	28/08/2019	03/06/2019	Quarterly	1000	0	1	2
Remnant Vegetation of the Cumberland Plain	NSW Office of Environment & Heritage	07/10/2014	04/08/2011	Unknown	1000	2	2	8
Ramsar Wetlands of Australia	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	1
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	2
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	21/10/2019	21/10/2019	Weekly	10000	-	-	-

Site Diagram

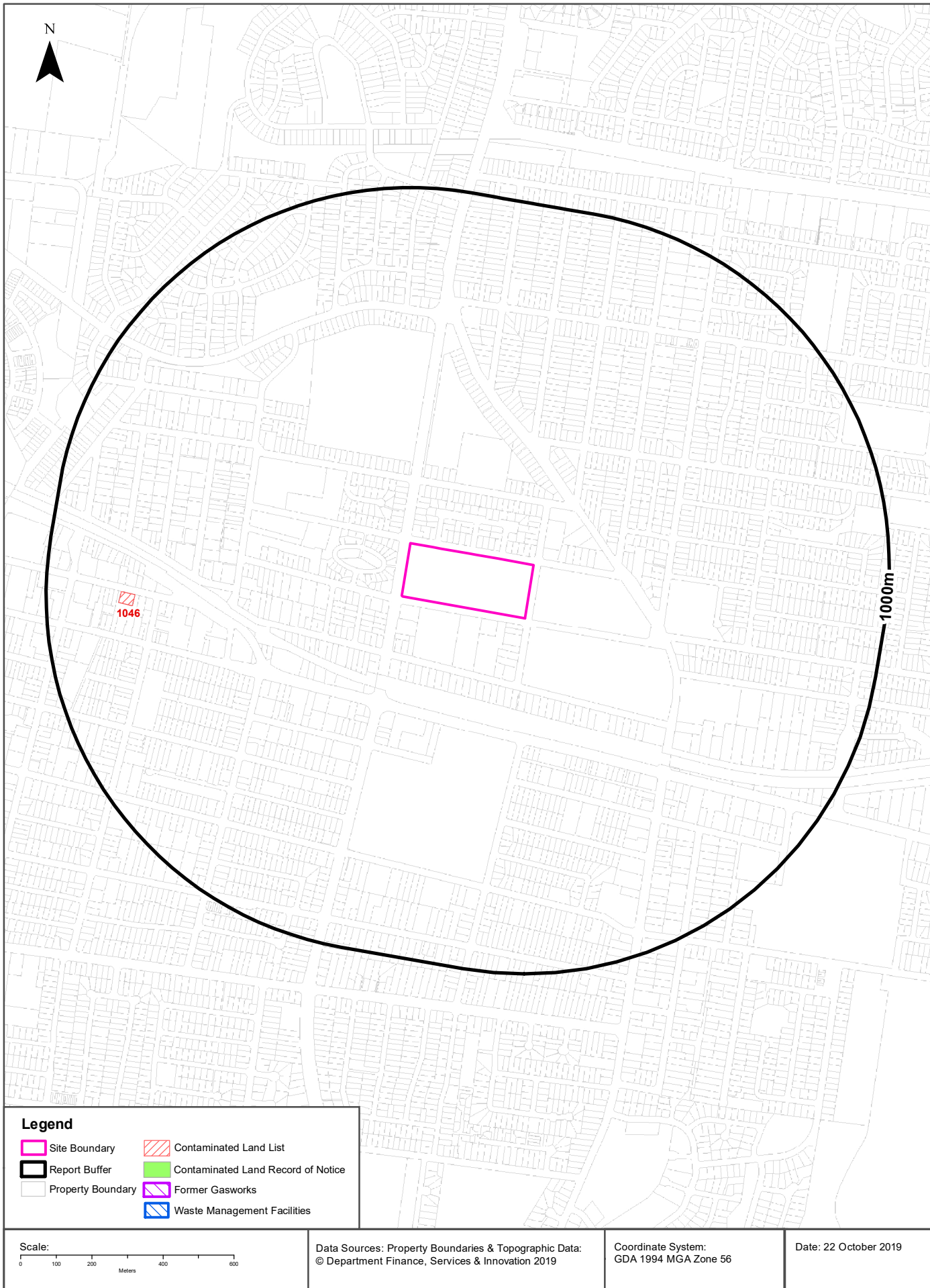
21 Copeland Street, Kingswood, NSW 2747



Legend Site Boundary Internal Parcel Boundaries	Total Area: 53238m ² Total Perimeter: 1005m Disclaimers: Measurements are approximate only and may have been simplified or smaller lengths removed for readability. Parcels that make up less than 2.0% of the total site area have not been labelled for increased legibility.	Scale: 0 25 50 100 Meters Data Sources: Aerial Imagery: © Aerometrex Pty Ltd Coordinate System: GDA 1994 MGA Zone 56 Date: 22 October 2019
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Contaminated Land & Waste Management Facilities

21 Copeland Street, Kingswood, NSW 2747



Contaminated Land & Waste Management Facilities

21 Copeland Street, Kingswood, NSW 2747

List of NSW contaminated sites notified to EPA

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

Map Id	Site	Address	Suburb	Activity	Management Class	Status	Location Confidence	Dist (m)	Direction
1046	7-Eleven Service Station Penrith	30 Henry Street	Penrith	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	750m	West

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

21 Copeland Street, Kingswood, NSW 2747

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

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

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

Former Gasworks

Former Gasworks within the dataset buffer:

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

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

National Waste Management Site Database

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

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

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

PFAS Investigation Sites

21 Copeland Street, Kingswood, NSW 2747

EPA PFAS Investigation Program

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

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

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

Defence PFAS Investigation & Management Program

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

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

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

Airservices Australia National PFAS Management Program

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

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

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

21 Copeland Street, Kingswood, NSW 2747

Defence 3 Year Regional Contamination Investigation Program

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

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

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

EPA Other Sites with Contamination Issues

21 Copeland Street, Kingswood, NSW 2747

EPA Other Sites with Contamination Issues

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

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

Sites within the dataset buffer:

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

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



EPA Activities

21 Copeland Street, Kingswood, NSW 2747

Licensed Activities under the POEO Act 1997

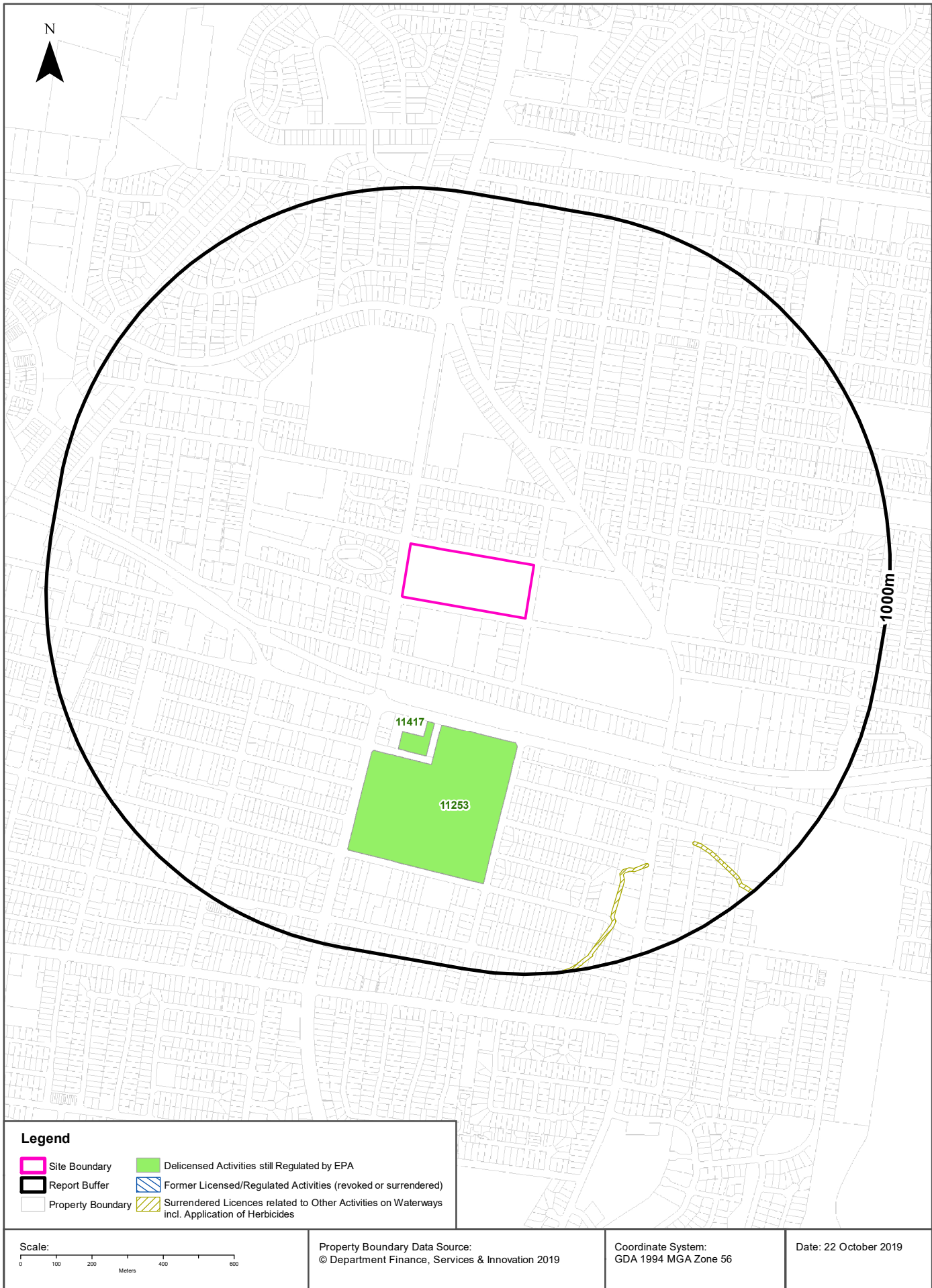
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
12208	SYDNEY TRAINS		PO BOX K349, HAYMARKET, NSW 1238		Railway systems activities	Network of Features	246m	South West

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities 21 Copeland Street, Kingswood, NSW 2747



EPA Activities

21 Copeland Street, Kingswood, NSW 2747

Delicensed Activities still regulated by the EPA

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

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
11417	HEALTHSCOPE OPERATIONS PTY LTD	NEPEAN PRIVATE HOSPITAL	9 Barber Avenue	KINGSWOOD	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	331m	South
11253	SYDNEY WEST AREA HEALTH SERVICE	NEPEAN HOSPITAL	CNR DERBY STREET AND PARKER STREET	KINGSWOOD	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	334m	South

Delicensed Activities Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

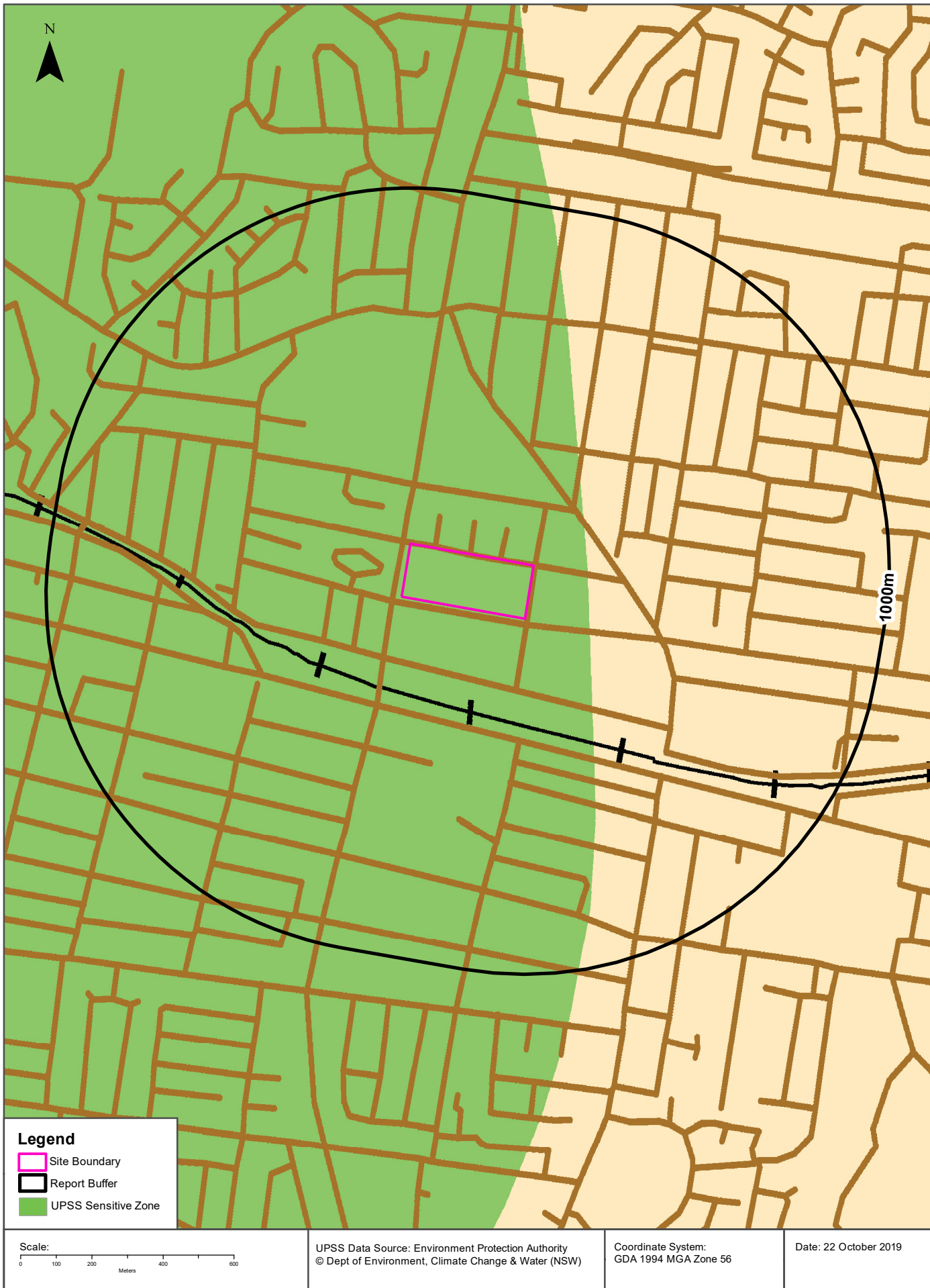
Former Licensed Activities under the POEO Act 1997, now revoked or surrendered

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

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	758m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	758m	-
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09/11/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	758m	-

Former Licensed Activities Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

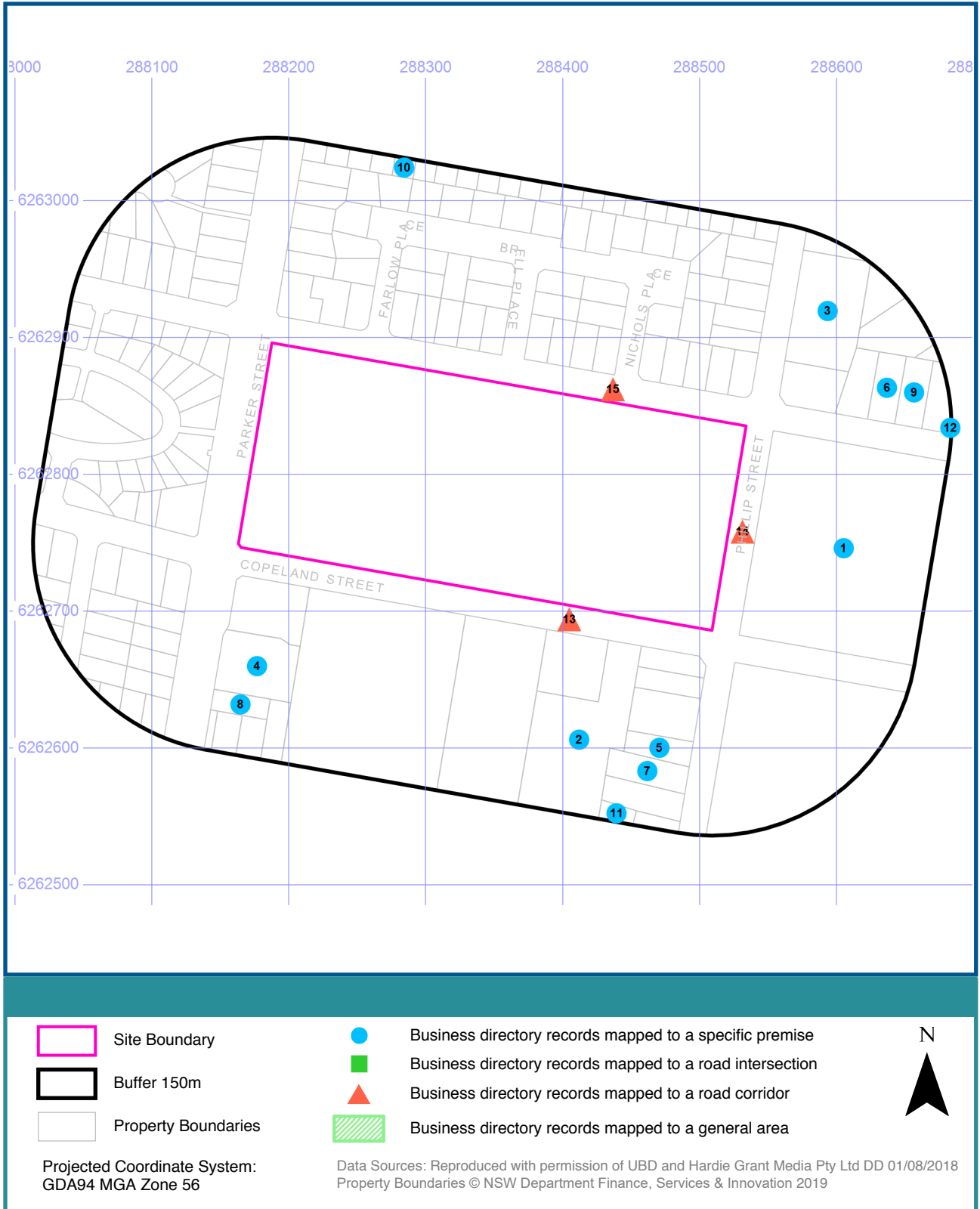


Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747



1991 Business to Business Directory Records



Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747

1991 Business to Business Directory Records Premise or Road Intersection Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	Sheds	Copeland Sheds, 8 Copeland St Kingswood 2747	62011	Premise Match	20m	East
	Engine Reconditioners	Heads Plus, 16 Copeland St., Kingswood 2747	43281	Premise Match	20m	East
	Motor Garages & Service Stations	Indian Automotive, The Volkswagen Specialist Unit 10, Copeland St., Kingswood 2747	97105	Premise Match	20m	East
	Motor Panel Beaters &/or Spray Painters	Smith, G J Motor Body Repairs, 15 Copeland St Kingswood 2747	54808	Premise Match	20m	East
	Motor Garages & Service Stations	T. W.E. Transmissions, 7 Copeland St., Kingswood 2747	53968	Premise Match	20m	East
	Motor Transmission Specialists	T.W.E. Transmissions, 7 Copeland St, Kingswood, 2747	55392	Premise Match	20m	East
2	Motor Panel Beaters &/or Spray Painters	Galvin, P & R, 7/83 Cox Ave, Kingswood 2747	54399	Premise Match	20m	South
	Motor Car Dealers New &/or Used	Gill, Mike Auto Wholesale, 13/83 Cox Ave., Kingswood 2747	52461	Premise Match	20m	South
	Motor Engine Reconditioners	Jap Reconditioned Motors, 14/83 Cox Ave., Kingswood 2747	96392	Premise Match	20m	South
	Printers General	Nowland, Peter Printing, 6/83 Cox Ave., Kingswood. 2747	58822	Premise Match	20m	South
	Printers Lithographic (Offset)	Nowland, Peter Printing., 6/83 Cox Ave., Kingswood. 2747	59245	Premise Match	20m	South
	Fruit Juice Processors &/or Merchants	Quenchy Beverage W'Salers, 1/83 Cox Ave., Kingswood. 2747	96642	Premise Match	20m	South
	Motor Engine Reconditioners	Rea, B., 2/83 Cox Ave., Kingswood 2747	96318	Premise Match	20m	South
	Electroplaters	Stonewall Jackson Chroming & Metal Polishing., 20/83 Cox Ave., Kingswood 2747	43084	Premise Match	20m	South
	Motor Engineers	Sutton Alan Pty Ltd 15/83 Cox Ave Kingswood 2747	96714	Premise Match	20m	South
	Confectionery Mfrs &/or Imps &/or W/salers	Sweeties Confectionery., Unit 11/83 Cox Ave., Kingswood 2747	40708	Premise Match	20m	South
	Advertising Novelty Mfrs &/or Dists	Toycon Industries, 9/83 Cox Ave., Kingswood 2747	33603	Premise Match	20m	South
	Electrical Supplies &/or Appliances Mfrs &/or W/salers	Martin de Launay Pty. Ltd., Unit 4/6 Phillip St., Kingswood 2747	42712	Premise Match	55m	North East
4	Welding Equipment &/or Supplies Mfrs &/or Dists	CIG Industrial Gases Pty Ltd, 66 Parker St Kingswood 2747	66134	Premise Match	60m	South West
5	Cleaning Equipment Supplies &/or Repairs	Origin Cleaning Equipment Pty. Ltd., 25 Phillip St, Kingswood 2747	39105	Premise Match	83m	South East
6	Screen Printers	Berlex Industries, 93 Gascoigne St, Kingwood. 2747	61696	Premise Match	89m	East
	Tube Benders	Elegance Furniture Co. Pty Ltd, 93 Gascoigne St Kingswood 2747	65048	Premise Match	89m	East
	Pump & Pumping Equipment Mfrs &/or Dists	General Pump Co, 93 Gascoigne St Kingswood 2747	59961	Premise Match	89m	East
7	Motor Panel Beaters &/or Spray Painters	Shipp Merv Smash Repairs, 27 Phillip St Kingswood 2747	54791	Premise Match	98m	South East
8	Motor Car Hire Services	Presketts Car & Truck Rental Co. Pty Ltd (Hertz International Licensee), 68 Parker St, Penrith 2750	52775	Premise Match	105m	South West

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
9	Motor Garages & Service Stations	Vantage Automotive Services, 95 Gascoigne St., Kingswood 2747	53974	Premise Match	109m	East
10	Pest Control	Cobb & Co. Pest Extermination, 42 Glebe Pl., Kingswood. 2747	57003	Premise Match	136m	North
11	Vanity Unit Mfrs &/or Dists	I & D Kitchens, 1/81 Cox Ave Kingswood 2747	65586	Premise Match	136m	South
	Furniture Mfrs &/or W/salers Built In	I & D Kitchens, 1/81 Cox Ave., Kingswood 2747	46910	Premise Match	136m	South
	Kitchen Units Mfrs &/or Dists &/or Installers	I & D Kitchens, 1/81 Cox Ave., Kingswood. 2747	50195	Premise Match	136m	South
	Motor Panel Beaters &/or Spray Painters	Inter-Service Smash Repairs, 81 Cox Ave Kingswood 2747	54463	Premise Match	136m	South
	Motor Panel Beaters &/or Spray Painters	Kingswood Smash Repairs Pty Ltd, 79 Cox Ave Kingswood 2747	54512	Premise Match	136m	South
	Motor Towing Services	Kingswood Smash Repairs Pty. Ltd., 79 Cox Ave., Kingswood 2747	55228	Premise Match	136m	South
12	Refrigeration Component Parts Mfrs &/or Dists	Topline Commercial Refrigeration Manufacturers., 99 Gascoigne St., Kingswood. 2747	60979	Premise Match	148m	East

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1991 Business to Business Directory Records Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
13	Motor Garages & Service Stations	Armour, Joe, Copeland St, Kingswood 2747	53516	Road Match	0m
	Motor Engineers	Auto track, Unit 22/32 Copeland St, Kingswood 2747	52992	Road Match	0m
	Fuel Injection Services	Bridger Diesel Service Pty. Ltd., 18 Copeland St., Kingswood. 2747	46757	Road Match	0m
	Motor Body Builders	Cabasse Limousines, 14 Copeland St., Kingswood 2747	52102	Road Match	0m
	Motor Panel Beaters &/or Spray Painters	Cooper, Jeff, Unit 2, Lot 12 Copeland St, Kingswood 2747	54298	Road Match	0m
	Motor Garages & Service Stations	Datspeed Engineering, 17 Copeland St, Kingswood 2747	53678	Road Match	0m
	Auto Electricians	Heap, Kerry Auto Electrics Pty. Ltd., Factory 13, Copeland St., Kingswood 2747	34952	Road Match	0m
	Woodworkers	Hucar Holdings Pty Ltd, 1A Copeland St Kingswood 2747	66448	Road Match	0m
14	Paving Contractors	Pioneer Pavers, Phillip St., Kingswood. 2747	56950	Road Match	0m
15	Concrete Products Mfrs &/or Dists &/or W/salers	Vicarys Kingswood Minicrete, Gascoigne St, Kingswood 2747	40546	Road Match	0m
	Concreting Contractors	Vicarys Kingswood Minicrete., Gascoigne St., Kingswood 2747	40663	Road Match	0m

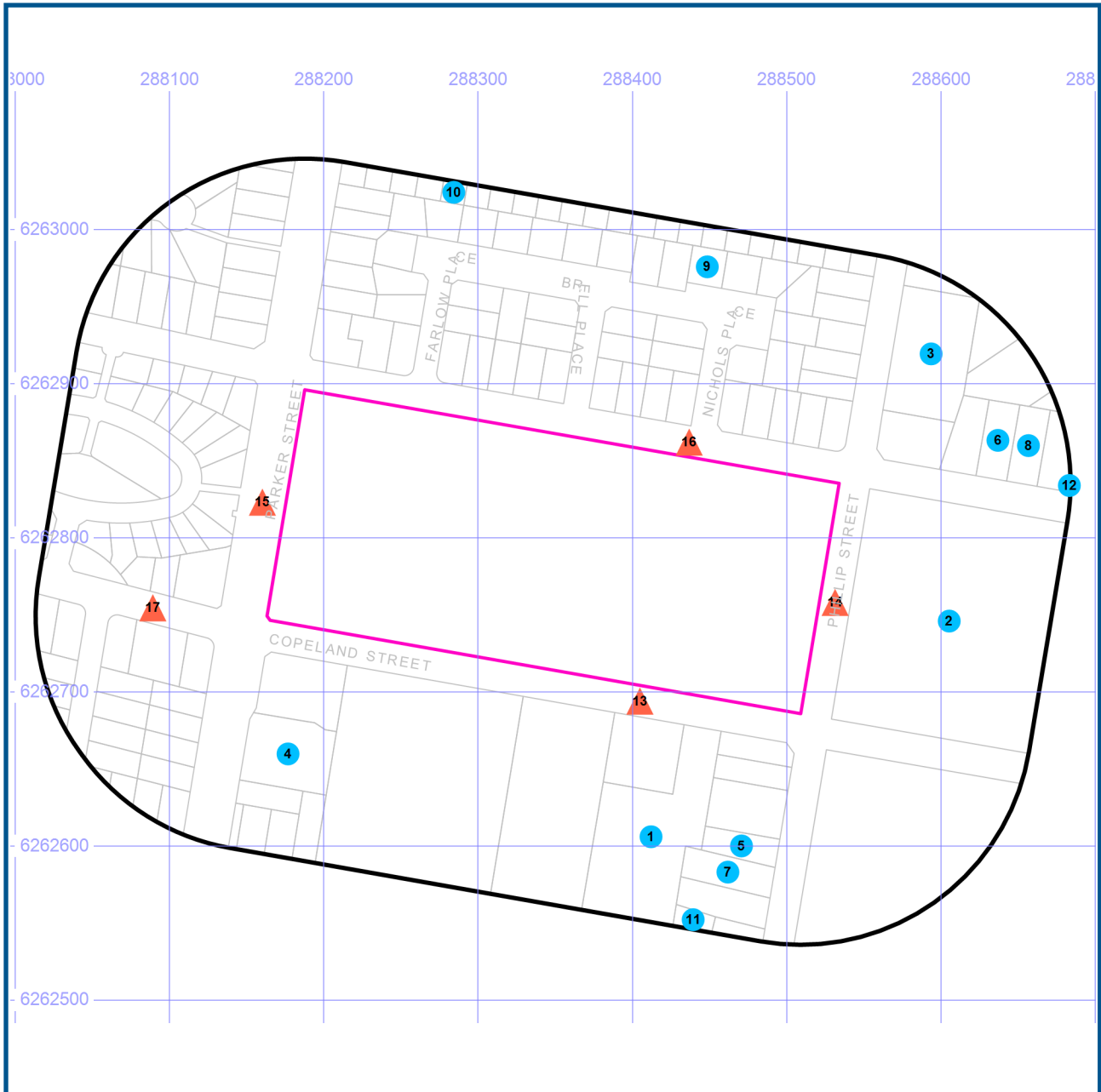
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Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747



1986 Business to Business Directory Records



- Site Boundary
- Buffer 150m
- Property Boundaries

- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area



Projected Coordinate System:
GDA94 MGA Zone 56

Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018
Property Boundaries © NSW Department Finance, Services & Innovation 2019

Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747

1986 Business to Business Directory Records Premise or Road Intersection Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	FURNITURE REMOVALISTS &/OR STORAGE.	Blue Mountains Removals, 83 Cox Ave., Kingswood. 2750	38016	Premise Match	20m	South
	CABINET MAKERS.	Edmund, C. J. Cabinet, 19/83 Cox Ave., Kingswood. 2750	11028	Premise Match	20m	South
	PEST CONTROL.	Flick, W. A. & Co. Pty. Ltd., 83 Cox Ave., Penrith. 2750	72518	Premise Match	20m	South
	ENGINEERS – GENERAL &/ OR MANUFACTURING &/ OR MECHANICAL.	G.D.H. Engineering Pty. Ltd., 5/83 Cox Ave., Kingswood. 2750	29976	Premise Match	20m	South
	ENGINEERS – PRECISION.	G.D.H. Engineering Pty. Ltd., 5/83 Cox Ave., Kingswood. 2750	30894	Premise Match	20m	South
	ELECTRICAL SUPPLIES &/OR APPLIANCES-WHOLESALE.	G.E.C.-A.E.I. Aust. Pty. Ltd., 83 Cox Ave., Penrith. 2750	27610	Premise Match	20m	South
	CLOTHING MFRS. &/OR W/SALERS.-BABY &/OR CHILDRENS WEAR.	Kennard & Kennard, 6/83 Cox Ave., Kingswood. 2750	15641	Premise Match	20m	South
	ELECTROPLATERS.	Nepean Chrome Plating, 20/83 Cox Ave., Kingswood. 2750	28216	Premise Match	20m	South
	MOTOR GARAGES & SERVICE STATIONS.	Penrith Dyno Tune Centre, 16, 83 Cox Ave., Kingswood. 2750	65257	Premise Match	20m	South
	MOTOR ENGINE RECONDITIONERS.	Rea, B., 2/83 Cox Ave., Kingswood. 2750	63141	Premise Match	20m	South
2	ENGINE RECONDITIONERS-INDUSTRIAL.	Heads Plus, 16 Copeland St., Kingswood. 2750	28474	Premise Match	20m	East
	MOTOR GARAGES & SERVICE STATIONS.	Indian Automotive, Unit 10 Copeland St., Kingswood. 2750	64889	Premise Match	20m	East
	DIESEL FUEL INJECTION SPECIALISTS.	Penrith Diesel Service Pty. Ltd., 18 Copeland Street, Kingswood. 2750	24094	Premise Match	20m	East
	DIESEL FUEL INJECTION SPECIALISTS.	Penrith Diesel Service, 18 Copeland St, Kingswood. 2750	24106	Premise Match	20m	East
	ENGINEERS – DIESEL.	Penrith Diesel Service, 18 Copeland St., Kingswood. 2750	29104	Premise Match	20m	East
	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS.	Smith, G. J. Motor Body Repairs, 15 Copeland St., Kingswood. 2750	66757	Premise Match	20m	East
	MOTOR GARAGES & SERVICE STATIONS.	T.W.E. Transmissions, 7 Copeland St., Kingswood. 2750	65555	Premise Match	20m	East
	MOTOR TRANSMISSION SPECIALISTS.	T.W.E. Transmissions, 7 Copeland St., Kingswood. 2750	68173	Premise Match	20m	East
3	ELECTRIC CABLE-FLEXIBLE &/OR WIRE-MFRS. &/OR DIST.	Lawrence & Hanson, Unit 1, 4 Phillip St. Kingswood. 2750	26043	Premise Match	55m	North East
	ELECTRIC CIRCUIT BREAKERS MFRS. &/OR DIST.	Lawrence & Hanson, Unit 1, 4 Phillip St. Kingswood. 2750	26081	Premise Match	55m	North East

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
3	ELECTRIC CONDUIT/WIRING ACCESSORIES MFRS. &/OR IMPS. &/OR DIST.	Lawrence & Hanson, Unit 1, 4 Phillip St. Kingswood. 2750	26152	Premise Match	55m	North East
	CABLE FLEXIBLE &/OR WIRE MFRS. &/OR DIST.	Lawrence & Hanson, Unit 1, 4 Phillip St., Kingswood. 2750	11130	Premise Match	55m	North East
	ELECTRIC FAN MFRS. &/OR DIST.	Lawrence & Hanson, Unit 1, 4 Phillip St., Kingswood. 2750	26215	Premise Match	55m	North East
	ELECTRIC LIGHT FITTINGS (SHADES, BRACKETS, ETC) MFRS. &/OR DIST.	Lawrence & Hanson, Unit 1, 4 Phillip St., Kingswood. 2750	100229	Premise Match	55m	North East
	ELECTRIC SWITCH & CONTROL GEAR MFRS. &/OR IMPS. &/OR DIST.	Lawrence & Hanson, Unit 1, 4 Phillip St., Kingswood. 2750	100231	Premise Match	55m	North East
	ELECTRIC SWITCH & CONTROL GEAR-FLAME &/OR DUST IGNITION PROOF-MFRS. &/OR IMPS. &/OR DIST.	Lawrence & Hanson, Unit 1, 4 Phillip St., Kingswood. 2750	100230	Premise Match	55m	North East
	ELECTRIC TOOLS-PORTABLE-MFRS. &/OR DIST.	Lawrence & Hanson, Unit 1, 4 Phillip St., Kingswood. 2750	100247	Premise Match	55m	North East
	ELECTRICAL ACCESSORIES MFRS. &/OR W/SALERS.	Lawrence & Hanson, Unit 1, 4 Phillip St., Kingswood. 2750	100248	Premise Match	55m	North East
	ELECTRICAL SUPPLIES &/OR APPLIANCES-WHOLESALE.	Lawrence & Hanson, Unit 1, 4 Phillip St., Kingswood. 2750	27636	Premise Match	55m	North East
	ELECTRONIC COMPONENTS MFRS. &/OR DIST.	Martin de Launay Pty. Ltd., Unit 4/6 Phillip St. Kingswood. 2750	27843	Premise Match	55m	North East
	ELECTRIC FAN MFRS. &/OR DIST.	Martin de Launay Pty. Ltd., Unit 4/6 Phillip St., Kingswood. 2750	26222	Premise Match	55m	North East
	ELECTRICAL SUPPLIES &/OR APPLIANCES-WHOLESALE.	Martin de Launay Pty. Ltd., Unit 4/6 Phillip St., Kingswood. 2750	27648	Premise Match	55m	North East
4	WELDING EQUIPMENT &/OR SUPPLIES MFRS. &/OR DIST.	CIG Industrial Products Pty. Ltd., 66 Parker St., Kingswood. 2750	98828	Premise Match	60m	South West
	GAS AND GEAR CENTRES	CIG Kingswood Gas & Gear Centre, 66 Parker St., Kingswood, 2750	38502	Premise Match	60m	South West
5	CABINET MAKERS.	Anchor Kitchens, 2/25 Phillip St., Kingswood. 2750	10996	Premise Match	83m	South East
	KITCHEN UNITS MFRS. &/OR DIST. &/OR INSTALLERS.	Anchor Kitchens, 2/25 Phillip St., Kingswood. 2750	50314	Premise Match	83m	South East
	MOTOR GARAGE EQUIPMENT &/OR TOOL MFRS. &/OR DIST.	Leo's German Automotive Pty. Ltd., 25 Phillip St., Kingswood. 2750	63810	Premise Match	83m	South East
6	TUBE BENDERS.	Elegance Furniture Co. Pty. Ltd., 93 Gascoigne St. Kingswood. 2750	95937	Premise Match	89m	East
	PUMP MFRS. &/OR DIST.	General Pump Co., 93 Gascoigne St., Kingswood. 2750	78479	Premise Match	89m	East
7	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS.	Shipp Merv. Smash Repairs, 27 Phillip St., Kingswood. 2750	66747	Premise Match	98m	South East
8	MOTOR GARAGES & SERVICE STATIONS.	Vantage Automotive Services, 95 Gascoigne St., Kingswood. 2750	65663	Premise Match	109m	East
9	BUILDERS &/OR BUILDING CONTRACTORS.	Tafrā Constructions, 4 Nicholls Pl., Kingswood. 2750	8264	Premise Match	111m	North East
10	PEST CONTROL.	Cobb & Co. Pest Extermination, 42 Glebe Pl., Kingswood. 2750	72510	Premise Match	136m	North

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
11	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS.	Inter-Service Smash Repairs Pty. Ltd., 81 Cox Ave., Kingswood. 2750	66404	Premise Match	136m	South
	MOTOR TRIMMERS.	Kingswood Car Upholstery & Sun Roofs, Unit 1/81 Cox Ave., Kingswood. 2750	68235	Premise Match	136m	South
	SUN ROOF SUPPLIERS &/OR FITTERS.	Kingswood Car Upholstery & Sun Roofs, Unit 1/81 Cox Ave., Kingswood. 2750	89657	Premise Match	136m	South
	UPHOLSTERERS.	Kingswood Car Upholstery & Sun Roofs, Unit 1/81 Cox Ave., Kingswood. 2750.	96601	Premise Match	136m	South
	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS.	Kingswood Smash Repairs Pty Ltd., 79 Cox Ave., Kingswood. 2750	66459	Premise Match	136m	South
	MOTOR TOWING SERVICES.	Kingswood Smash Repairs Pty. Ltd., 79 Cox Ave., Kingswood. 2750	67944	Premise Match	136m	South
	MOTOR GARAGES & SERVICE STATIONS.	Trojan Performance, 81 Cox Ave., Kingswood. 2750	65646	Premise Match	136m	South
12	REFRIGERATOR - COMPONENT PARTS - MFRS. &/OR IMPS.T &/OR SUPPLIERS.	Topline Commercial Refrigeration Manufacturers, 99 Gascoigne St., Kingswood. 2750	80878	Premise Match	148m	East

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1986 Business to Business Directory Records Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
13	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS.	A.A. & D. Smash Repairs, Factory 2/12 Copeland St., Kingswood. 2750	65999	Road Match	0m
	MOTOR TOWING SERVICES.	A.A. & D. Smash Repairs, Factory 2/12 Copeland St., Kingswood. 2750	67865	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Armour, Joe, Copeland St., Kingswood. 2750	63972	Road Match	0m
	GARDEN EQUIPMENT, TOOLS & SUPPLIES MFRS. &/OR IMPS. &/OR DIST.	Betta Budget Sheds, 8 Copeland St., Kingswood. 2750	38238	Road Match	0m
	SHEDS.	Betta Budget Sheds, 8 Copeland St., Kingswood. 2750	85891	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Datspeed Engineering, 17 Copeland St., Kingswood. 2750	64536	Road Match	0m
	ENGINEERS – GENERAL &/OR MANUFACTURING &/OR MECHANICAL.	Gough L J. & B. A., 19 Copeland St, Kingswood. 2750	29994	Road Match	0m
	TRAILER &/OR SEMI-TRAILER REPAIRERS.	Gough L J. & B. A., 19 Copeland St, Kingswood. 2750	95000	Road Match	0m
	WELDERS - CAST IRON &/OR NON-FERROUS METALS.	Gough L J. & B. A., 19 Copeland St, Kingswood. 2750	98773	Road Match	0m
	WELDERS - ELECTRIC &/OR OXY.	Gough L J. & B. A., 19 Copeland St, Kingswood. 2750	98629	Road Match	0m
	MOTOR BODY REPAIRS &/OR CONVERTERS.	Gough L J. & B. A., 19 Copeland St., Kingswood. 2750	61379	Road Match	0m
	MOTOR TRUCK REPAIRS & MAINTENANCE.	Gough L J. & B. A., 19 Copeland St., Kingswood. 2750	68333	Road Match	0m
	ENGINEERS – GENERAL &/OR MANUFACTURING &/OR MECHANICAL.	Gough L. J. & B. A. Engineering, 20 Copeland St., Kingswood. 2750	29993	Road Match	0m
	MOTOR BODY BUILDERS.	Gough L. J. & B. A., 19 Copeland St., Kingswood. 2750	61282	Road Match	0m

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
13	MOTOR GARAGES & SERVICE STATIONS.	Gough L. J. & B. A., 19 Copeland St., Kingswood. 2750	64804	Road Match	0m
	TRUCK &/OR TRAILER REPAIRERS.	Gough, L.J. & B.A., 19/20 Copeland St., Kingswood. 2750	95908	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Hacar Holdings Pty. Ltd., 1A Copeland St., Kingswood. 2750	64839	Road Match	0m
	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS.	Hacar Holdings Pty. Ltd., 1A Copeland St., Kingswood. 2750	66363	Road Match	0m
	MOTOR ELECTRICIANS.	Heap, Kerry Auto Electrics, Copeland St., Kingswood. 2750	62919	Road Match	0m
	BRICK MFRS. &/OR DIST.	Kingswood Brick Works, 1B Copeland St., Kingswood.2750	7635	Road Match	0m
	TRUCK &/OR TRAILER REPAIRERS.	L.J. & B.A. Gough 19, 20 Copeland Street, Kingswood. 2750	95906	Road Match	0m
	MOTOR TRUCK REPAIRS & MAINTENANCE.	L.J. & B.A. Gough 19-20 Copeland Street, Kingswood. 2750	68312	Road Match	0m
	ENGINEERS – STRUCTURAL.	P.S.M. Structural Engineers, 14 Copeland St., Kingswood. 2750	31300	Road Match	0m
	STEEL FABRICATORS.	P.S.M. Structural Engineers, 14 Copeland St., Kingswood. 2750	89027	Road Match	0m
	AIR CONDITIONING-INDUSTRIAL &/OR DOMESTIC.	Powell General Sheet Metal, 4 Copeland St., Kingswood. 2750	2280	Road Match	0m
	SHEET METAL WORKERS.	Powell General Sheet Metal, 4 Copeland St., Kingswood. 2750	86120	Road Match	0m
	RUSTPROOFING SPECIALISTS,	Riz-Zing Rustproofing, 12 Copeland St., Penrith. 2750	84065	Road Match	0m
14	TRAILER &/OR TRAILER EQUIPMENT MFRS. &/OR DIST. &/OR HIRERS.	Bacteon Pty. Ltd., Unit 7 Lot 8 Phillip St., Kingswood. 2750	94964	Road Match	0m
	WROUGHT IRON WORKERS.	Star Wrought Iron, Lot 8 Phillip St., Kingswood. 2750	100114	Road Match	0m
15	MOTOR HIRE SERVICES-DRIVE YOURSELF &/OR RENTAL.	Presketts Car & Truck Rental, Parker St., Penrith. 2750	65898	Road Match	0m
	FURNITURE REMOVALISTS &/OR STORAGE.	Presketts Removal & Storage Pty. Ltd., Parker St., Penrith. 2750	38074	Road Match	0m
16	CONCRETE PRODUCTS MFRS. &/OR DIST. &/OR W/SALERS.	Vicarys Kingswood Minicrete, Gascoigne St, Kingswood. 2750	19869	Road Match	0m
	CONCRETE-READY MIXED SUPPLIES.	Vicarys Kingswood Minicrete, Gascoigne St., Kingswood. 2750	19952	Road Match	0m
	CONCRETE CONTRACTORS-CONSTRUCTIONAL,	Vicarys Kingswood Mlnicrete, Gascoigne St., Kingswood 2750	19751	Road Match	0m
17	GROCERS-WHOLESALE.	Campbell, A. G. (Self Service) Pty. Ltd., Copeland St., Penrith. 2750	41287	Road Match	33m

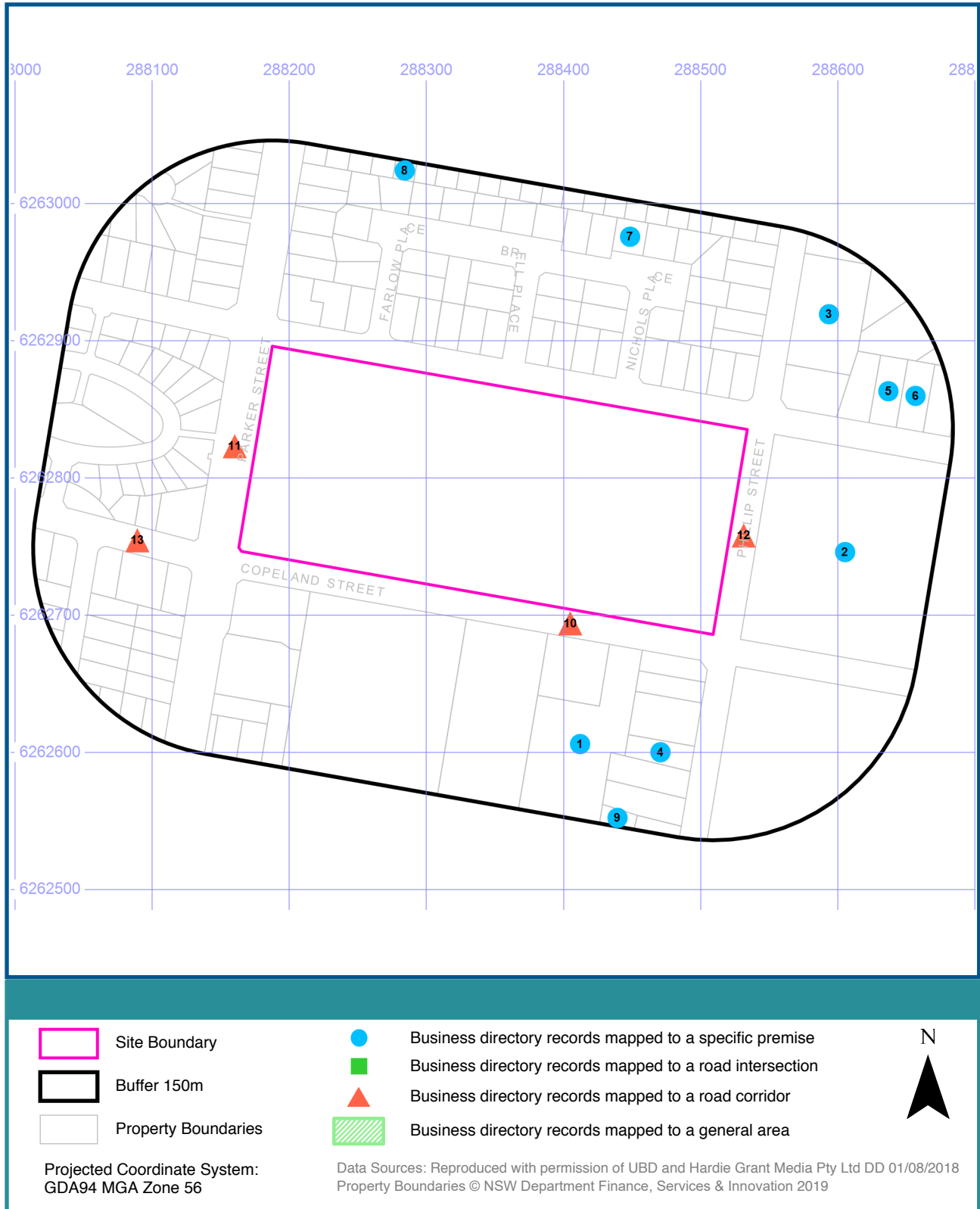
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Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747



1982 Business Directory Records



Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747

1982 Business Directory Records Premise or Road Intersection Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	PEST CONTROL. (P2800)	Flick, W. A. & Co. Pty. Ltd., 83 Cox Ave., Penrith. 2750.	63278	Premise Match	20m	South
	ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL. (E7140)	G. D H. Engineering Pty. Ltd., 5/83 Cox Ave., Kingswood. 2750.	28022	Premise Match	20m	South
	ELECTRICAL SUPPLIES &/OR APPLIANCES - WHOLESALE. (E3870)	G. E. C. A. E. I. Aust Pty. Ltd. 83 Cox Ave., Penrith. 2750.	25909	Premise Match	20m	South
	ENGINEERS - PRECISION. (E7770)	G. O. H. Engineering Pty. Ltd., 5/83 Cox Ave., Kingswood. 2750.	28903	Premise Match	20m	South
	CLOTHING-BABIES & CHILDRENS WEAR MFRS. &/OR W/SALERS.(C5162)	Kennard & Kennard, 6/83 Cox Ave., Kingswood. 2750.	16400	Premise Match	20m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Penrith Dyno Tune Centre, 16, 83 Cox Ave., Kingswood. 2750.	57372	Premise Match	20m	South
	PLUMBERS, GASFITTERS &/OR DRAINLAYERS. (P6680)	Proctor Plumbing Services Pty. Ltd., 19/83 Cox Ave., Kingswood. 2750.	65231	Premise Match	20m	South
	CAMPING & HIKING EQUIPMENT - SUPPLIERS, HIRERS &/OR REPAIRERS. (C0665)	Verrey's Umbi Tent Co. of Aust. Pty. Ltd., 3/83 Cox Ave., Kingswood. 2750.	12959	Premise Match	20m	South
2	CANVAS GOODS RETAILERS. (C1005)	Verrey's Umbi Tent Co. of Aust. Pty. Ltd., 3/83 Cox Ave., Kingswood. 2750.	13065	Premise Match	20m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Indian Automotive, Unit 10 Copeland St., Kingswood. 2750.	56985	Premise Match	20m	East
	DIESEL FUEL INJECTION SPECIALISTS. (D3650)	Penrith Diesel Service Pty. Ltd., 18 Copeland St., Kingswood. 2750.	21522	Premise Match	20m	East
	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS. (M7360)	Smith, G. J. Motor Body Repairs, 15 Copeland St., Kingswood. 2750.	58712	Premise Match	20m	East
3	MOTOR TRANSMISSIONS. (M8240)	T.W.E. Transmissions, 7 Copeland St., Kingswood. 2750.	59771	Premise Match	20m	East
	ELECTRICAL SUPPLIES &/OR APPLIANCES - WHOLESALE. (E3870)	Martin de Launary Pty. Ltd., Unit 1/6 Phillip St, Kingswood. 2750.	25933	Premise Match	55m	North East
4	CARPORT &/OR AWNING MFRS.(C2085)	Warren's Carports Pty. Ltd., 4/6 Phillip St., Kingswood. 2750.	13534	Premise Match	55m	North East
	KITCHEN MFRS. &/OR CONTRACTORS. * (K0455)	Anchor Kitchens 2, 25 Phillip Street, Kingswood. 2750	44101	Premise Match	83m	South East
	CABINET MAKERS. (C0030)	Anchor Kitchens, 2/25 Phillip St., Kingswood. 2750.	11975	Premise Match	83m	South East

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
4	KITCHEN UNIT MANUFACTURERS. (K0500)	Anchor Kitchens, 2/25 Phillip St., Kingswood. 2750.	44114	Premise Match	83m	South East
	MOTOR CAR DETAILERS. (M5445)	Hanrahan, Noel Car Detailing, 25 Phillip St., Kingswood. 2750	54561	Premise Match	83m	South East
	PHOTOGRAPHERS-COMMERCIAL. (P3480)	Studio 25 (Penrith), 25 Phillip St., Kingswood. 2750.	63534	Premise Match	83m	South East
5	TUBE BENDERS. (T7975)	Elegance Furniture Co. Pty. Ltd., 93 Gascoigne St., Kingswood. 2750.	82345	Premise Match	89m	East
	PUMP MFRS. &/OR DIST. (P9420)	General Pump Co., 93 Gascoigne St., Kingswood. 2750.	68017	Premise Match	89m	East
	TYPEWRITER DEALERS &/OR REPAIRERS. (T8525)	Mountains Business Services, 93 Gascoigne St, Kingswood. 2750.	82482	Premise Match	89m	East
	OFFICE SUPPLIES &/OR EQUIPMENT-RETAIL. (O0800)	Mountains Business Services, 93 Gascoigne St., Kingswood, 2750	61457	Premise Match	89m	East
	OFFICE EQUIPMENT MFRS.&/OR DIST. (O0400)	Mountains Business Services, 93 Gascoigne St., Kingswood. 2750	61343	Premise Match	89m	East
	ADDING & CALCULATING MACHINE MFRS. &/OR IMPS. &/OR DIST. (A0970)	Mountains Business Services, 93 Gascoigne St., Kingswood. 2750.	1161	Premise Match	89m	East
	CASH REGISTER MFRS. IMPS. &/OR DEALERS. (C2520)	Mountains Business Services, 93 Gascoigne St., Kingswood. 2750.	13946	Premise Match	89m	East
6	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	C.V.J. Auto Repairs, 95 Gascolgne St., Kingswood. 2750.	56378	Premise Match	109m	East
	MOTOR BODY BUILDERS. (M5020)	T. & H. Commercial Bodies, 95A Gascoigne St., Kingswood. 2750.	54222	Premise Match	109m	East
7	BUILDERS &/OR BUILDING CONTRACTORS. (B6920)	Tafra Constructions, 4 Nicholls Pl., Kingswood, 2750.	9438	Premise Match	111m	North East
8	PEST CONTROL. (P2800)	Cobb & Co. Pest Extermination, 42 Glebe Pl., Kingswood. 2750.	63268	Premise Match	136m	North
9	MOTOR TRIMMERS. (M8260)	Kingswood Car Upholstery & Sun Roofs, Unit 1 /81 Cox Ave., Kingswood. 2750.	59802	Premise Match	136m	South
	SUN ROOF SUPPLIERS &/OR FITTERS. (S7757)	Kingswood Car Upholstery & Sun Roofs, Unit 1/81 Cox Ave., Kingswood. 2750.	77547	Premise Match	136m	South
	UPHOLSTERERS. (U0450)	Kingswood Car Upholstery & Sun Roofs, Unit 1/81 Cox Ave., Kingswood. 2750.	82863	Premise Match	136m	South
	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS. (M7360)	Kingswood Smash Repairs, 79 Cox Ave., Kingswood. 2750.	58444	Premise Match	136m	South
	MOTOR TOWING SERVICES. (M8220)	Kingswood Smash Repairs, 79 Cox Ave., Kingswood. 2750.	59636	Premise Match	136m	South
	MOTOR ACCESSORIES DEALERS.(M4690)	Mini Shop Pty. Ltd., The, 81 Cox Ave., Kingswood. 2750.	53874	Premise Match	136m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Mini Shop Pty. Ltd.The, 81 Cox Ave., Kingswood. 2750.	57191	Premise Match	136m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Trojan Performance, 81 Cox Ave., Kingswood. 2750.	57772	Premise Match	136m	South

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1982 Business Directory Records Road or Area Matches

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Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
10	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS. (M7360)	A.A. & D. Smash Repairs, Factory 2/12 Copeland St., Kingswood. 2750.	58025	Road Match	0m
	MOTOR TOWING SERVICES. (M8220)	A.A. & D. Smash Repairs, Factory 2/12 Copeland St., Kingswood. 2750.	59576	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Armour, Joe, Copeland St., Kingswood. 2750.	56044	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Bainbridge Auto Repairs, 9 Copeland St., Kingswood. 2750.	56079	Road Match	0m
	AWNINGS-ALUMINIUM MFRS.&/OR DIST. (A8910)	Better Carports & Patio Awnings, 23 Copeland St., Kingswood. 2750.	4239	Road Match	0m
	CARPORT &/OR AWNING MFRS.(C2085)	Better Carports & Patio Awnings, 23 Copeland St., Kingswood. 2750.	13516	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Datspeed Engineering, 17 Copeland St., Kingswood. 2750.	56612	Road Match	0m
	ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL. (E7140)	Gough & Le Blang Engineering, 20 Copeland St., Kingswood. 2750.	28038	Road Match	0m
	MOTOR ELECTRICIANS, (M6580)	Heap, Kerry Auto Electrics, Copeland St., Kingswood. 2750.	55513	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Hucar Holdings Pty. Ltd., Copeland St., Kingswood. 2750.	56976	Road Match	0m
	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS. (M7360)	Hucar Holdings Pty. Ltd., Copeland St., Kingswood. 2750.	58381	Road Match	0m
	MOTOR ACCESSORIES DEALERS.(M4690)	Jap Parts, 17 Copeland St., Kingswood. 2750.	53837	Road Match	0m
	BRICK MFRS. &/OR DIST. (B6120)	Kingswood Brick Works, Copeland St., Kingswood. 2750.	8454	Road Match	0m
	ENGINEERS - STRUCTURAL. (E8340)	P. S.M. Structural Engineers, 14 Copeland St., Kingswood. 2750.	29363	Road Match	0m
	STEEL FABRICATORS, (S6105)	P.S.M. Structural Engineers, 14 Copeland St, Kingswood. 2750.	76973	Road Match	0m
	AIR CONDITIONING-INDUSTRIAL&/OR DOMESTIC. (A3600)	Powell General Sheet Metal, 4 Copeland St., Kingswood. 2750.	2015	Road Match	0m
	SHEET METAL WORKERS. (S2595)	Powell General Sheet Metal, 4 Copeland St., Kingswood. 2750.	74393	Road Match	0m
	RUSTPROOFING SPECIALISTS.(R8610)	Riz-Zing Rustproofing, 12 Copeland St., Penrith. 2750.	72738	Road Match	0m
	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS. (M7360)	Smith, G. J. Motor Body Repairs, Copeland St., Kingswood. 2750.	58713	Road Match	0m
	WROUGHT IRON WORKERS. (W9440)	Star Wrought Iron, 12 Copeland St., Kingswood. 2750.	85516	Road Match	0m
	STEEL TUBING MFRS.&/OR DIST. (S6780)	Trans Vent Spiral Tubing Pty. Ltd., 16 Copeland St., Kingswood. 2750.	77216	Road Match	0m
	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS. (M7360)	Turner Smash Repairs, Copeland St., Kingswood. 2750.	58801	Road Match	0m
11	MOTOR HIRE SERVICES - DRIVE YOURSELF &/OR RENTAL. (M6960)	Presketts Car & Truck Rental, Parker St., Penrith. 2750.	57968	Road Match	0m
	FURNITURE REMOVALISTS &/OR STORAGE. (F8900)	Presketts Removal & Storage Pty. Ltd., Parker St., Penrith. 2750.	35486	Road Match	0m
12	MOTOR PANEL BEATERS &/OR SPRAY PAINTERS. (M7360)	Shipp Merv. Smash Repairs, Phillip St., Kingswood. 2750.	58704	Road Match	0m

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
13	GROCERS - WHOLESALE. (G8000)	Campbell, A. G. (Self Service) Pty. Ltd., Copeland St., Penrith. 2750.	38173	Road Match	33m

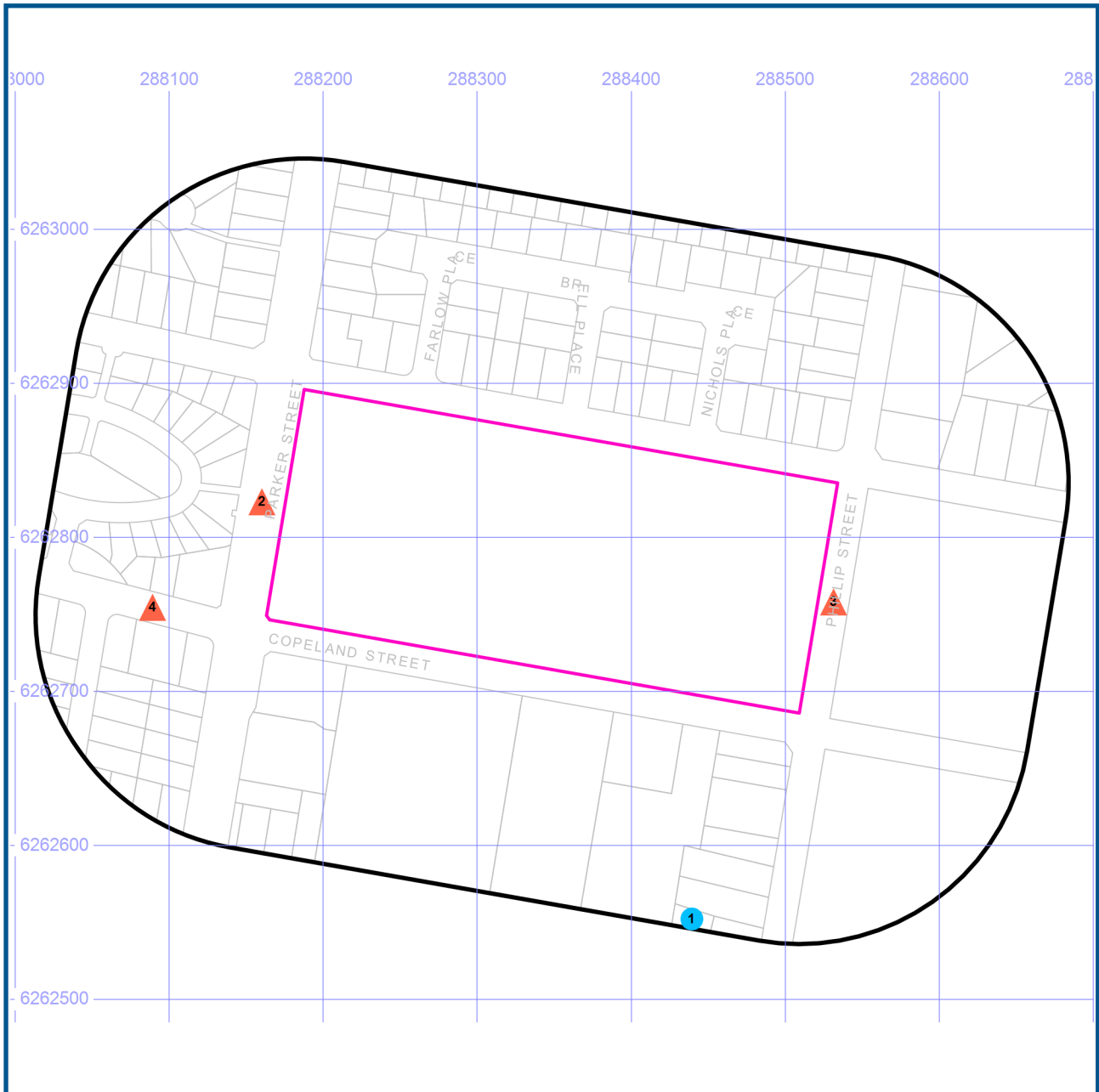
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Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747



1970 Business Directory Records



-  Site Boundary
-  Buffer 150m
-  Property Boundaries

Projected Coordinate System:
GDA94 MGA Zone 56

-  Business directory records mapped to a specific premise
-  Business directory records mapped to a road intersection
-  Business directory records mapped to a road corridor
-  Business directory records mapped to a general area

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Property Boundaries © NSW Department Finance, Services & Innovation 2019



Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747

1970 Business Directory Records Premise or Road Intersection Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MONUMENTAL MASONS	Lakke, L. & Son, 79 Cox Ave. Penrith	536018	Premise Match	136m	South
	TERRAZZO SPECIALISTS	Lakke, L. & Son, 79 Cox Ave. Penrith	536182	Premise Match	136m	South

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1970 Business Directory Records Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
2	SCHOOLS & COLLEGES-PRIVATE & PUBLIC	St. Dominic's College (Boys), Parker St. Penrith	536138	Road Match	0m
3	BUILDERS &/OR BUILDING CONTRACTORS	Stonehill Pty. Ltd., 13 Phillip St. Penrith	535751	Road Match	0m
	STONE MASONS	Stonehill Pty. Ltd., 13 Phillip St. Penrith	536171	Road Match	0m
4	GROCERS-WHOLESALE	Campbell, A. G. Pty. Ltd., Copeland St. Penrith	535908	Road Match	33m
	BRICK MANUFACTURERS	Nepean Brick Co. Pty. Ltd., Copeland St. Penrith	535745	Road Match	33m

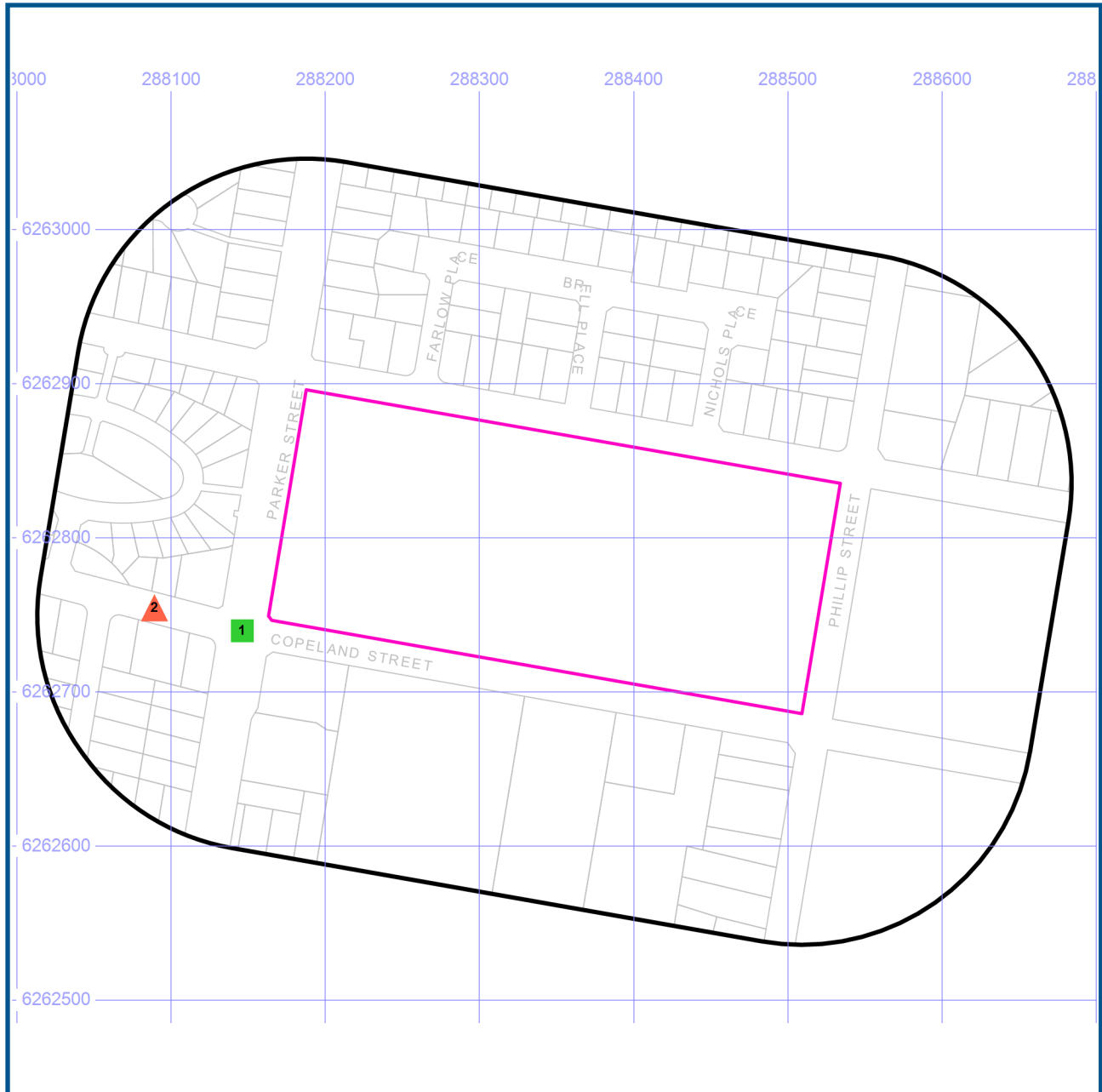
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Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747



1961 Business Directory Records



- Site Boundary
- Buffer 150m
- Property Boundaries

- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area



Projected Coordinate System:
GDA94 MGA Zone 56

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Property Boundaries © NSW Department Finance, Services & Innovation 2019

Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747

1961 Business Directory Records Premise or Road Intersection Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	GROCERS & GENERAL STOREKEEPERS	Campbell, A. G. (Self Service) Pty. Ltd. Cnr. Parker & Copeland Sts., Penrith	222393	Road Intersection	19m	West

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1961 Business Directory Records Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
2	BRICK MANUFACTURERS	Nepean Brick Co. Pty. Ltd., Copeland St., Penrith	222188	Road Match	33m

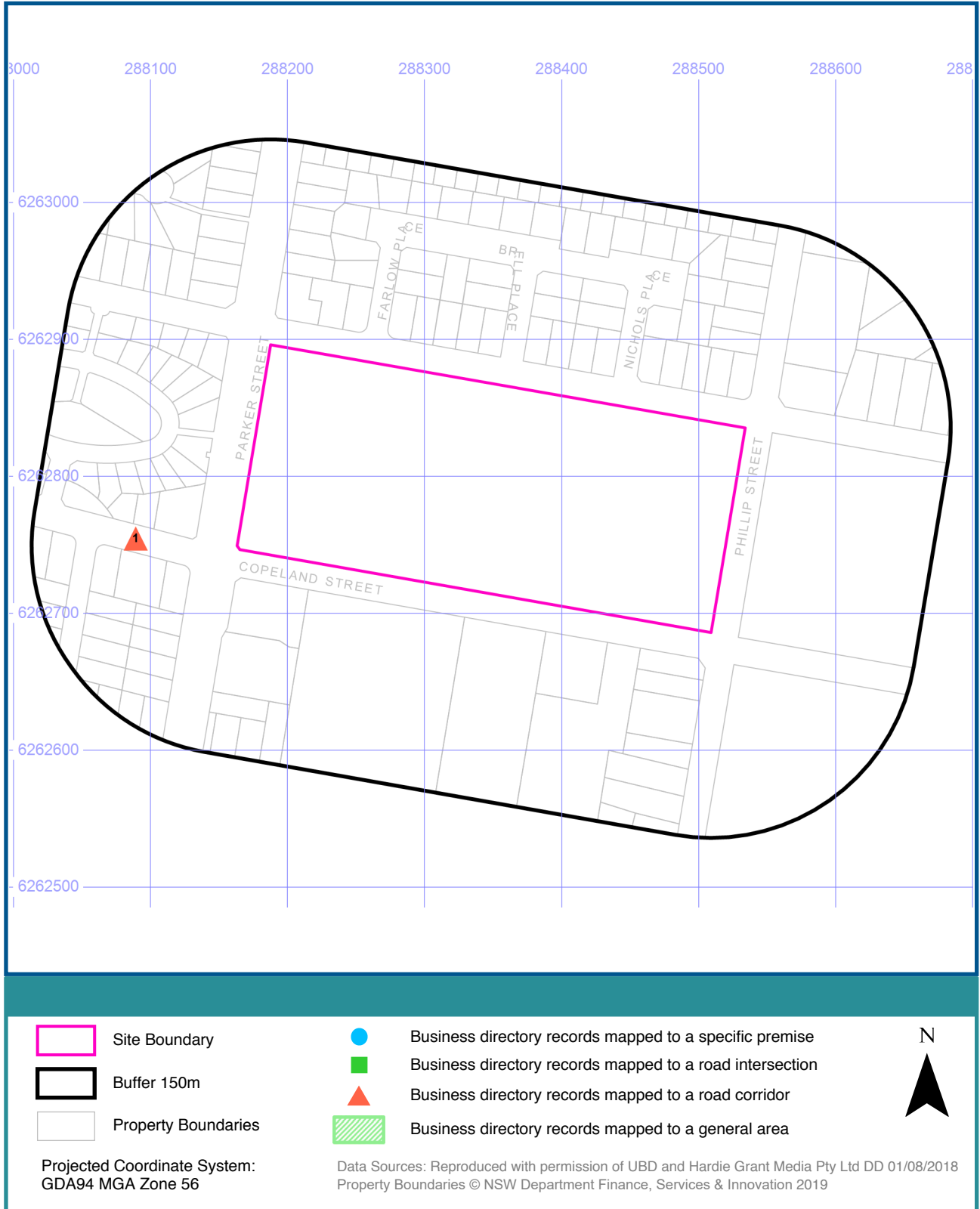
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Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747



1950 Business Directory Records



Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747

1950 Business Directory Records Premise or Road Intersection Matches

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

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

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1950 Business Directory Records Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	PLASTERERS	Irvine, A. C. Copeland St. Penrith	151432	Road Match	33m
	PLASTERERS	Irvine, A. C., Copeland St. Penrith	151434	Road Match	33m
	BRICK MANUFACTURERS	Millingen and Mallett, Copeland St. Penrith	150996	Road Match	33m

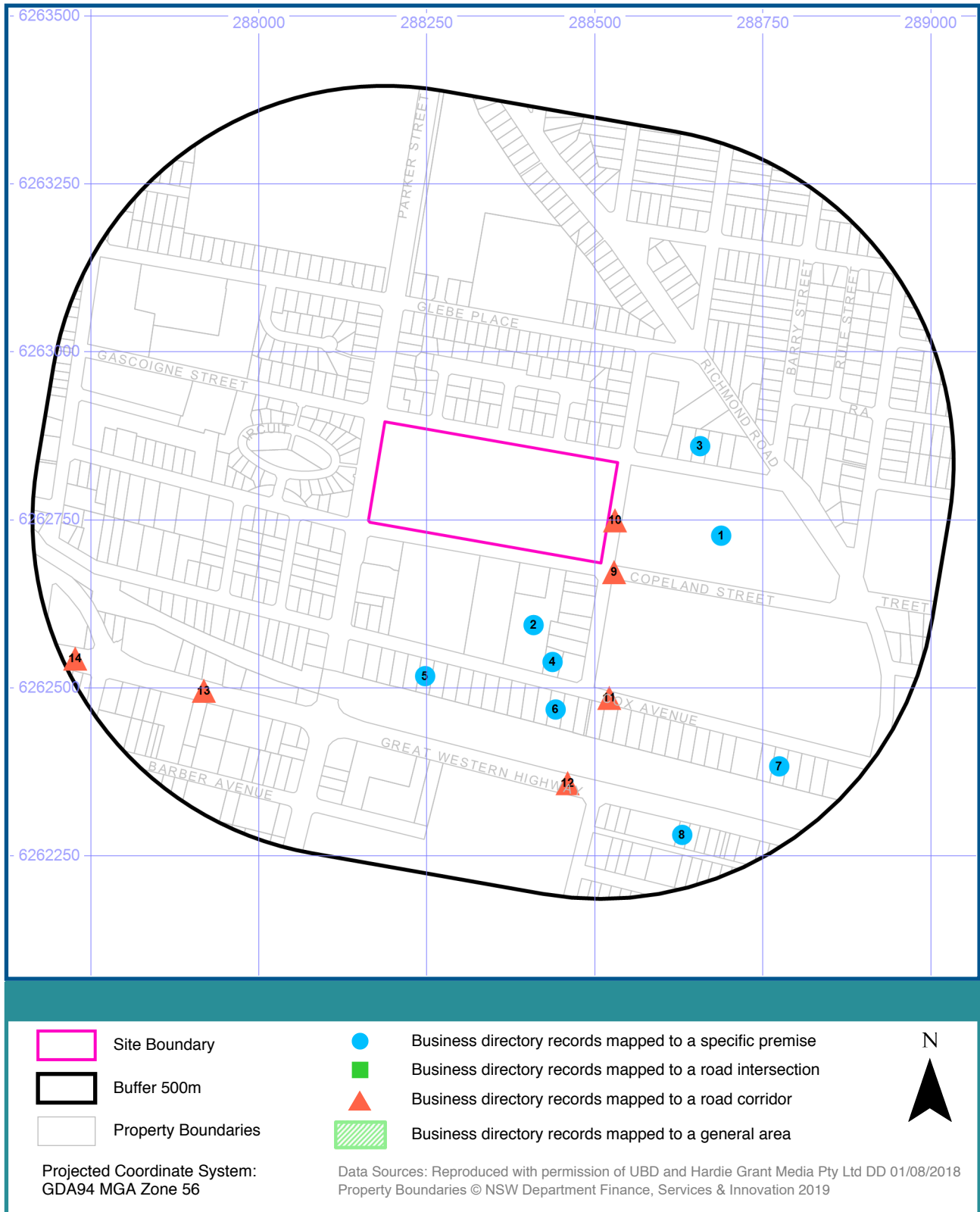
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Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747



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



Historical Business Directories

21 Copeland Street, Kingswood, NSW 2747

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

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

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MOTOR GARAGES & SERVICE STATIONS.	Indian Automotive The Volkswagen Specialist Unit 10, Copeland St., Kingswood. 2747	19027	1993	Premise Match	20m	East
	MOTOR GARAGES & SERVICE STATIONS.	T W E Transmissions, 7 Copeland St., Kingswood. 2747	25491	1993	Premise Match	20m	East
	Motor Garages & Service Stations	Indian Automotive, The Volkswagen Specialist Unit 10, Copeland St., Kingswood 2747	97105	1991	Premise Match	20m	East
	Motor Garages & Service Stations	T. W.E. Transmissions, 7 Copeland St., Kingswood 2747	53968	1991	Premise Match	20m	East
	MOTOR GARAGES & SERVICE STATIONS.	Indian Automotive, The Volkswagen Specialist, Unit 10, Copeland St., Kingswood. 2747	11711	1990	Premise Match	20m	East
	MOTOR GARAGES & SERVICE STATIONS.	T.W.E. Transmissions, 7 Copeland St., Kingswood. 2747	18315	1990	Premise Match	20m	East
	MOTOR GARAGE & SERVICE STATIONS.	Indian Automotive, Unit 10 Copeland St., Kingswood. 2750	5103	1989	Premise Match	20m	East
	MOTOR GARAGE & SERVICE STATIONS.	T.W.E. Transmissions, 7 Copeland St., Kingswood. 2750	5639	1989	Premise Match	20m	East
	MOTOR GARAGES & SERVICE STATIONS.	Indian Automotive, Unit 10 Copeland St., Kingswood. 2750	59444	1988	Premise Match	20m	East
	MOTOR GARAGES & SERVICE STATIONS.	T.W.E. Transmissions, 7 Copeland St., Kingswood. 2750	60042	1988	Premise Match	20m	East
	MOTOR GARAGES & SERVICE STATIONS.	Indian Automotive, Unit 10 Copeland St., Kingswood. 2750	64889	1986	Premise Match	20m	East
	MOTOR GARAGES & SERVICE STATIONS.	T.W.E. Transmissions, 7 Copeland St., Kingswood. 2750	65555	1986	Premise Match	20m	East
	MOTOR GARAGES & SERVICE STATIONS.	Indian Automotive Unit 10, Copeland St., Kingswood. 2750	44991	1985	Premise Match	20m	East
	MOTOR GARAGES & SERVICE STATIONS.	T.W.E. Transmissions., 7 Copeland St., Kingswood. 2750	45676	1985	Premise Match	20m	East
	MOTOR GARAGES & OR ENGINEERS & OR SERVICE STATIONS.	Indian Automotive, Unit 10 Copeland St., Kingswood. 2750	28491	1984	Premise Match	20m	East
	MOTOR GARAGES & OR ENGINEERS & OR SERVICE STATIONS.	Indian Automotive., Unit 10 Copeland St., Kingswood 2750	14919	1983	Premise Match	20m	East
	MOTOR GARAGES & OR ENGINEERS & OR SERVICE STATIONS. (M6860)	Indian Automotive, Unit 10 Copeland St., Kingswood. 2750.	56985	1982	Premise Match	20m	East
2	MOTOR GARAGE & SERVICE STATIONS.	Penrith Dyno Tune Centre, 16/83 Cox Ave., Kingswood. 2750	5400	1989	Premise Match	20m	South
	MOTOR GARAGES & SERVICE STATIONS.	Penrith Dyno Tune Centre, 16/83 Cox Ave., Kingswood. 2750	59779	1988	Premise Match	20m	South
	MOTOR GARAGES & SERVICE STATIONS.	Penrith Dyno Tune Centre, 16, 83 Cox Ave., Kingswood. 2750	65257	1986	Premise Match	20m	South
	MOTOR GARAGES & SERVICE STATIONS.	Penrith Dyno Tune Centre, 16, 83 Cox Ave., Kingswood. 2750	45366	1985	Premise Match	20m	South

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
2	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Penrith Dyno Tune Centre, 16, 83 Cox Ave., Kingswood. 2750	33937	1984	Premise Match	20m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Penrith Dyno Tune Centre, 16, 83 Cox Ave., Kingswood. 2750	65784	1983	Premise Match	20m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Penrith Dyno Tune Centre, 16, 83 Cox Ave., Kingswood. 2750.	57372	1982	Premise Match	20m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Penrith Dyno Tune Centre., 16, 83 Cox Ave., Kingswood 2750	3920	1981	Premise Match	20m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Penrith Dyno Tune Centre., 16, 83 Cox Ave., Kingswood. 2750	58663	1980	Premise Match	20m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Penrith Dyno Tune Centre., Shop 16., 83 Cox Ave., Kingswood. 2750	46157	1979	Premise Match	20m	South
3	MOTOR GARAGES & SERVICE STATIONS.	Vantage Automotive Services, 95 Gascoigne St., Kingswood. 2747	25517	1993	Premise Match	109m	East
	Motor Garages & Service Stations	Vantage Automotive Services, 95 Gascoigne St., Kingswood 2747	53974	1991	Premise Match	109m	East
	MOTOR GARAGES & SERVICE STATIONS.	Vantage Automotive Services, 95 Gascoigne St., Kingswood. 2747	18360	1990	Premise Match	109m	East
	MOTOR GARAGE & SERVICE STATIONS.	Vantage Automotive Services, 95 Gascoigne St., Kingswood. 2750	5691	1989	Premise Match	109m	East
	MOTOR GARAGES & SERVICE STATIONS.	Vantage Automotive Services, 95 Gascoigne St., Kingswood. 2750	64168	1988	Premise Match	109m	East
	MOTOR GARAGES & SERVICE STATIONS.	Vantage Automotive Services, 95 Gascoigne St., Kingswood. 2750	65663	1986	Premise Match	109m	East
	MOTOR GARAGES & SERVICE STATIONS.	Vantage Automotive Services, 95 Gascoigne St., Kingswood. 2750	45784	1985	Premise Match	109m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	C.V.J. Auto Repairs., 95 Gascoigne St., Kingswood 2750	14325	1983	Premise Match	109m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	C.V.J. Auto Repairs, 95 Gascolgne St., Kingswood. 2750.	56378	1982	Premise Match	109m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	C. V. J. Auto Repairs., 95 Gascoigne St., Kingswood. 2750	64052	1981	Premise Match	109m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	C.V.J. Auto Repairs., 95 Gascoigne St., Kingswood. 2750	51557	1980	Premise Match	109m	East
4	MOTOR GARAGES & SERVICE STATIONS.	Trojan Performance, 81 Cox Ave., Kingswood. 2750	65646	1986	Premise Match	136m	South
	MOTOR GARAGES & SERVICE STATIONS.	Trojan Performance., 81 Cox Ave., Kingsgrove. 2750	45769	1985	Premise Match	136m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Mini Shop Pty Ltd The 81 Cox Ave., Kingswood. 2750	33768	1984	Premise Match	136m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Trojan Performance., 81 Cox Ave., Kingswood. 2750	34331	1984	Premise Match	136m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Mini Shop Pty Ltd The., 81 Cox Ave., Kingswood 2750	15116	1983	Premise Match	136m	South

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
4	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Trojan Performance., 81 Cox Ave., Kingswood 2750	21772	1983	Premise Match	136m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Mini Shop Pty. Ltd.The, 81 Cox Ave., Kingswood. 2750.	57191	1982	Premise Match	136m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Trojan Performance, 81 Cox Ave., Kingswood. 2750.	57772	1982	Premise Match	136m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Mini Shop Pty Ltd The., 81 Cox Ave., Kingswood 2750	3756	1981	Premise Match	136m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Trojan Performance., 81 Cox Ave., Kingswood 2750	8352	1981	Premise Match	136m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Mini Shop Pty Ltd The., 81 Cox Ave., Kingswood. 2750	58488	1980	Premise Match	136m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Trojan Performance., 81 Cox Ave., Kingswood. 2750	59039	1980	Premise Match	136m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Mini Shop Pty Ltd, The., 81 Cox Ave., Kingswood. 2750.	45982	1979	Premise Match	136m	South
5	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Roberts. M., 68 Cox Ave., Kingswood. 2750.	57477	1982	Premise Match	185m	South
6	Motor Garages & Service Stations	Nepean Automotive Services, 48 Cox Ave, Kingswood 2747	97836	1991	Premise Match	199m	South
	MOTOR GARAGES & SERVICE STATIONS.	Nepean Automotive Services, 48 Cox Ave., Kingswood. 2747	11923	1990	Premise Match	199m	South
	MOTOR GARAGE & SERVICE STATIONS.	Nepean Automotive Services, 48 Cox Ave., Kingswood. 2750	5332	1989	Premise Match	199m	South
	MOTOR GARAGES & SERVICE STATIONS.	Nepean Automotive Services, 48 Cox Ave., Kingswood. 2750	59702	1988	Premise Match	199m	South
	MOTOR GARAGES & SERVICE STATIONS.	Nepean Automotive Services, 48 Cox Ave., Kingswood. 2750	65178	1986	Premise Match	199m	South
	MOTOR GARAGES & SERVICE STATIONS.	Nepean Automotive Services., 48 Cox Ave., Kingswood. 2750	45280	1985	Premise Match	199m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Nepean Automotive Services, 48 Cox Ave., Kingswood. 2750	33855	1984	Premise Match	199m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Nepean Automotive Services., 48 Cox Ave., Kingswood 2750	15206	1983	Premise Match	199m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Nepean Automotive Services, 48 Cox Ave., Kingswood. 2750.	57284	1982	Premise Match	199m	South
7	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Penrith Transmission Service., 14 Cox Ave., Penrith. 2750.	46158	1979	Premise Match	378m	South East
8	MOTOR GARAGES & SERVICE STATIONS.	Solo Kingswood Service Station, 236 Great Western Hwy., Kingswood. 2747	25454	1993	Premise Match	402m	South East
	Motor Garages & Service Stations	Solo Kingswood Service Station, 236 Great Western H'way, Kingswood 2747	53897	1991	Premise Match	402m	South East

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

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

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
9	MOTOR GARAGES & SERVICE STATIONS.	Datspeed Engineering, 17 Copeland St., Kingswood. 2747	18892	1993	Road Match	0m
	Motor Garages & Service Stations	Armour, Joe, Copeland St, Kingswood 2747	53516	1991	Road Match	0m
	Motor Garages & Service Stations	Datspeed Engineering, 17 Copeland St, Kingswood 2747	53678	1991	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Armour, Joe, Copeland St., Kingswood. 2747	5933	1990	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Datspeed Engineering, 17 Copeland St., Kingswood. 2747	11484	1990	Road Match	0m
	MOTOR GARAGE & SERVICE STATIONS.	Armour, Joe, Copeland St., Kingswood. 2750	64425	1989	Road Match	0m
	MOTOR GARAGE & SERVICE STATIONS.	Datspeed Engineering, 17 Copeland St., Kingswood. 2750	64935	1989	Road Match	0m
	MOTOR GARAGE & SERVICE STATIONS.	Hacar Holdings Pty. Ltd., 1A Copeland St., Kingswood. 2750	65163	1989	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Armour, Joe., Copeland St., Kingswood. 2750	53526	1988	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Datspeed Engineering, 17 Copeland St., Kingswood. 2750	59143	1988	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Hacar Holdings Pty. Ltd., 1A Copeland St., Kingswood. 2750	59404	1988	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Armour, Joe, Copeland St., Kingswood. 2750	63972	1986	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Datspeed Engineering, 17 Copeland St., Kingswood. 2750	64536	1986	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Gough L. J. & B. A., 19 Copeland St., Kingswood. 2750	64804	1986	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Hacar Holdings Pty. Ltd., 1A Copeland St., Kingswood. 2750	64839	1986	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Armour Joe., Copeland St., Kingswood. 2750	38992	1985	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Datspeed Engineering, 17 Copeland St., Kingswood. 2750	39541	1985	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Gough I. J. & B. A., 19 Copeland St., Kingswood. 2750	44900	1985	Road Match	0m
	MOTOR GARAGES & SERVICE STATIONS.	Hacar Holdings Pty. Ltd., 1A Copeland St., Kingswood. 2750	44939	1985	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Armour Joe., Copeland St., Kingswood. 2750	27600	1984	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Bainbridge Auto Repairs, 9 Copeland St., Kingswood. 2750	27630	1984	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Datspeed Engineering, 17 Copeland St., Kingswood. 2750	28124	1984	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hucar Holdings Pty. Ltd., Copeland St., Kingswood. 2750	28477	1984	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Armour Joe., Copeland St., Kingswood 2750	8959	1983	Road Match	0m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
9	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Bainbridge Auto Repairs., 9 Copeland St., Kingswood 2750	8990	1983	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Datspeed Engineering., 17 Copeland St., Kingswood. 2750	14548	1983	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hucar Holdings Pty. Ltd., Copeland St., Kingswood 2750	14908	1983	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Armour, Joe, Copeland St., Kingswood. 2750.	56044	1982	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Bainbridge Auto Repairs, 9 Copeland St., Kingswood. 2750.	56079	1982	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Datspeed Engineering, 17 Copeland St., Kingswood. 2750.	56612	1982	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Hucar Holdings Pty. Ltd., Copeland St., Kingswood. 2750.	56976	1982	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Armour, Joe., Copeland St., Kingswood. 2750	63714	1981	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Bainbridge Auto Repairs., 9 Copeland St., Kingswood. 2750	63748	1981	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Datspeed Engineering., 17 Copeland St., Kingswood. 2750.	3165	1981	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Gough & Le Blang Engineering., 20 Copeland St., Kingswood 2750	3451	1981	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hucar Holdings Pty Ltd., Copeland St., Kingswood 2750	3531	1981	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Armour. Joe., Copeland St., Kingswood. 2750	50187	1980	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Bainbridge Auto Repairs., 9 Copeland St., Kingswood. 2750	50219	1980	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Datspeed Engineering., 17 Copeland St., Kingswood. 2750	52807	1980	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Gough & Le Blang Engineering., 20 Copeland St., Kingswood. 2750	58182	1980	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Armour & Clarke., Copeland St., Kingswood. 2750.	40799	1979	Road Match	0m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Riz-Zing Rustproofing., 12 Copeland St., Penrith. 2750.	46249	1979	Road Match	0m
10	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Hucar Holdings Pty Ltd., Phillip St., Kingswood. 2750	58266	1980	Road Match	0m
11	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Kingswood Smash Repairs., Cox Ave., Kingswood. 2750.	45862	1979	Road Match	157m
	MOTOR GARAGES & ENGINEERS	Kingswood Smash & Body Repairs, Cox Ave. Kingswood	535554	1970	Road Match	157m
12	MOTOR GARAGES & SERVICE STATIONS.	Kingswood Auto Port, Great Western Hghwy, Kingswood. 2747	11752	1990	Road Match	289m
	MOTOR GARAGES & SERVICE STATIONS.	Golden Fleece Kingswood Service Station, Great Western H'way., Kingswood. 2750	64765	1986	Road Match	289m
	MOTOR GARAGES & SERVICE STATIONS.	Kingswood Auto Port, Great Western H'way., Kingswood. 2750	64956	1986	Road Match	289m
	MOTOR GARAGES & SERVICE STATIONS.	Kingswood Auto Port, Great Western Hghwy, Kingswood. 2750	45058	1985	Road Match	289m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
12	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Golden Fleece Kingswood Service Station, Great Western H'way., Kingswood. 2750.	56836	1982	Road Match	289m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Golden Fleece Kingswood Service Station, Great Western H'way., Kingswood. 2750.	56837	1982	Road Match	289m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Kingswood Auto Port, Great Western H'way., Kingswood. 2750.	57058	1982	Road Match	289m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Golden Fleece Kingswood Service Station., Great Western H'way., Kingswood 2750	3396	1981	Road Match	289m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Golden Fleece Kingswood Service Station., Great Western H'way., Kingswood 2750	3397	1981	Road Match	289m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Kingswood Auto Port., Great Western H'way., Kingswood. 2750	58344	1980	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Kingswood Tyre Service., Great Western Hghwy., Kingswood	16811	1972	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Kingswood Tyre Service., Great Western Hghwy., Kingswood	2275	1971	Road Match	289m
	MOTOR GARAGES & ENGINEERS	Beattie, R. & Co., Great Western Hghwy. Kingswood	535551	1970	Road Match	289m
	MOTOR GARAGES & ENGINEERS	Golden Fleece Service Station, Great Western Hghwy. Kingswood	535552	1970	Road Match	289m
	MOTOR SERVICE STATIONS, PETROL, OILS, Etc.	Kingswood Auto Port, Great Western Hghwy. Kingswood	535557	1970	Road Match	289m
	MOTOR SERVICE STATIONS, PETROL, OILS, Etc.	Kingswood Tyre Service, Great Western Hghwy. Kingswood	535558	1970	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL,OIL,Etc.	Kingswood Tyre Service., Great Western Hghwy., KINGSWOOD	341256	1970	Road Match	289m
	MOTOR SERVICE STATIONS, PETROL, OILS, Etc.	Towns, L. R., Great Western Hghwy. Kingswood	535559	1970	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Kingswood Tyre Service., Great Western Hghwy Kingswood	50361	1969	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Kingswood Tyre Service., Great Western Hghwy., Kingswood	31377	1968	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Kingswood Tyre Service., Great Western Hghwy., Kingswood	15851	1967	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Kingswood Tyre Service., Great Western Hghwy., Kingswood	1425	1966	Road Match	289m
	Motor Service Stations - Petrol, Oil, Etc.	Kingswood Tyre Service, Great Western Highway. Kingswood	125815	1965	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Kingswood Tyre Service., Great Western Hghwy., Kingswood	52094	1964	Road Match	289m
	MOTOR GARAGES & ENGINEERS	Beattie, R. & Co., Great Western Highway., Kingswood	211435	1961	Road Match	289m
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Kingswood Tyre Service, Great Western Hghwy. Kingswood	350757	1961	Road Match	289m
	MOTOR SERVICE STATIONS, PETROL, Etc.	Towns, L. R., Great Western Highway., Kingswood	211437	1961	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL,. OIL, ETC.	Kingswood Tyre Service., Great Western Hghwy., Kingswood	24272	1959	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Kingswood Tyre Service., Western Hghwy., Kingswood	9625	1958	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Kingswood Tyre Service., Great Western Hghwy., Kingswood	61982	1956	Road Match	289m

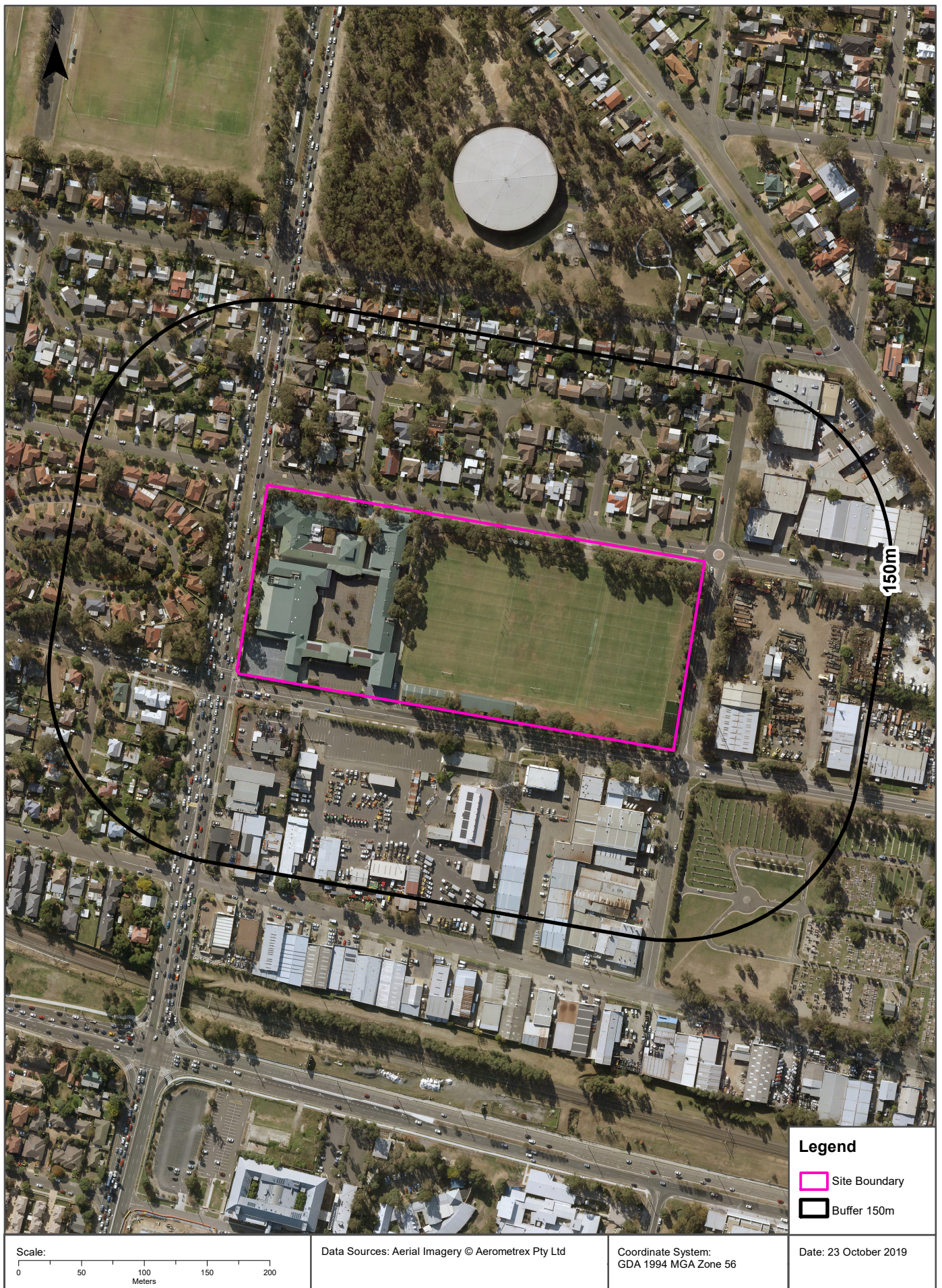
Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
12	MOTOR SERVICE STATIONS-PETROL, ETC.	Kingswood Tyre Service., Western Hghwy., Kingswood	54535	1954	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Kingswood Tyre Service., Western Hghwy., Kingswood	44114	1953	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Kingswood Tyre Service., Western Hghwy., Kingswood	35888	1952	Road Match	289m
	MOTOR SERVICE STATIONS-PETROL, Etc.	Kingswood Tyre Service, Western Highway., Kingswood	86110	1950	Road Match	289m
13	MOTOR GARAGES & ENGINEERS	Ward's Motors Pty. Ltd., Great Western Hghwy. Penrith	536052	1970	Road Match	290m
	MOTOR GARAGES & ENGINEERS	Ward's Motors Pty. Ltd., Great Western Highway., Penrith	222561	1961	Road Match	290m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Ward's Motors Pty. Ltd., Great Western Highway., Penrith	222581	1961	Road Match	290m
	MOTOR GARAGES & ENGINEERS	McCleary Motors, Western Rd. Penrith	151376	1950	Road Match	290m
14	MOTOR GARAGES & SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith. 2750	5967	1990	Road Match	459m
	MOTOR GARAGES & SERVICE STATIONS.	Nepean Auto Port, High St., Penrith. 2750	11922	1990	Road Match	459m
	MOTOR GARAGE & SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith. 2750	64464	1989	Road Match	459m
	MOTOR GARAGE & SERVICE STATIONS.	Nepean Auto Port, High St., Penrith. 2750	5331	1989	Road Match	459m
	MOTOR GARAGES & SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith. 2750	53567	1988	Road Match	459m
	MOTOR GARAGES & SERVICE STATIONS.	Nepean Auto Port, High St., Penrith. 2750	59701	1988	Road Match	459m
	MOTOR GARAGES & SERVICE STATIONS.	Barrett, Ron Pty Ltd., 645 High St., Penrith. 2750	64018	1986	Road Match	459m
	MOTOR GARAGES & SERVICE STATIONS.	Nepean Auto Port, High St., Penrith. 2750	65177	1986	Road Match	459m
	MOTOR GARAGES & SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith. 2750	39037	1985	Road Match	459m
	MOTOR GARAGES & SERVICE STATIONS.	Nepean Auto Port, High St., Penrith. 2750	45279	1985	Road Match	459m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith. 2750	27643	1984	Road Match	459m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Nepean Auto Port, High St., Penrith. 2750	33854	1984	Road Match	459m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith 2750	9004	1983	Road Match	459m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Nepean Auto Port., High St., Penrith 2750	15205	1983	Road Match	459m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Barrett, Ron Pty. Ltd., 645 High St., Penrith. 2750.	56096	1982	Road Match	459m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Nepean Auto Port, High St., Penrith. 2750.	57283	1982	Road Match	459m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Barrett, Ron Pty. Ltd., 645 High St., Penrith. 2750	63766	1981	Road Match	459m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Nepean Auto Port., High St., Penrith 2750	3840	1981	Road Match	459m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Barrett, Ron Pty. Ltd., 645 High St., Penrith. 2750	50237	1980	Road Match	459m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Nepean Auto Port., High St., Penrith. 2750	58584	1980	Road Match	459m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
14	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith. 2750.	40865	1979	Road Match	459m
	MOTOR GARAGES & ENGINEERS	Barrett, Ron Pty. Ltd., 645-649 High St. Penrith	536046	1970	Road Match	459m
	MOTOR GARAGES & ENGINEERS	Barrett, Ron Pty. Ltd., 645-649 High St., Penrith	222552	1961	Road Match	459m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Wood, K., High St., Penrith	222583	1961	Road Match	459m
	MOTOR GARAGES & ENGINEERS	Wood, Ken, High St., Penrith	222563	1961	Road Match	459m

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Aerial Imagery 2019

21 Copeland Street, Kingswood, NSW 2747





Aerial Imagery 2014

21 Copeland Street, Kingswood, NSW 2747



Aerial Imagery 2007

21 Copeland Street, Kingswood, NSW 2747



Aerial Imagery 2000

21 Copeland Street, Kingswood, NSW 2747







Aerial Imagery 1970

21 Copeland Street, Kingswood, NSW 2747





Aerial Imagery 1961

21 Copeland Street, Kingswood, NSW 2747



Aerial Imagery 1956

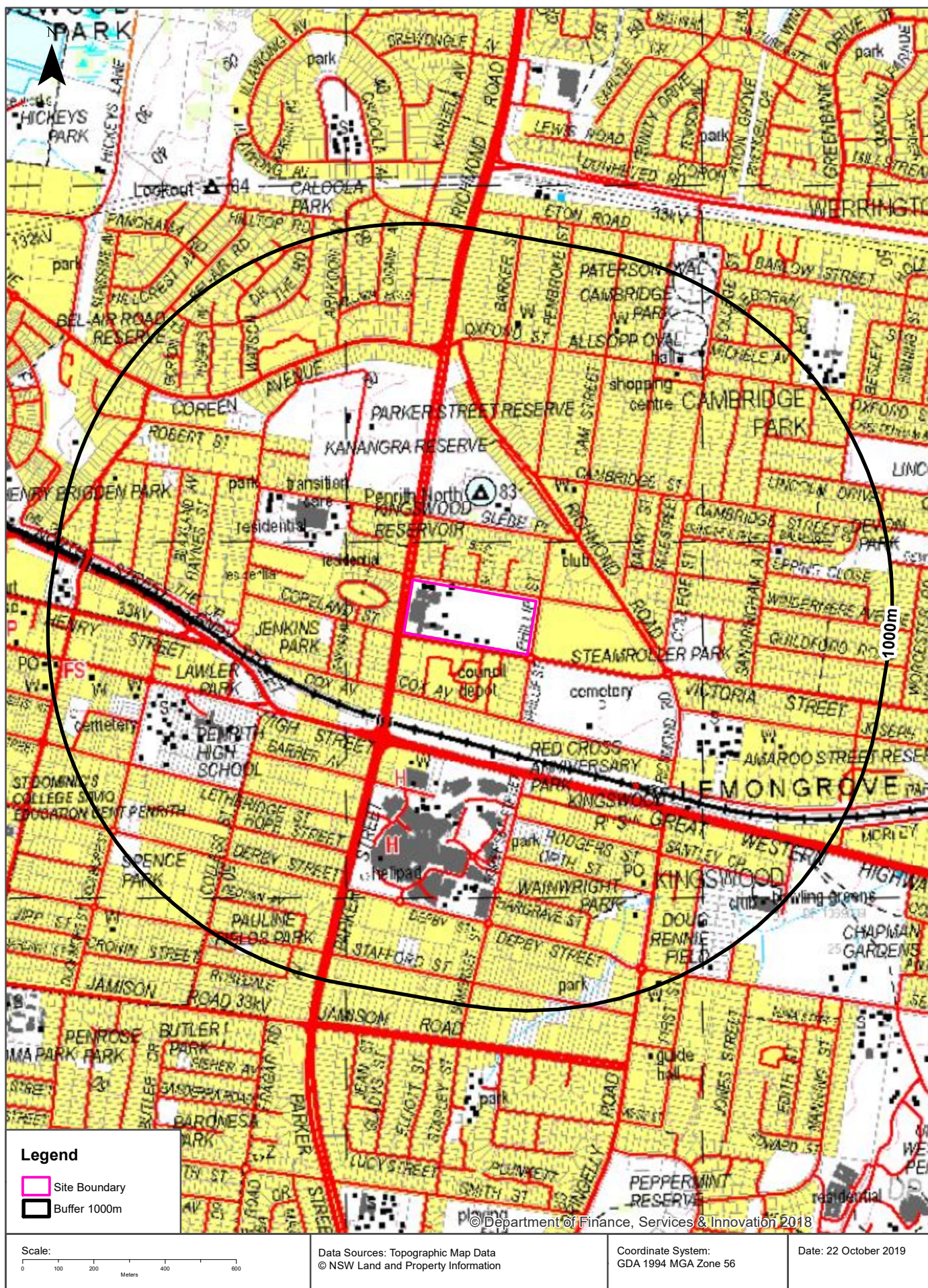
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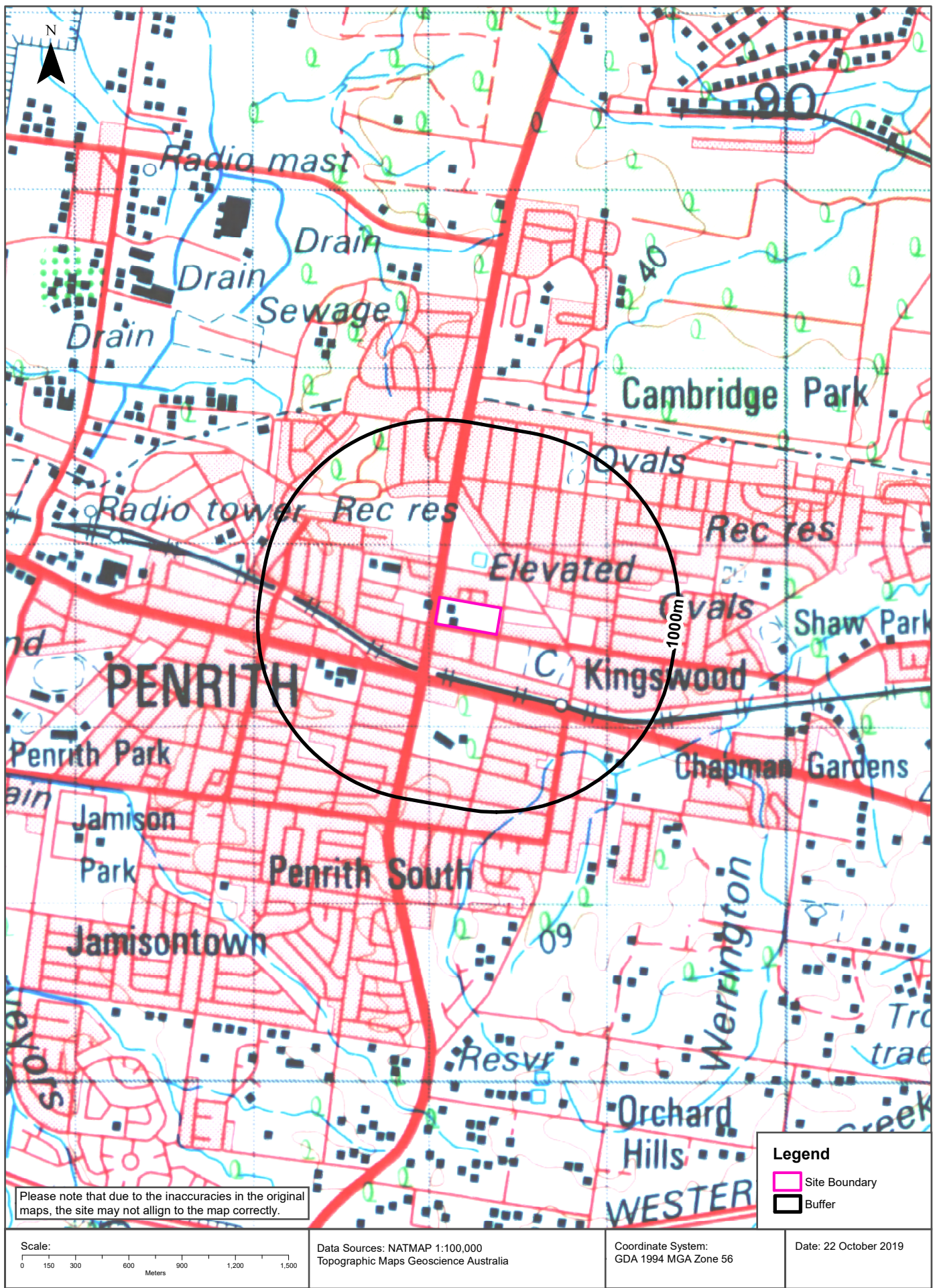


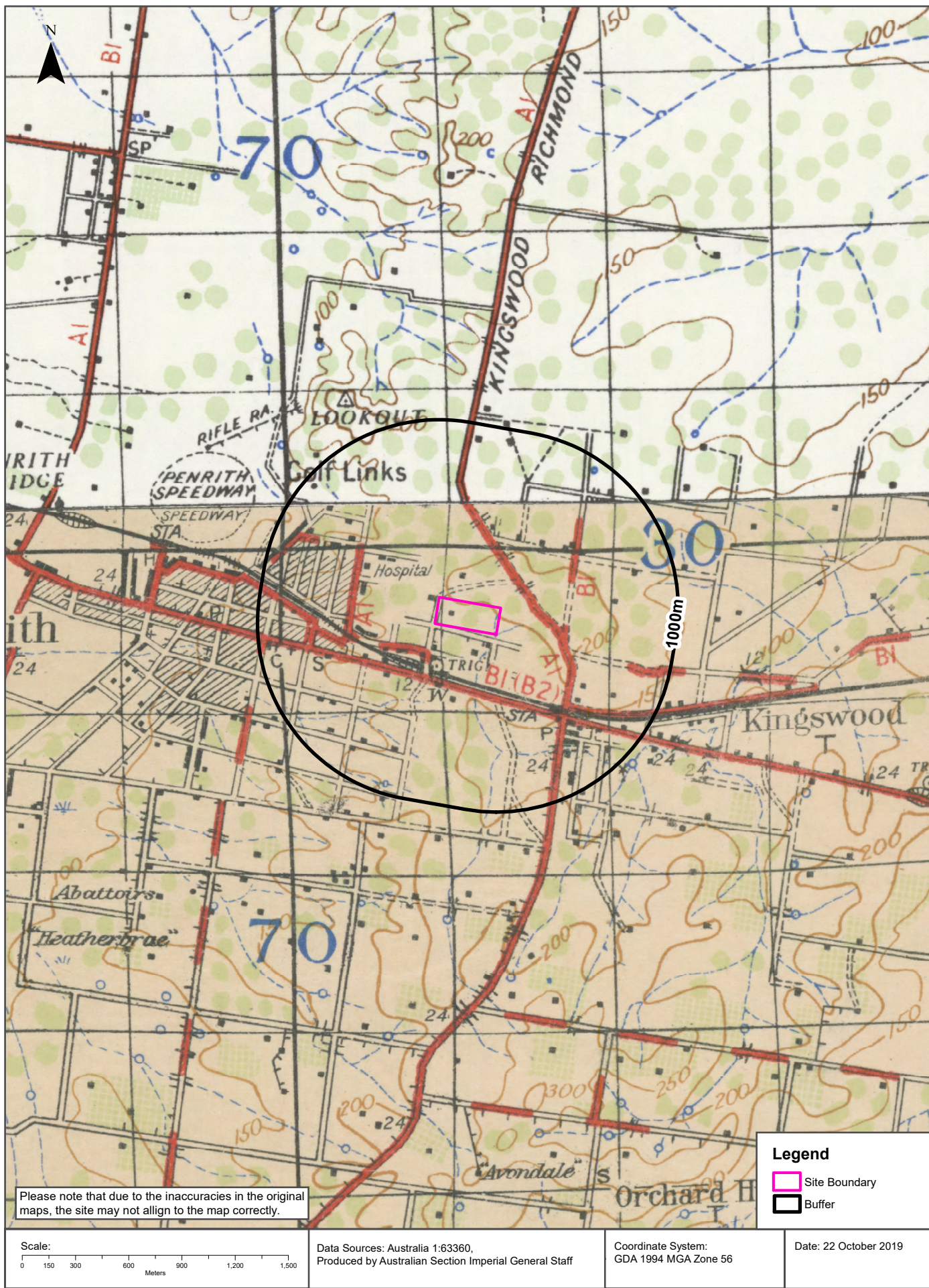


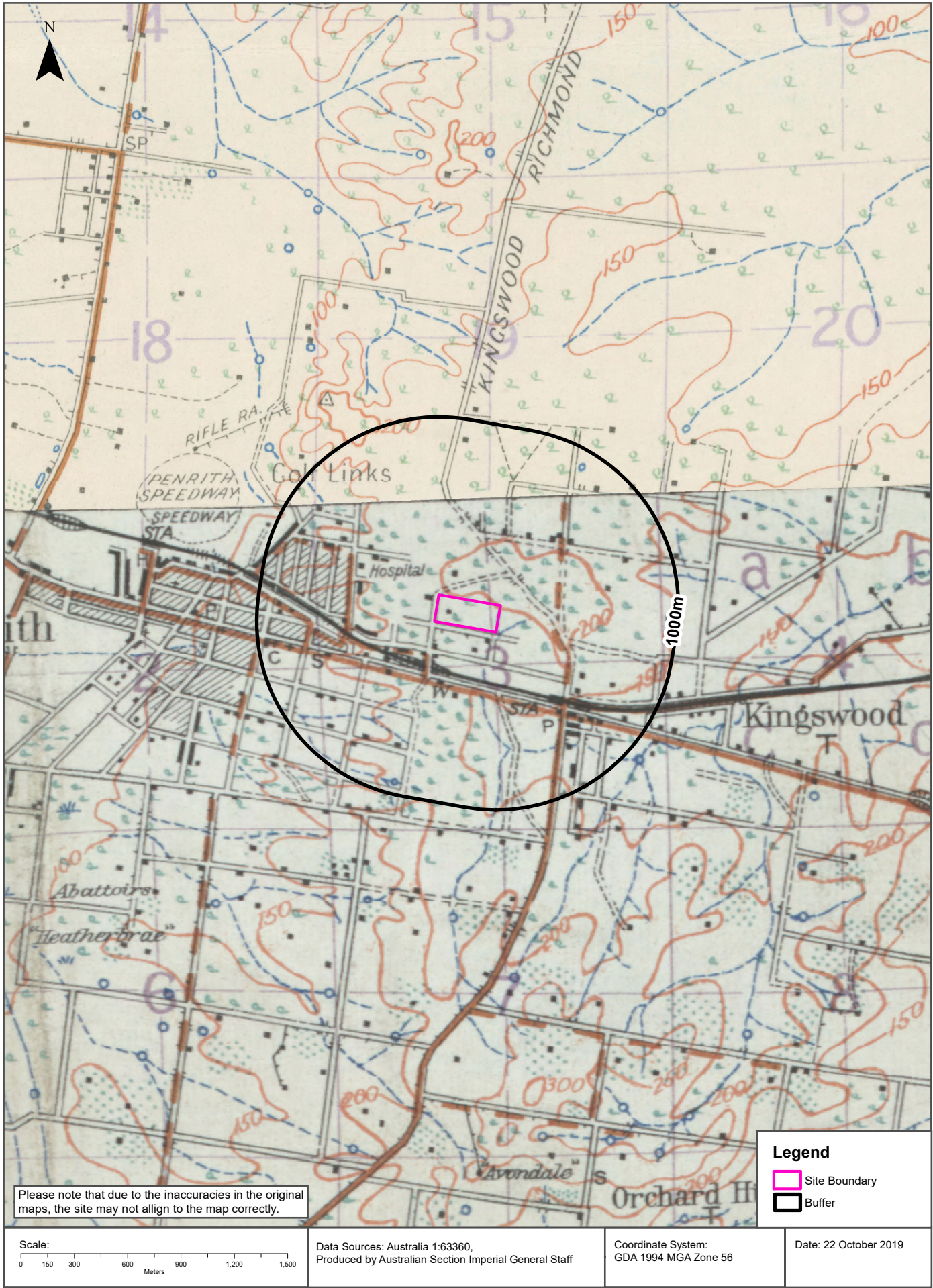
Topographic Map 2015

21 Copeland Street, Kingswood, NSW 2747









Topographic Features

21 Copeland Street, Kingswood, NSW 2747



Topographic Features

21 Copeland Street, Kingswood, NSW 2747

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
995419	Combined Primary-Secondary School	ST DOMINIC'S COLLEGE	0m	Onsite
995395	Club	PENRITH GAELS CULTURAL AND SPORTING ASSOCIATION	156m	North East
995347	Park	JENKINS PARK	226m	West
995312	Cemetery	PENRITH CEMETERY	253m	South East
995396	Community Home	LEMONGROVE GARDENS HOSTEL	261m	West
995538	Community Home	GOVERNOR PHILLIP MANOR	329m	North West
995438	Place Of Worship	BRETHREN CHURCH	330m	North East
995524	Medical Centre	LEMONGROVE COMMUNITY HEALTH CENTRE	334m	North West
995537	Community Home	NEPEAN AGED COMMUNITY BASED TRANSITIONAL AGED CARE	334m	North West
995303	Place Of Worship	BAPTIST CHURCH	357m	South
995044	Nursing Home	UNITING EDINGLASSIE LODGE PENRITH	360m	West
995467	Park	KANANGRA RESERVE	360m	North
995329	Park	RED CROSS ANNIVERSARY PARK	370m	South
995055	Ambulance Station	PENRITH SUPERSTATION AMBULANCE STATION	372m	South West
995402	Retirement Village	LEMONGROVE GARDENS	376m	West
995368	General Hospital	NEPEAN PRIVATE HOSPITAL	415m	South
995159	Parking Area	Parking Area	421m	South
995782	Urban Place	LEMONGROVE	449m	South East
995341	Park	STEAMROLLER PARK	465m	East
995462	Park	PARKER STREET RESERVE	471m	North West
995313	Park	LAWLER PARK	479m	West
995399	Railway Station	KINGSWOOD RAILWAY STATION	482m	South East
995155	Parking Area	Parking Area	495m	South
995243	Parking Area	Parking Area	506m	South
995153	Park	Park	509m	South
995550	Park	Park	513m	North West
995376	Primary School	ST JOSEPH'S PRIMARY SCHOOL	573m	South East
995381	High School	PENRITH HIGH SCHOOL	606m	West
995242	Parking Area	Parking Area	606m	South West
995382	General Hospital	NEPEAN HOSPITAL	638m	South

Map Id	Feature Type	Label	Distance	Direction
995038	Helipad	Helipad	696m	South
995244	Parking Area	Parking Area	704m	South
995373	Primary School	PENRITH PUBLIC SCHOOL	709m	West
995308	Post Office	KINGSWOOD POST OFFICE	722m	South East
995456	Park	HENRY BRIGDEN PARK	737m	North West
995536	Retirement Village	ST STEPHEN'S VILLAGE	739m	North West
995331	Park	WAINWRIGHT PARK	742m	South East
995426	Shopping Centre	Shopping Centre	747m	North East
995442	Place Of Worship	ANGLICAN CHURCH	754m	North
995302	Place Of Worship	Place Of Worship	756m	South East
995364	Suburb	KINGSWOOD	760m	South East
995299	Place Of Worship	PRESBYTERIAN CHURCH	775m	West
995013	Community Facility	CAMBRIDGE PARK HALL	788m	North East
995441	Place Of Worship	SEVENTH DAY ADVENTIST CHURCH	788m	North East
995020	Community Facility	KINGSWOOD NEIGHBOURHOOD CENTRE	793m	South East
995482	Park	NORMAN PEEK PARK	811m	North West
995430	Sports Field	ALLSOPP OVAL	850m	North East
995145	Community Facility	LEMONGROVE LODGE	883m	West
995305	Place Of Worship	ANGLICAN CHURCH	886m	West
995428	Park	CAMBRIDGE PARK	896m	North East
995415	Sports Field	DOUG RENNIE FIELD	936m	South East
995492	Suburb	CAMBRIDGE PARK	936m	North East
995338	Park	DEVON PARK	944m	East
995359	Sports Field	BOWLING GREENS	948m	South East
995311	Cemetery	ST STEPHEN THE MARTYR CEMETERY	955m	West
995296	Club	KINGSWOOD SPORTS CLUB	961m	South East
995350	Park	Park	967m	South
995297	Fire Station	PENRITH FIRE STATION	983m	West
995301	Place Of Worship	ANGLICAN CHURCH	995m	South East

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Topographic Features

21 Copeland Street, Kingswood, NSW 2747

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?

Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
10706	Water	Operational	KINGSWOOD RESERVOIR	13/07/2018	233m	North

Tanks (Points)

What are the Tank Points located within the dataset buffer?

Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

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

Tanks Data Source: © Land and Property Information (2015)

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Major Easements

What Major Easements exist within the dataset buffer?

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

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
N/A	No records in buffer				

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

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Topographic Features

21 Copeland Street, Kingswood, NSW 2747

State Forest

What State Forest exist within the dataset buffer?

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

State Forest Data Source: © NSW Department of Finance, Services & Innovation (2018)
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National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

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

NPWS Data Source: © NSW Department of Finance, Services & Innovation (2018)
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Hydrogeology & Groundwater

21 Copeland Street, Kingswood, NSW 2747

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive highly productive aquifers

Description of aquifers within the dataset buffer:

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

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

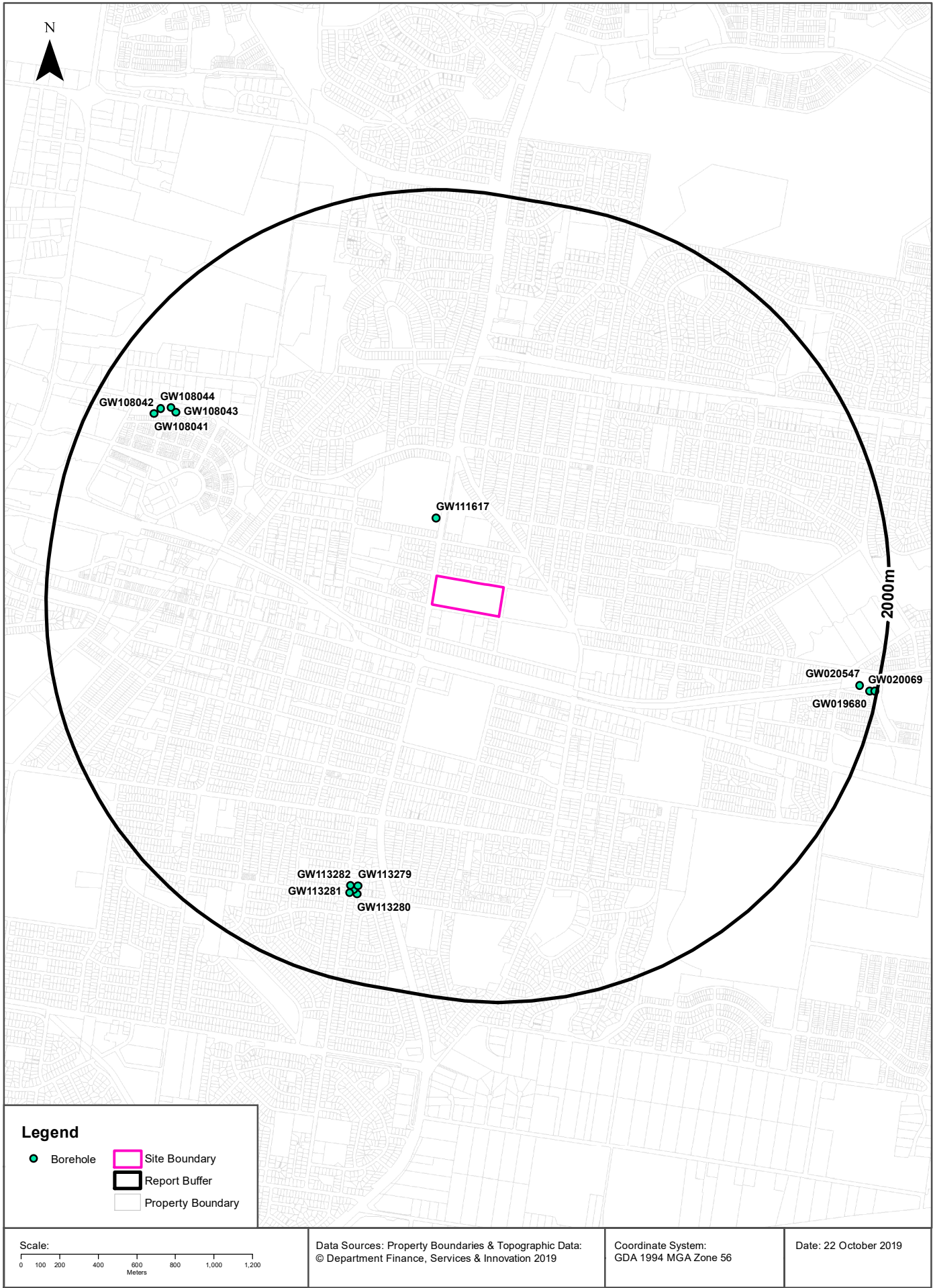
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Botany Groundwater Management Zones

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

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

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



Hydrogeology & Groundwater

21 Copeland Street, Kingswood, NSW 2747

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW111 617	10BL604 801, 10BL604 802, 10WA11 7803	Bore	Local Govt	Recreation (groundwater), Test Bore	Recreation (groundwater)		20/10/2011	210.00	210.00	2600	69.00	1.120		299m	North
GW113 279	10BL601 835	Bore	Local Govt	Monitoring Bore	Monitoring Bore	The Prospect CC	02/05/2007	7.50	7.50					1507m	South
GW113 282	10BL601 835	Bore	Local Govt	Monitoring Bore	Monitoring Bore	The Prospect CC	02/05/2007	7.00	7.00					1516m	South
GW113 283	10BL601 835	Bore	Local Govt	Monitoring Bore	Monitoring Bore	The Prospect CC	02/05/2007	2.80	2.80					1531m	South
GW113 280	10BL601 835	Bore	Local Govt	Monitoring Bore	Monitoring Bore	The Prospect CC	02/05/2007	8.20	8.20					1551m	South
GW113 281	10BL601 835	Bore	Local Govt	Monitoring Bore	Monitoring Bore	The Prospect CC	02/05/2007	2.85	2.85					1555m	South
GW108 043	10BL600 263	Bore		Monitoring Bore	Monitoring Bore		22/04/2006	9.00	9.00		6.80			1594m	North West
GW108 044	10BL600 263	Bore		Monitoring Bore	Monitoring Bore		22/04/2006	9.50	9.50		6.60			1628m	North West
GW108 042	10BL600 263	Bore		Monitoring Bore	Monitoring Bore		22/04/2006	8.00	8.00		6.40			1670m	North West
GW108 041	10BL600 263	Bore		Monitoring Bore	Monitoring Bore		12/04/2006	7.50	7.50		6.70			1687m	North West
GW020 547	10BL013 346	Bore open thru rock	Federal Govt	Waste Disposal	Waste Disposal		01/06/1963	91.40	91.40					1905m	East
GW019 680	10BL012 376	Bore open thru rock	Federal Govt	Test Bore	Waste Disposal		01/04/1962	53.30	53.30	Salty				1962m	East
GW020 069	10BL012 538	Bore open thru rock	Federal Govt	Waste Disposal	Waste Disposal		01/06/1962	75.50	75.60					1987m	East

Borehole Data Source : NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation for all bores prefixed with GW. All other bores © Commonwealth of Australia (Bureau of Meteorology) 2015. Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

Hydrogeology & Groundwater

21 Copeland Street, Kingswood, NSW 2747

Driller's Logs

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

Groundwater No	Drillers Log	Distance	Direction
GW111617	0.00m-0.50m CLAY BROWN 0.50m-1.00m SHALE BROWN 1.00m-113.00m SHALE GREY 113.00m-130.00m SANDSTONE GREY 130.00m-130.20m SANDSTONE GREY QUARTZ 130.20m-141.00m SANDSTONE GREY 141.00m-142.00m SANDSTONE GREY QUARTZ 142.00m-145.00m SANDSTONE GREY 145.00m-149.00m SANDSTONE GREY QUARTZ 149.00m-154.00m SANDSTONE GREY 154.00m-155.00m SANDSTONE GREY ,SILTSTONE BANDS 155.00m-158.50m SANDSTONE GREY 158.50m-160.00m SANDSTONE GREY QUARTZ 160.00m-161.00m SANDSTONE GREY 161.00m-162.00m SANDSTONE GREY ,SILTSTONE BANDS 162.00m-190.00m SANDSTONE GREY 190.00m-192.00m SANDSTONE GREY ,SILTSTONE BANDS 192.00m-198.50m SANDSTONE GREY 198.50m-200.00m SANDSTONE GREY QUARTZ 200.00m-203.00m SANDSTONE GREY 203.00m-209.00m SANDSTONE GREY QUARTZ 209.00m-210.00m SANDSTONE GREY	299m	North
GW108043	0.00m-4.80m CLAYEY SAND 4.80m-5.40m SAND,BROWN, LOOSE,DDRY 5.40m-9.00m GRAVEL	1594m	North West
GW108044	0.00m-0.20m CONCRETE 0.20m-0.30m FILL,CLAY,GREY 0.30m-6.40m SILTY CLAYEY SAND,ORANGE,BROWN 6.40m-9.50m GRAVELS,WET,MODERATE	1628m	North West
GW108042	0.00m-0.20m CONCRETE 0.20m-0.30m FILL,CLAY,GREY/BROWN 0.30m-2.50m CLAY,RED/BROWN 2.50m-7.50m GRAVELS,WELL GRADED 7.50m-8.00m COARSE GRAINED SAND BANDS	1670m	North West
GW108041	0.00m-0.20m CONCRETE 0.20m-0.40m CLAY L/BROWN 0.40m-3.30m CLAY BECOMING ORANGE,BROWN 3.30m-7.50m GRAVEL,BROWN,WELL GRADED	1687m	North West
GW020547	0.00m-0.91m Topsoil 0.91m-9.14m Clay Yellow 0.91m-9.14m Pebbles 9.14m-13.71m Shale Grey 13.71m-91.44m Shale Black Water Supply	1905m	East
GW019680	0.00m-11.27m Clay Water Supply 11.27m-16.15m Clay Shale 16.15m-44.19m Shale Hard 44.19m-44.80m Shale Water Supply 44.80m-50.29m Shale Dark 50.29m-52.42m Shale Clay Seams 52.42m-53.34m Shale Water Supply	1962m	East

Groundwater No	Drillers Log	Distance	Direction
GW020069	0.00m-2.13m Clay 2.13m-4.57m Clay Coloured 4.57m-7.31m Clay Shale 7.31m-8.83m Clay Sticky Water Supply 8.83m-51.20m Shale Light Coloured 51.20m-59.43m Shale Dark Water Supply 51.20m-59.43m Clay Seams 59.43m-60.65m Shale Dark 60.65m-63.70m Shale 60.65m-63.70m Sandstone Yellow Streaks 63.70m-72.54m Shale Light Orange 72.54m-74.67m Shale Dark Orange Water Supply 72.54m-74.67m Clay Seams 74.67m-75.59m Shale Dark Orange	1987m	East

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

21 Copeland Street, Kingswood, NSW 2747

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Rwb	Shale, carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff	Bringelly Shale	Wianamatta Group (undifferentiated)		Middle Triassic		Penrith	1:100,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Qal	Fine-grained sand, silt and clay				Quaternary		Penrith	1:100,000
Rwb	Shale, carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff	Bringelly Shale	Wianamatta Group (undifferentiated)		Middle Triassic		Penrith	1:100,000

Geological Structures

What are the Geological Structures onsite?

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

What are the Geological Structures within the dataset buffer?

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

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

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Naturally Occurring Asbestos Potential

21 Copeland Street, Kingswood, NSW 2747

Naturally Occurring Asbestos Potential

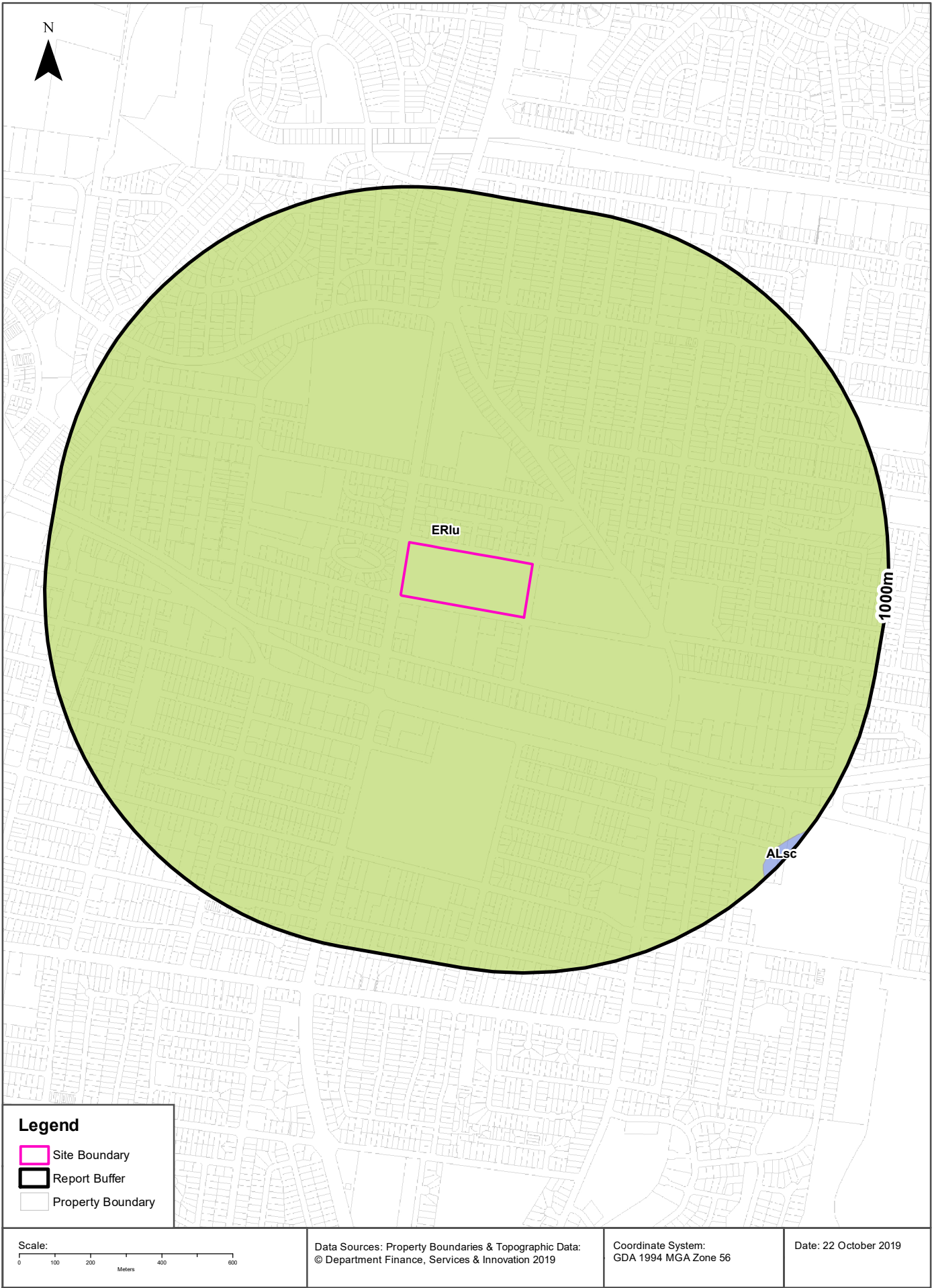
Naturally Occurring Asbestos Potential within the dataset buffer:

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

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

Soil Landscapes

21 Copeland Street, Kingswood, NSW 2747



Soils

21 Copeland Street, Kingswood, NSW 2747

Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
ERlu	LUDDENHAM		EROSIONAL	Penrith	1:100,000

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALsc	SOUTH CREEK		ALLUVIAL	Penrith	1:100,000
ERlu	LUDDENHAM		EROSIONAL	Penrith	1:100,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage

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Soils

21 Copeland Street, Kingswood, NSW 2747

Atlas of Australian Soils

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

Map Unit Code	Soil Order	Map Unit Description	Distance
Pb12	Kurosol	Gently rolling to rounded hilly country with some steep slopes and broad valleys: chief soils are hard acidic red soils (Dr2.21) with hard neutral and acidic yellow mottled soils (Dy3.42 and Dy3.41) on lower slopes and in valleys. Associated are small areas of various soils including (Gn3.54) on some ridges, (Dr3.31) on some slopes; (Dr2.23) in saddles and some mid-slope positions, and some low-lying swampy areas of (Uf6) soils and (Uc1.2) soils with peaty surfaces. Small areas of other soils such as (Db1.2) are likely throughout.	0m
X9	Sodosol	Plains--former river terraces and levees: chief soils are sandy neutral yellow mottled soils (Dy5.42) with leached sands (Uc2.3) on the broader plains. Associated are (Dy3.41, Dy3.42, and Dy3.43) soils, some containing ironstone gravels, in relatively low-lying areas and depressions, and (Dr2.2), (Gn2.15), and (Gn2.18) soils on levees. Areas of other soils, possibly including (Um4.31), occur throughout what is a complex unit. As mapped, areas of units Gb6 and Sp1 are included.	682m

Atlas of Australian Soils Data Source: CSIRO

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Acid Sulfate Soils

21 Copeland Street, Kingswood, NSW 2747

Environmental Planning Instrument - Acid Sulfate Soils

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

Soil Class	Description	EPI Name
N/A		

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

Soil Class	Description	EPI Name	Distance	Direction
N/A				

Acid Sulfate Data Source Accessed 23/10/2018: NSW Crown Copyright - Planning and Environment
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Atlas of Australian Acid Sulfate Soils

21 Copeland Street, Kingswood, NSW 2747



Acid Sulfate Soils

21 Copeland Street, Kingswood, NSW 2747

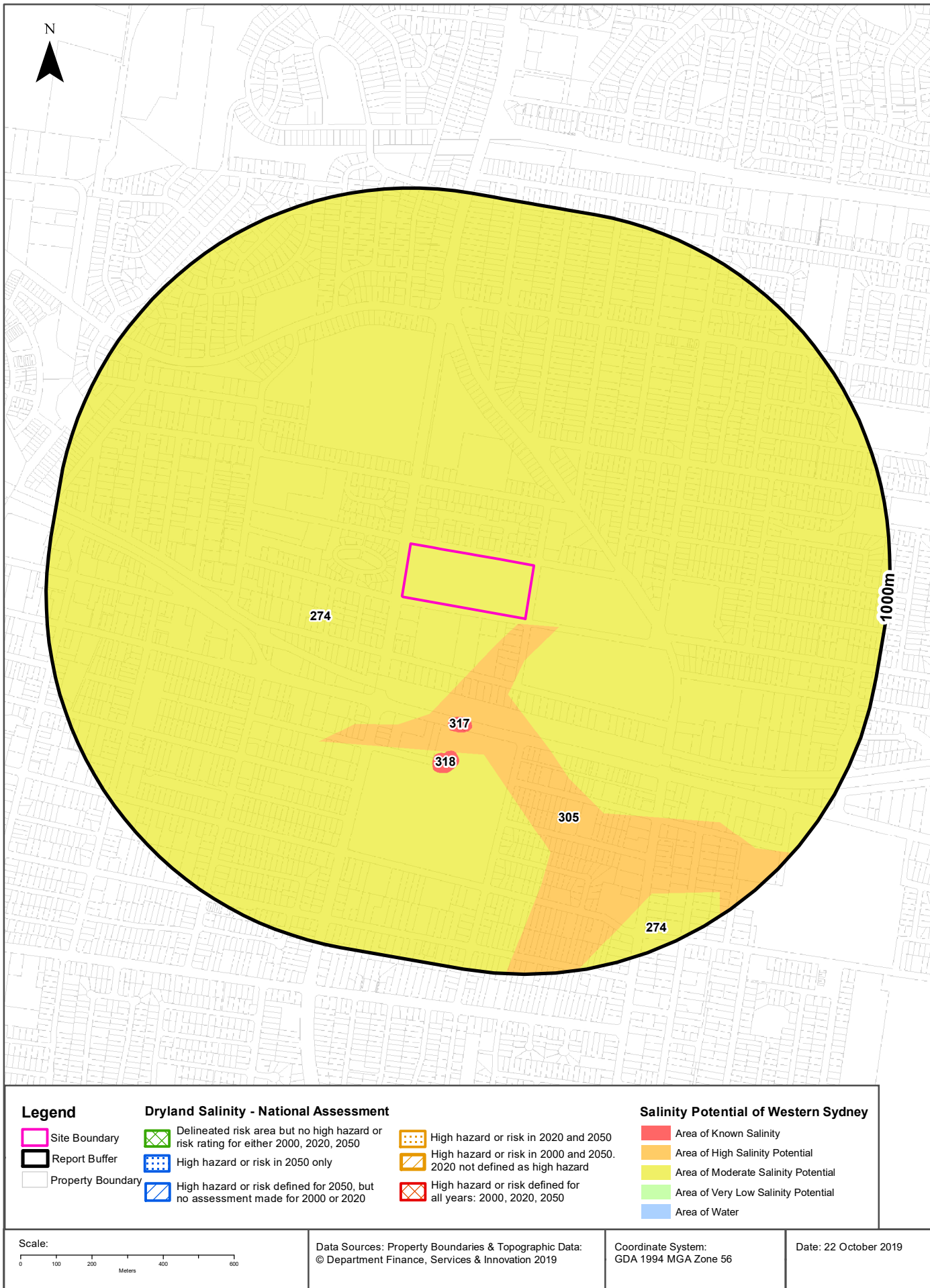
Atlas of Australian Acid Sulfate Soils

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

Class	Description	Distance
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m
B	Low Probability of occurrence. 6-70% chance of occurrence.	683m

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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Dryland Salinity

21 Copeland Street, Kingswood, NSW 2747

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

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

No

What Dryland Salinity assessments are given?

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

Dryland Salinity Data Source : National Land and Water Resources Audit

The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. Any persons using this information do so at their own risk.

In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

Dryland Salinity Potential of Western Sydney

Dryland Salinity Potential of Western Sydney within the dataset buffer?

Feature Id	Classification	Description	Distance	Direction
274	MODERATE	Area of Moderate Salinity Potential	0m	Onsite
305	HIGH	Area of High Salinity Potential	15m	East
317	SALT	Area of Known Salinity	301m	South
318	SALT	Area of Known Salinity	400m	South

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

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Mining Subsidence Districts

21 Copeland Street, Kingswood, NSW 2747

Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

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

Mining Subsidence District Data Source: © Land and Property Information (2016)
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State Environmental Planning Policy

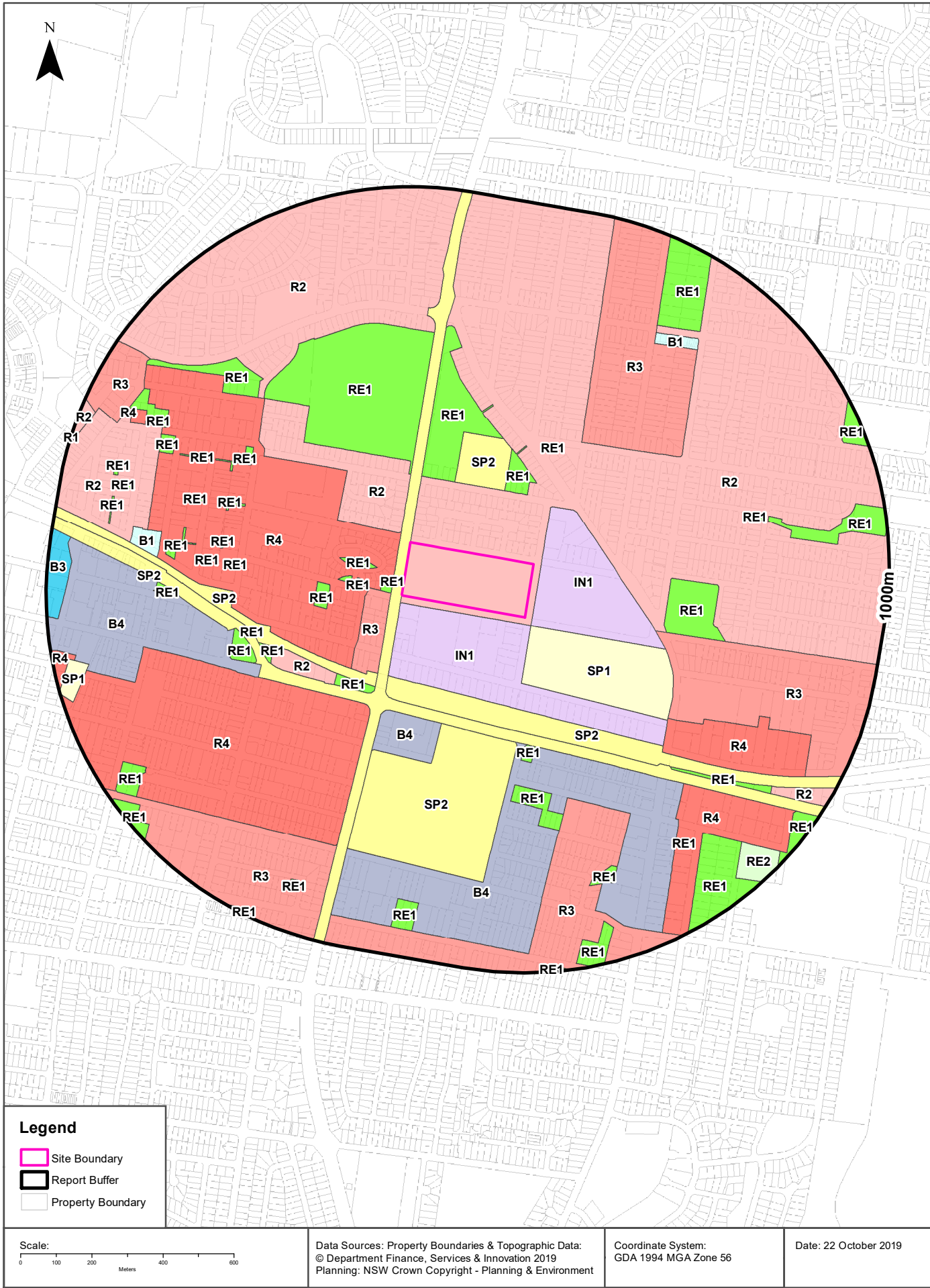
21 Copeland Street, Kingswood, NSW 2747

State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

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

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Environmental Planning Instrument

21 Copeland Street, Kingswood, NSW 2747

Land Zoning

What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R2	Low Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	0m	Onsite
SP2	Infrastructure	Classified Road	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	0m	South West
IN1	General Industrial		Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	27/09/2019		20m	East
SP1	Special Activities	Cemetery	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	29m	South East
R3	Medium Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	30m	South West
R4	High Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	30m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	30m	West
R2	Low Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	41m	North West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	80m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	92m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	146m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	190m	North
SP2	Infrastructure	Water Supply System	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	190m	North
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	192m	North West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	202m	West
SP2	Infrastructure	Railway	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	228m	East
SP2	Infrastructure	Railway	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	229m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	266m	South West
R2	Low Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	285m	South West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	319m	North East
R4	High Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	321m	South West
B4	Mixed Use		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	323m	South
SP2	Infrastructure	Health Services Facilities	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	334m	South
B4	Mixed Use		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	351m	South
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	358m	South
R3	Medium Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	367m	North East
R3	Medium Density Residential		Penrith Local Environmental Plan 2010	27/09/2019	27/09/2019	27/09/2019	Amendment No 22	367m	East

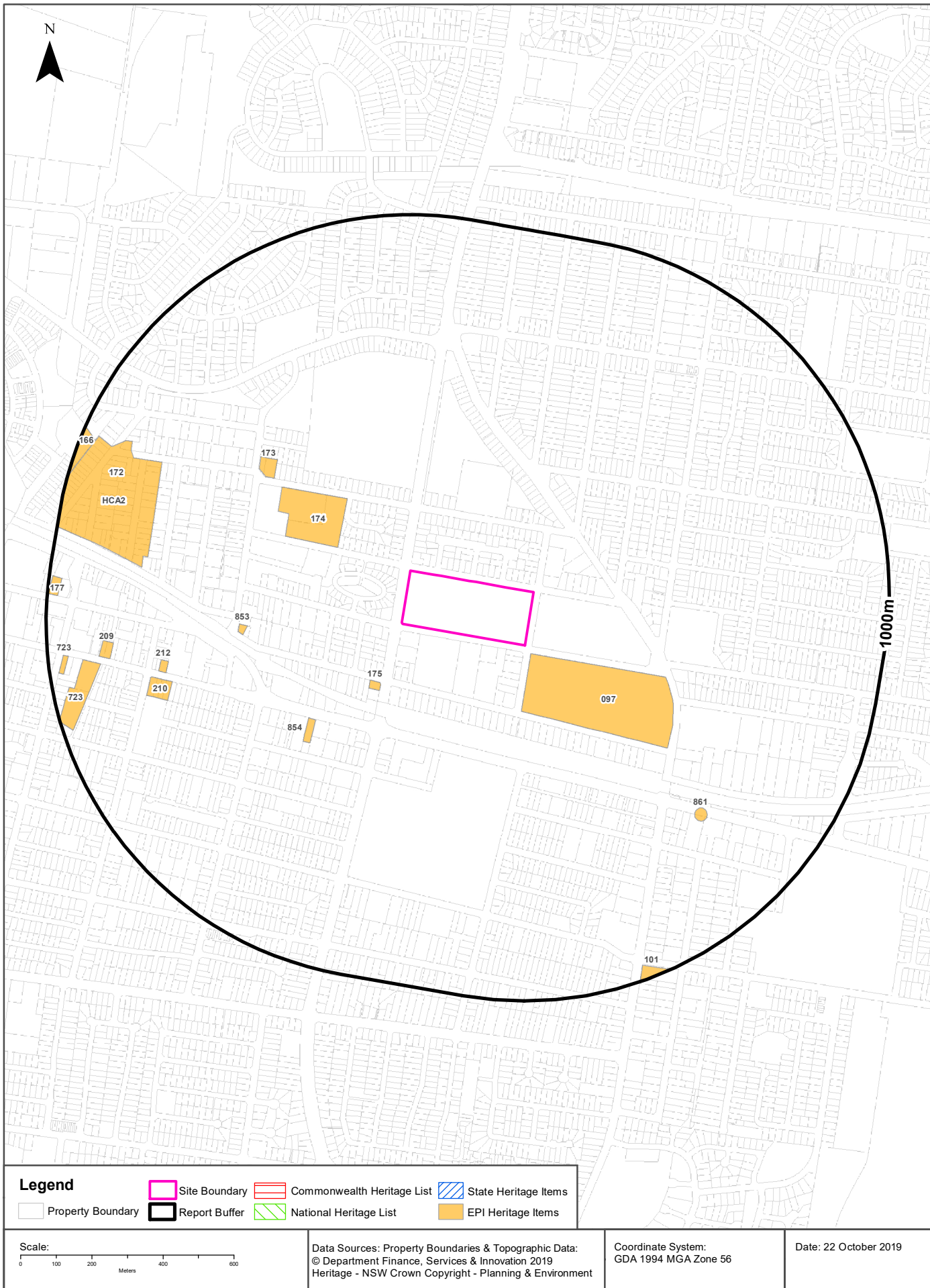
Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	387m	East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	390m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	14/10/2016	14/10/2016	27/09/2019	Amendment No 11	424m	West
B4	Mixed Use		Penrith Local Environmental Plan 2010	26/04/2019	26/04/2019	27/09/2019	Amendment No 15	441m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	446m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	470m	South
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	472m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	476m	West
R4	High Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	492m	South East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	498m	North West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	517m	West
R3	Medium Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	520m	South East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	535m	West
R2	Low Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	578m	North
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	584m	South East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	592m	North West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	593m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	596m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	614m	North West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	618m	East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	643m	West
R4	High Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	646m	South East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	669m	East
B1	Neighbourhood Centre		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	693m	West
B1	Neighbourhood Centre		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	706m	North East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	712m	North West
R3	Medium Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	722m	South West
R2	Low Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	734m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	739m	South East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	754m	North East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	758m	North West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	785m	South East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	798m	West
R4	High Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	815m	North West

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R2	Low Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	840m	South East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	840m	South
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	841m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	844m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	852m	South West
R3	Medium Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	864m	North West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	865m	South West
RE2	Private Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	877m	South East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	880m	South
SP1	Special Activities	Cemetery	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	900m	West
B3	Commercial Core		Penrith Local Environmental Plan 2010	26/04/2019	26/04/2019	27/09/2019	Amendment No 15	931m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	932m	East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	943m	South West
R2	Low Density Residential		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	958m	North West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	976m	South
RE1	Public Recreation		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	978m	South West
R1	General Residential		Penrith Local Environmental Plan 2010	27/09/2019	27/09/2019	27/09/2019	Amendment No 22	984m	North West
B1	Neighbourhood Centre		Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	Amendment No 4	988m	South West

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Heritage Items

21 Copeland Street, Kingswood, NSW 2747



Heritage

21 Copeland Street, Kingswood, NSW 2747

Commonwealth Heritage List

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

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

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

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

Note. Please click on Place Id to activate a hyperlink to online website.

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

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

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

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

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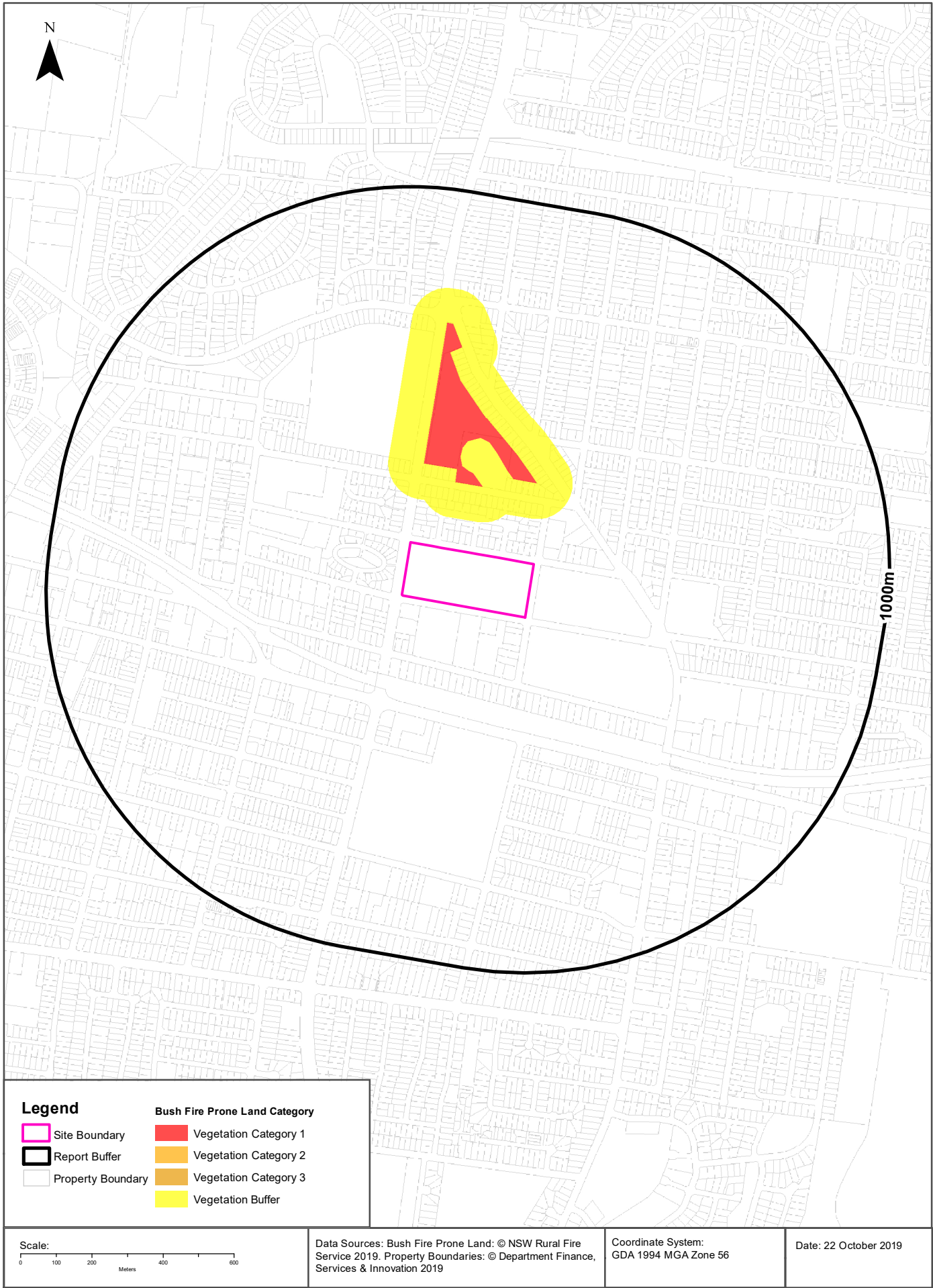
Environmental Planning Instrument - Heritage

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

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
097	Penrith General Cemetery	Item - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	29m	South East
175	Cottage	Item - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	177m	South West
174	Governor Phillip Special Hospital - original building	Item - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	214m	North West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
854	Federation house	Item - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	363m	South West
853	Cottage	Item - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	433m	West
173	Former rectory	Item - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	463m	North West
212	Victorian terrace and Interwar shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	27/09/2019	665m	West
210	Penrith Public School and palm trees	Item - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	666m	West
861	Milestone	Item - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	667m	South East
HCA2	Lemongrove	Conservation Area - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	734m	West
209	St Aubyn's Terrace	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	27/09/2019	812m	West
172	Lemongrove Lodge	Item - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	843m	West
723	Cottage	Item - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	853m	West
723	Cottage	Item - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	941m	West
166	Thornton Hall	Item - General	State	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	957m	North West
101	St. Phillips Anglican Church	Item - General	Local	Penrith Local Environmental Plan 2010	28/01/2015	25/02/2015	27/09/2019	958m	South East
177	Penrith Infants Department (1884 building)	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	27/09/2019	962m	West

Heritage Data Source: NSW Crown Copyright - Planning & Environment
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Natural Hazards

21 Copeland Street, Kingswood, NSW 2747

Bush Fire Prone Land

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

Bush Fire Prone Land Category	Distance	Direction
Vegetation Buffer	89m	North
Vegetation Category 1	189m	North

NSW Bush Fire Prone Land - © NSW Rural Fire Service under Creative Commons 4.0 International Licence



Ecological Constraints

21 Copeland Street, Kingswood, NSW 2747

Remnant Vegetation of the Cumberland Plain

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

Description	Crown Cover	Distance	Direction
10 - Shale Plains Woodland	Crown cover less than 10% (urban areas)	0m	Onsite
9 - Shale Hills Woodland	Crown cover less than 10% (urban areas)	0m	Onsite
10 - Shale Plains Woodland	Crown cover less than 10%	105m	South East
9 - Shale Hills Woodland	Crown cover greater than 10%	180m	North
10 - Shale Plains Woodland	Crown cover greater than 10%	188m	North
9 - Shale Hills Woodland	Crown cover less than 10%	397m	East
11 - Alluvial Woodland	Crown cover less than 10% (urban areas)	489m	South East
11 - Alluvial Woodland	Crown cover less than 10%	899m	South West

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

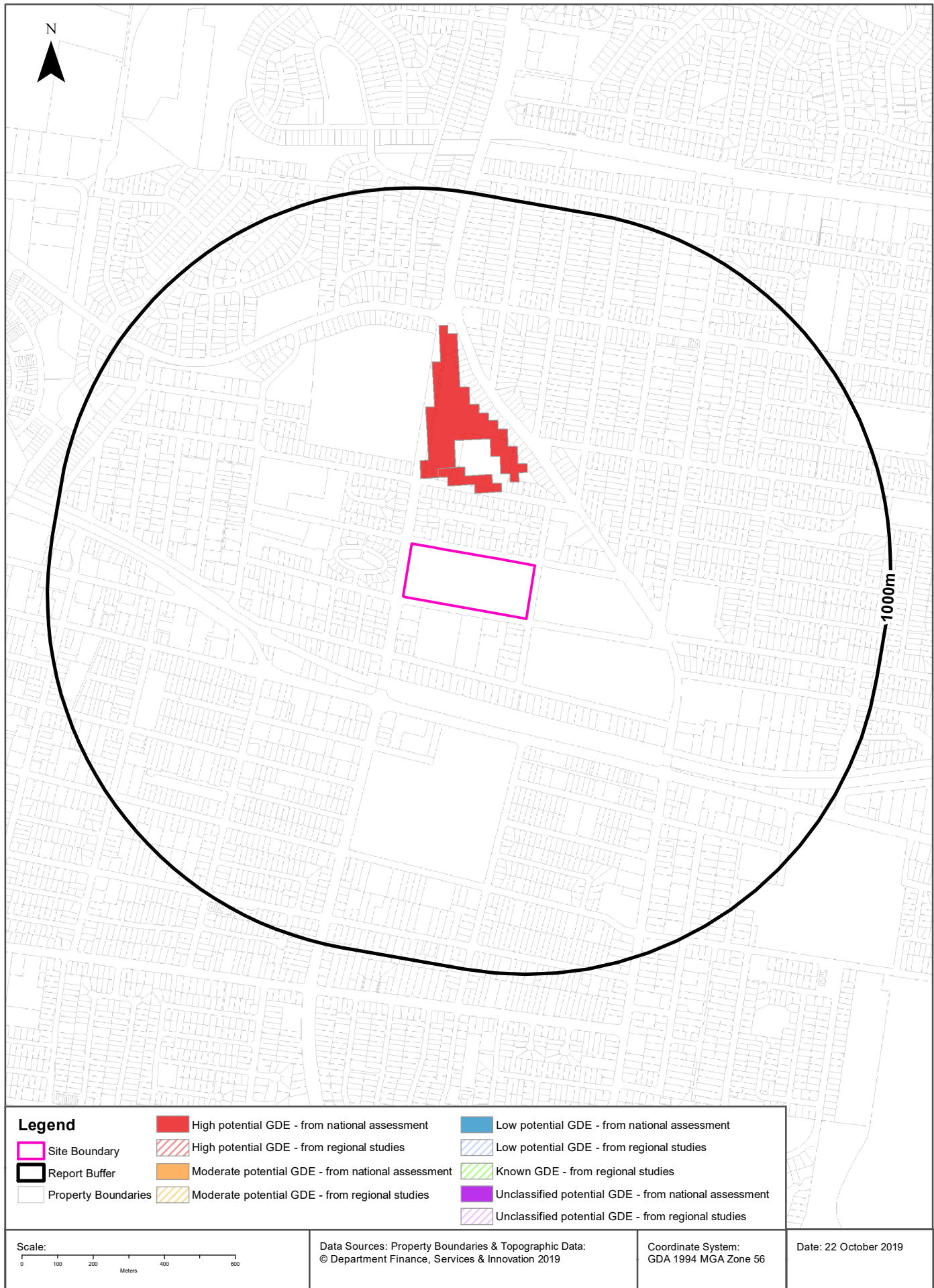
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Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

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

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



Ecological Constraints

21 Copeland Street, Kingswood, NSW 2747

Groundwater Dependent Ecosystems Atlas

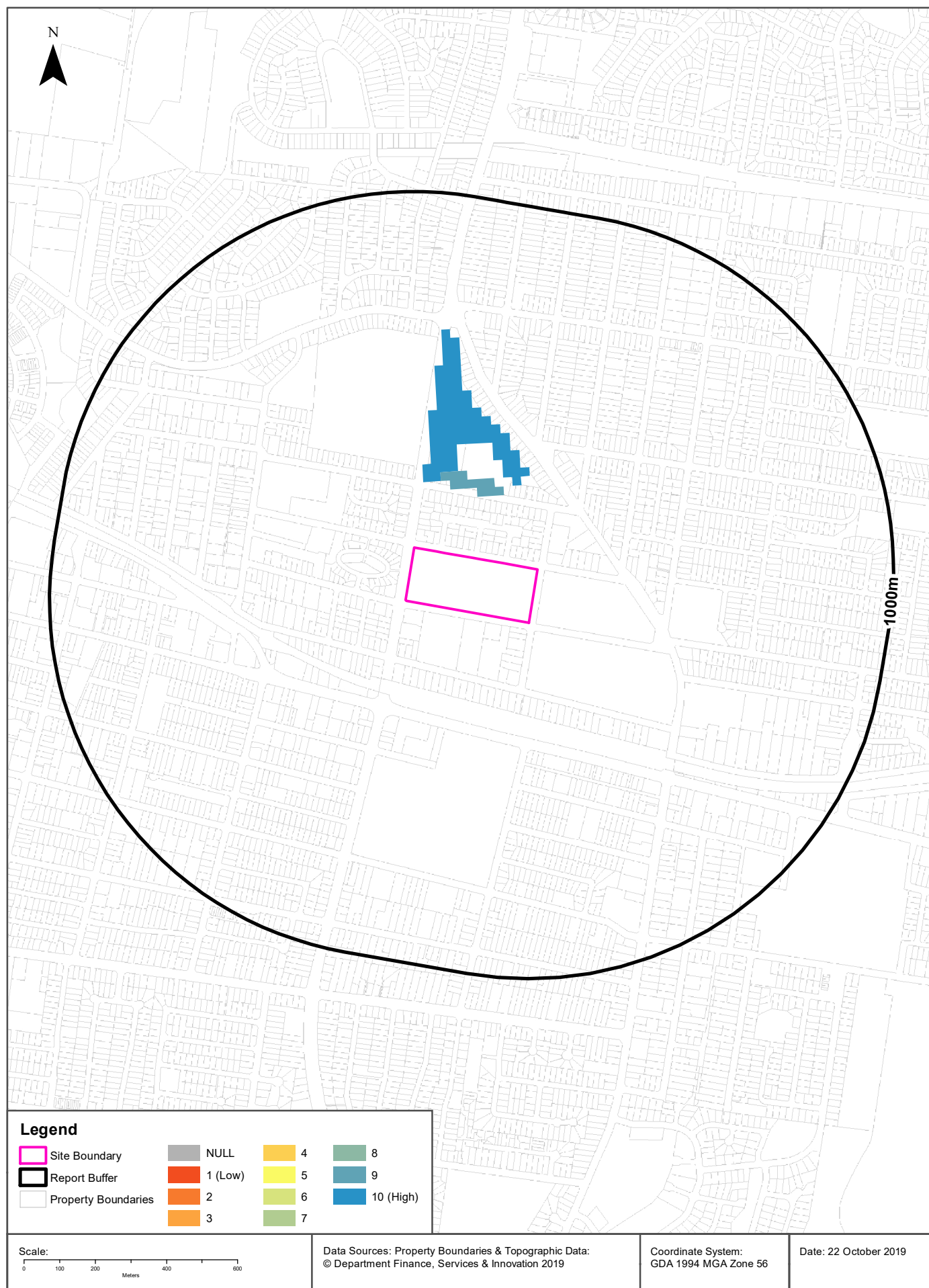
Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	High potential GDE - from national assessment	Undulating to low hilly country, mainly on shale.	Vegetation	Consolidated sedimentary	170m

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology

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Ecological Constraints - Inflow Dependent Ecosystems Likelihood

21 Copeland Street, Kingswood, NSW 2747



Ecological Constraints

21 Copeland Street, Kingswood, NSW 2747

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	9	Undulating to low hilly country, mainly on shale.	Vegetation	Consolidated sedimentary	170m
Terrestrial	10	Undulating to low hilly country, mainly on shale.	Vegetation	Consolidated sedimentary	185m

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

21 Copeland Street, Kingswood, NSW 2747

NSW BioNet Atlas

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

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Heleioporus australiacus	Giant Burrowing Frog	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Amphibia	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Amphibia	Pseudophryne australis	Red-crowned Toadlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Amauornis moluccana	Pale-vented Bush-hen	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anseranas semipalmata	Magpie Goose	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardea ibis	Cattle Egret	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Ardenna tenuirostris	Short-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Botaurus poiciloptilus	Australasian Bittern	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Burhinus grallarius	Bush Stone-curlew	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptorhynchus banksii samueli	Red-tailed Black-Cockatoo (inland subspecies)	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Certhionyx variegatus	Pied Honeyeater	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Charadrius veredus	Oriental Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Chthonicola sagittata	Speckled Warbler	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Circus assimilis	Spotted Harrier	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ephippiorhynchus asiaticus	Black-necked Stork	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Grantiella picta	Painted Honeyeater	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Hieraetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ixobrychus flavicollis	Black Bittern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Lathamus discolor	Swift Parrot	Endangered	Category 3	Critically Endangered	
Animalia	Aves	Lophochroa leadbeateri	Major Mitchell's Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Merops ornatus	Rainbow Bee-eater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Neophema pulchella	Turquoise Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Numenius minutus	Little Curlew	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pezoporus wallicus wallicus	Eastern Ground Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Phaethon lepturus	White-tailed Tropicbird	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Plegadis falcinellus	Glossy Ibis	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	Rostratula australis	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Sterna hirundo	Common Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Tringa glareola	Wood Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa nebularia	Common Greenshank	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tyto longimembris	Eastern Grass Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Gastropoda	Meridolum corneovirens	Cumberland Plain Land Snail	Endangered	Not Sensitive	Not Listed	
Animalia	Insecta	Petalura gigantea	Giant Dragonfly	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Miniopterus australis	Little Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Petaurus australis	Yellow-bellied Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascogale cinerea	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheath-tail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Antaresia stimsoni	Stimson's Python	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Aspidites ramsayi	Woma	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Caretta caretta	Loggerhead Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Eulamprus leuraensis	Blue Mountains Water Skink	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Hoplocephalus bungaroides	Broad-headed Snake	Endangered	Category 2	Vulnerable	
Animalia	Reptilia	Suta flagellum	Little Whip Snake	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Tiliqua occipitalis	Western Blue-tongued Lizard	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia bynoeana	Bynoe's Wattle	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia pubescens	Downy Wattle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Allocasuarina glauca		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Dillwynia tenuifolia		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus benthamii	Camden White Gum	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Grevillea juniperina subsp. juniperina	Juniper-leaved Grevillea	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Grevillea parviflora subsp. parviflora	Small-flower Grevillea	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Hibbertia puberula		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Isotoma fluviatilis subsp. fluviatilis		Not Listed	Not Sensitive	Extinct	
Plantae	Flora	Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Marsdenia viridiflora subsp. viridiflora	Native Pear	Endangered Population	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Micromyrtus minutiflora		Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Persoonia nutans	Nodding Geebung	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pimelea spicata	Spiked Rice-flower	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pterostylis saxicola	Sydney Plains Greenhood	Endangered	Category 2	Endangered	
Plantae	Flora	Pultenaea parviflora		Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Senna acclinis	Rainforest Cassia	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetradlea glandulosa		Vulnerable	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

NSW BioNet: © State of NSW and Office of Environment and Heritage

Data obtained 21/10/2019

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APPENDIX C

Plans for Proposed Development

Ref No: 23001

4 February 2019
PMDL
Attention : Stephanie Hope



GEOTECHNICAL BRIEF FOR ST DOMINICS , BLOCK E

1. BUILDING

The new Block E building will involve excavations approximately to RL 54.80, about 2.7m below the playing field and varying depths below the tree embankment to the south for the carpark, theatre and services rooms.

The building above rises 2 levels above the ground floor (RL 58.05) and consists of a framed concrete slab and column structure with metal deck roof.

Maximum column loadings are in the order of 1400 kN.

2. PROPOSED GEOTECHNICAL INVESTIGATIONS AND REPORTING

The geotechnical investigation and report for the development is described in the scope below for the building including an environmental assessment of the subsurface conditions.

Description of subsurface conditions, site constraints, depth of fill, excavations and ground water issues:

- i. Boreholes to be drilled to rock;
Refer sketch attached for boreholes (BH1 to BH5).
- ii. At least 4 boreholes are to be cored into rock
- iii. Services Search to locate existing services.
- iv. Site classification and undertake shrink swell testing of soils
- v. Allowable bearing capacities for pad and pile footings;
- vi. Footing system options for building
- vii. Recommendations for bulk excavations, shoring and batter slopes.
- viii. Record and comment on the presence of groundwater;
- ix. Specify Ground work preparation for slab on ground external and internal;
- x. Provide recommendations and design values for piling and high level footings;
- xi. Provide design values for lateral earth pressures for retaining structures
- xii. Provide settlement estimates for footing systems, slab on ground, shrink swell issues;
- xiii. CBR for pavement design;

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• SYDNEY

68-70 Crown Street,
Woolloomooloo, NSW 2011
☎ (02) 9332 5100 Fax (02) 9331 2963
Email: sydney@gnfp.com.au
Drawings: keiths@gnfp.com.au

• PERTH

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West Perth WA 6005
All WA mail to PO Box 8108, Subiaco East WA 6008
☎ (08) 9321 0159
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• MELBOURNE

Geoff Ninnies Fong & Nixon in Association
Suite 3, 52 Bay Road,
Sandringham VIC 3191
☎ (03) 9533 1373 Fax (03) 9533 1383
Email: gcnixon@tpg.com.au

Environmental Investigations

- i) Test for presence of an contamination and provide waste classification of fill materials;
- ii) Test for aggressive soils and provide recommendations;
- iii) Report on presence of contaminated material, soils, filled ground and remediation required or further investigations.

Please address fee proposal to:-

St Dominics School
C/- Geoff Ninnes Fong & Partners
Level 1, 68-70 Crown Street
Woolloomooloo NSW 2000

Yours faithfully

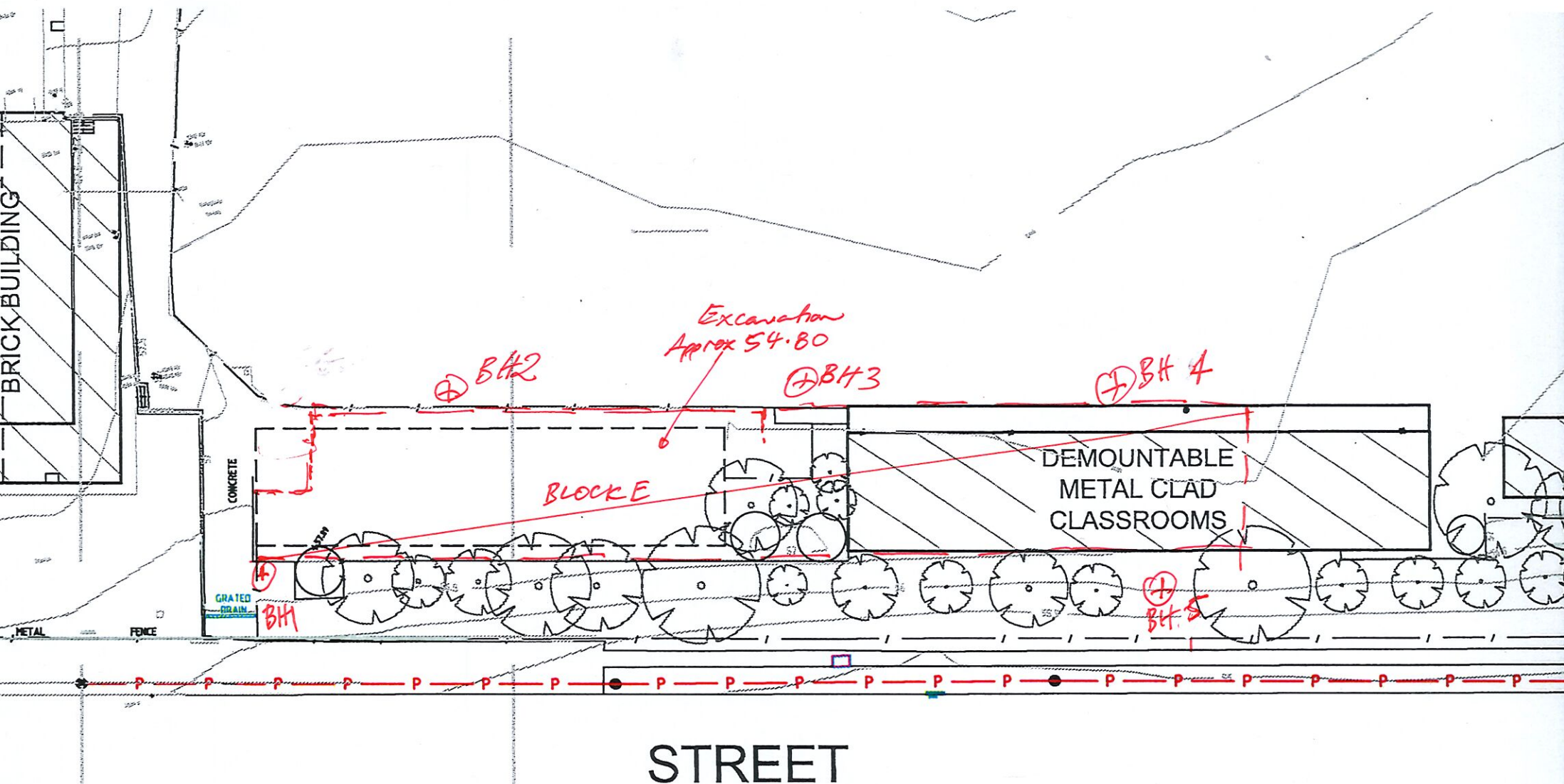
FOR AND ON BEHALF OF

GEOFF NINNES FONG& PARTNERS PTY LTD



BRAD FONG MIE Aust CPEng NPER
Director

BRICK BUILDING



APPROX 1:400

A1

APPROXIMATE

BORE HOLE

LOCATIONS

SH

APPENDIX D

Photographs









APPENDIX E

Lab Analytical Reports



	Asbestos	TRH							BTEX							Halogenated Benzenes	Inorganics		Metals			
	Asbestos fibres	CG-C10	CG-C10 (F1 minus BTEX)	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	C10-C40 (Sum of total)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	Heptachlorobenzene	% Moisture	Moisture Content (dried @ 103 °C)	Arsenic	Cadmium	Chromium (II+VI)	Copper
	Detect	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg
EOL	0	20	20	25	25	90	100	100	0.1	0.1	0.1	0.2	0.1	0.3	0.6	0.1	10,000	1	1	0.3	0.5	0.5
CRC Care HSL-A Residential (Low Density)		4,400		3,300		4,500	6,300		100	14,000	4,500			12,000								
CRC Care HSL-B Residential (High Density)		5,600		4,200		5,800	8,100		140	21,000	5,900			17,000								
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil		700		1,000		3,500	10,000															
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil		800		1,000		5,000	10,000															
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil		700		1,000		2,500	10,000															
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil		800		1,000		3,500	10,000															
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay									1	130	50			25					55	12	380	190
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																						
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt																						
NEPM 2013 Table 1B(5) Generic EIL - Comm/Ind																			160			
NEPM 2013 Table 1B(5) Generic EIL - Urban Res & Public Open Space																			100			
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil			180		120	1,300	5,600		65	105	125			45								
0-2m											125			45								
NEPM 2013 Table 1A(1) HILs Res A Soil																10			100	20		6,000
NEPM 2013 Table 1A(1) HILs Res B Soil																15			500	150		30,000

Field ID	Date																						
BH1 0.3-0.5	4/10/19	0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<0.1	170,000		8	<0.3	13	20
BH1 1.3-1.5	4/10/19		<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	0.4	0.2	0.6	0.7		135,000		6	<0.3	14	15
BH2 0.35-0.55	4/10/19	0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<0.1	205,000		3	<0.3	3.6	7.1
BH2 1.2-1.3	4/10/19		<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6		236,000		5	<0.3	22	14
BH3 0.3-0.7	4/10/19	0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<0.1	181,000		5	<0.3	8.6	14
BH3 1.9-2.1	4/10/19		<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6		120,000		9	<0.3	13	21
BH4 0.3-0.6	4/10/19	0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<0.1	220,000		17	<0.3	10	25
BH4 1.7-1.9	4/10/19		<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6		186,000		6	<0.3	36	26
BH5 0.2-0.5	4/10/19	0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<0.1	127,000		11	<0.3	12	18
BH5 1.0-1.2	4/10/19		<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6		190,000		8	<0.3	13	17
BH6 0.2-0.5	4/10/19	0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<0.1	67,000		4	<0.3	5.6	6.4
BH6 0.7-1.0	4/10/19		<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6		133,000		7	<0.3	18	13
BH7 0.2-0.4	4/10/19	0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<0.1	116,000		10	<0.3	11	16
BH7 0.4-0.6	4/10/19		<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6		129,000		6	<0.3	17	10
BH8 0.2-0.5	4/10/19	0	<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<0.1	176,000		4	<0.3	11	14
BH8 0.8-1.0	4/10/19		<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6		106,000		4	<0.3	6.7	5.8
Dup 1	4/10/19		<25	<25	<25	<25	<90	<120	<210	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6		158,000		4	<0.3	11	13
TRIP 1	4/10/19		<20	<20	<50	<50	<100	<100	<100	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3			19	5.9	<0.4	16	22	

Statistics																						
Number of Results	8	18	18	18	18	18	18	18	18	18	18	18	18	18	17	8	17	1	18	18	18	18
Number of Detects	8	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	17	1	18	0	18	18
Minimum Concentration	0	<20	<20	<25	<25	<90	<100	<100	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.6	<0.1	67,000	19	3	<0.3	3.6	5.8
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4	0.2	0.6	0.7	ND	67,000	19	3	ND	3.6	5.8
Maximum Concentration	0	<25	<25	<50	<50	<100	<120	<210	<0.1	<0.1	<0.1	0.4	0.2	0.6	0.7	<0.1	236,000	19	17	<0.4	36	26
Maximum Detect	0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4	0.2	0.6	0.7	ND	236,000	19	17	ND	36	26
Average Concentration *	0	12	12	13	13	45	59	102	0.05	0.05	0.05	0.12	0.058	0.17	0.32	0.05	156,176		6.8	0.15	13	15
Median Concentration *	0	12.5	12.5	12.5	12.5	45	60	105	0.05	0.05	0.05	0.1	0.05	0.15	0.3	0.05	158,000	19	6	0.15	12.5	14.5
Standard Deviation *	0	0.59	0.59	2.9	2.9	1.2	2.4	13	0	0	0	0.071	0.035	0.11	0.097	0	44,745		3.4	0.012	7.2	5.9
95% UCL (Student's-t) *	0	12.6	12.6	14.4	14.4	45.76	60.41	107.3	0.05	0.05	0.05	0.146	0.0728	0.218	0.365	0.05	175,123		8.215	0.158	16.37	17.84

* A Non Detect Multiplier of 0.5 has been applied.

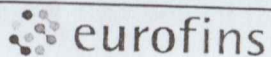
Environmental Standards

DoE, 2000, CRC Care HSL-A Residential (Low Density)
CRC Care, 2011, CRC Care HSL-B Residential (High Density)
NEPM, NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil
NEPM, NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil

tals				Organochlorine Pesticides																					
Lead	Mercury	Nickel	Zinc	2,4-DDT	4,4-DDE	α-BHC	Aldrin	β-BHC	Chlordane (α)	Chlordane (technical)	δ-BHC	DDD	DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	γ-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	o,p'-DDD
mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1	0.05	0.5	2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
530	10	210	720							4												4	4		
													640												
													180												
300	40	400	7,400															10						300	
1,200	120	1,200	60,000															20				6	10	500	

19	<0.05	7.2	38	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
50	0.09	5.5	30																						
4	<0.05	0.6	4.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
12	<0.05	20	34																						
19	<0.05	4.4	32	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	<0.05	11	43																						
16	<0.05	9.7	43	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
16	<0.05	22	68																						
32	<0.05	5.9	45	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
16	<0.05	5.7	27																						
13	<0.05	2.8	20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
14	<0.05	3.8	19																						
35	<0.05	4.4	34	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
26	<0.05	2.5	18																						
22	<0.05	1.8	13	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
30	0.06	2.2	21																						
25	<0.05	3.7	31																						
31	<0.1	9.1	45																						

18	18	18	18	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
18	2	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	<0.05	0.6	4.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
4	0.06	0.6	4.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
50	<0.1	22	68	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
50	0.09	22	68	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
22	0.032	6.8	31	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05
19	0.025	4.95	31.5	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05
11	0.018	5.9	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26.28	0.0391	9.209	37.46	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05



mgt

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : Asset Geotechnical	Contact Name: Woonchul Yang	Purchase Order : PO# 2906	Page of
Office Address : Suite 2.05 56 Delhi Road, North Ryde	Project Manager : Ilia Rostami	PROJECT Number : 5410-2	COC Number :
	Email for results : wyang@asstgeo.com.au	PROJECT Name : Kingswood NSW	Eurofins mgt quote ID :
			Data output format:

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Date	Matrix
1	Trip 1	4.10.19	Soil
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Analytes															
Suite CL7															

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	Zip-lock bag
						1	

Sample comments:

Relinquished By:	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Date & Time:: 18.04.2019	Received By: <i>[Signature]</i> Date & Time: 18/04/19 2:14PM	1 DAY ☐ 2 DAY ☐ 3 DAY ☐ 5 DAY ☒ 10 DAY ☐ Other:	☐ Courier ☐ Hand Delivered ☐ Postal Courier Consignment # :	Report number: <i>681818</i>
Signature: <i>[Signature]</i>	Signature: <i>[Signature]</i>			

Asset Geotechnical Engineering Pty Ltd
Suite 2.05 / 56 Delhi Road
North Ryde
NSW 2113



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Woochul Yang

Report 681818-S
Project name KINGSWOOD NSW
Project ID 5410-2
Received Date Oct 10, 2019

Client Sample ID			TRIP 1
Sample Matrix			Soil
Eurofins Sample No.			S19-Oc15562
Date Sampled			Oct 04, 2019
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	135
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5

Client Sample ID			TRIP 1
Sample Matrix			Soil
Eurofins Sample No.			S19-Oc15562
Date Sampled			Oct 04, 2019
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	87
p-Terphenyl-d14 (surr.)	1	%	119
Heavy Metals			
Arsenic	2	mg/kg	5.9
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	16
Copper	5	mg/kg	22
Lead	5	mg/kg	31
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	9.1
Zinc	5	mg/kg	45
% Moisture	1	%	19

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Oct 11, 2019	14 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Oct 11, 2019	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Oct 11, 2019	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Oct 11, 2019	
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Oct 11, 2019	14 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Oct 11, 2019	180 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Oct 10, 2019	14 Days

Company Name: Asset Geotechnical Engineering Pty Ltd
Address: Suite 2.05 / 56 Delhi Road
North Ryde
NSW 2113
Project Name: KINGSWOOD NSW
Project ID: 5410-2

Order No.: PO# 2906
Report #: 681818
Phone: 02 9878 6005
Fax:

Received: Oct 10, 2019 2:14 PM
Due: Oct 17, 2019
Priority: 5 Day
Contact Name: Woochul Yang

Eurofins Analytical Services Manager : Asim Khan

Sample Detail						Moisture Set	Eurofins mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	TRIP 1	Oct 04, 2019		Soil	S19-Oc15562	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	91			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14			%	82			70-130	Pass	
LCS - % Recovery									
BTEX									
Benzene			%	92			70-130	Pass	
Toluene			%	93			70-130	Pass	
Ethylbenzene			%	90			70-130	Pass	
m&p-Xylenes			%	93			70-130	Pass	
o-Xylene			%	90			70-130	Pass	
Xylenes - Total			%	92			70-130	Pass	
LCS - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions									
Naphthalene			%	129			70-130	Pass	
TRH C6-C10			%	87			70-130	Pass	
TRH >C10-C16			%	82			70-130	Pass	
LCS - % Recovery									
Polycyclic Aromatic Hydrocarbons									
Acenaphthene			%	106			70-130	Pass	
Acenaphthylene			%	118			70-130	Pass	
Anthracene			%	129			70-130	Pass	
Benz(a)anthracene			%	108			70-130	Pass	
Benzo(a)pyrene			%	107			70-130	Pass	
Benzo(b&j)fluoranthene			%	115			70-130	Pass	
Benzo(g.h.i)perylene			%	100			70-130	Pass	
Benzo(k)fluoranthene			%	109			70-130	Pass	
Chrysene			%	120			70-130	Pass	
Dibenz(a.h)anthracene			%	87			70-130	Pass	
Fluoranthene			%	119			70-130	Pass	
Fluorene			%	124			70-130	Pass	
Indeno(1.2.3-cd)pyrene			%	88			70-130	Pass	
Naphthalene			%	90			70-130	Pass	
Phenanthrene			%	127			70-130	Pass	
Pyrene			%	128			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	92			70-130	Pass	
Cadmium			%	95			70-130	Pass	
Chromium			%	95			70-130	Pass	
Copper			%	99			70-130	Pass	
Lead			%	97			70-130	Pass	
Mercury			%	104			70-130	Pass	
Nickel			%	104			70-130	Pass	
Zinc			%	100			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S19-Oc19784	NCP	%	86			70-130	Pass	
TRH C10-C14	S19-Oc06522	NCP	%	97			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S19-Oc19784	NCP	%	90			70-130	Pass	
Toluene	S19-Oc19784	NCP	%	90			70-130	Pass	
Ethylbenzene	S19-Oc19784	NCP	%	86			70-130	Pass	
m&p-Xylenes	S19-Oc19784	NCP	%	89			70-130	Pass	
o-Xylene	S19-Oc19784	NCP	%	89			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total	S19-Oc19784	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S19-Oc19784	NCP	%	107			70-130	Pass	
TRH C6-C10	S19-Oc19784	NCP	%	88			70-130	Pass	
TRH >C10-C16	S19-Oc06522	NCP	%	96			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S19-Oc17052	NCP	%	99			70-130	Pass	
Acenaphthylene	S19-Oc17052	NCP	%	112			70-130	Pass	
Anthracene	S19-Oc17052	NCP	%	110			70-130	Pass	
Benz(a)anthracene	S19-Oc17052	NCP	%	103			70-130	Pass	
Benzo(a)pyrene	S19-Oc17052	NCP	%	104			70-130	Pass	
Benzo(b&j)fluoranthene	S19-Oc17052	NCP	%	104			70-130	Pass	
Benzo(g,h,i)perylene	S19-Oc17052	NCP	%	98			70-130	Pass	
Benzo(k)fluoranthene	S19-Oc17052	NCP	%	109			70-130	Pass	
Chrysene	S19-Oc17052	NCP	%	116			70-130	Pass	
Dibenz(a,h)anthracene	S19-Oc17052	NCP	%	85			70-130	Pass	
Fluoranthene	S19-Oc17052	NCP	%	85			70-130	Pass	
Fluorene	S19-Oc17052	NCP	%	104			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S19-Oc17052	NCP	%	84			70-130	Pass	
Naphthalene	S19-Oc17052	NCP	%	102			70-130	Pass	
Phenanthrene	S19-Oc17052	NCP	%	105			70-130	Pass	
Pyrene	S19-Oc17052	NCP	%	97			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S19-Oc15248	NCP	%	86			70-130	Pass	
Cadmium	S19-Oc15248	NCP	%	89			70-130	Pass	
Chromium	S19-Oc15248	NCP	%	88			70-130	Pass	
Copper	S19-Oc15248	NCP	%	93			70-130	Pass	
Lead	S19-Oc15248	NCP	%	91			70-130	Pass	
Mercury	S19-Oc15248	NCP	%	98			70-130	Pass	
Nickel	S19-Oc15248	NCP	%	96			70-130	Pass	
Zinc	S19-Oc15248	NCP	%	93			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S19-Oc18249	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S19-Oc15658	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S19-Oc15658	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S19-Oc15658	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S19-Oc18249	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S19-Oc18249	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S19-Oc18249	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S19-Oc18249	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S19-Oc18249	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S19-Oc18249	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S19-Oc18249	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S19-Oc18249	NCP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S19-Oc15658	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S19-Oc15658	NCP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S19-Oc15658	NCP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S19-Oc17050	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S19-Oc12726	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Cadmium	S19-Oc12726	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S19-Oc12726	NCP	mg/kg	8.6	7.5	14	30%	Pass
Copper	S19-Oc12726	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	S19-Oc12726	NCP	mg/kg	8.8	8.3	6.0	30%	Pass
Mercury	S19-Oc12726	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	S19-Oc12726	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Zinc	S19-Oc12726	NCP	mg/kg	6.6	5.5	19	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S19-Oc15453	NCP	%	9.9	10	1.0	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Asim Khan	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)



Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

CLIENT DETAILS

Contact: Woonchul Yang
 Client: ASSET GEOTECHNICAL ENGINEERING PTY LTD
 Address: SUITE 2.05
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Project: **5410-2**
 Order Number: **PO# 2905**
 Samples: 17

LABORATORY DETAILS

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SGS Reference: **SE198610 R0**
 Date Received: 04 Oct 2019
 Date Reported: 17 Oct 2019

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES



Dong LIANG
 Metals/Inorganics Team Leader



Huong CRAWFORD
 Production Manager



Ly Kim HA
 Organic Section Head



Ravee SIVASUBRAMANIAM
 Hygiene Team Leader

Parameter	Units	LOR	Sample Number	SE198610.001	SE198610.002	SE198610.003	SE198610.004
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019
			Sample Name	BH1 0.3-0.5	BH1 1.3-1.5	BH2 0.35-0.55	BH2 1.2-1.3

VOC's in Soil Method: AN433 Tested: 13/10/2019

Monocyclic Aromatic Hydrocarbons

Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	0.4	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	0.2	<0.1	<0.1

Polycyclic VOCs

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
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Surrogates

d4-1,2-dichloroethane (Surrogate)	%	-	109	100	110	111
d8-toluene (Surrogate)	%	-	91	85	94	95
Bromofluorobenzene (Surrogate)	%	-	92	89	94	93

Totals

Total Xylenes	mg/kg	0.3	<0.3	0.6	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	0.7	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 13/10/2019

TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20

Surrogates

d4-1,2-dichloroethane (Surrogate)	%	-	109	100	110	111
d8-toluene (Surrogate)	%	-	91	85	94	95
Bromofluorobenzene (Surrogate)	%	-	92	89	94	93

VPH F Bands

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

Parameter	Sample Number					
	Sample Matrix					
	Sample Date					
	Sample Name					
	Sample Number	SE198610.001	SE198610.002	SE198610.003	SE198610.004	
	Sample Matrix	Soil	Soil	Soil	Soil	
	Sample Date	04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019	
	Sample Name	BH1 0.3-0.5	BH1 1.3-1.5	BH2 0.35-0.55	BH2 1.2-1.3	
Units	LOR					

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 13/10/2019

TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210

TRH F Bands

TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 13/10/2019

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8

Surrogates

d5-nitrobenzene (Surrogate)	%	-	90	0	90	94
2-fluorobiphenyl (Surrogate)	%	-	94	92	86	100
d14-p-terphenyl (Surrogate)	%	-	92	94	90	92

OC Pesticides in Soil Method: AN420 Tested: 13/10/2019

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	-	<0.1	-
Alpha BHC	mg/kg	0.1	<0.1	-	<0.1	-
Lindane	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor	mg/kg	0.1	<0.1	-	<0.1	-
Aldrin	mg/kg	0.1	<0.1	-	<0.1	-
Beta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Delta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor epoxide	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
Gamma Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
trans-Nonachlor	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Dieldrin	mg/kg	0.2	<0.2	-	<0.2	-
Endrin	mg/kg	0.2	<0.2	-	<0.2	-

Parameter	Sample Number		SE198610.001	SE198610.002	SE198610.003	SE198610.004
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019
	Sample Name		BH1 0.3-0.5	BH1 1.3-1.5	BH2 0.35-0.55	BH2 1.2-1.3
Units	LOR					

OC Pesticides in Soil Method: AN420 Tested: 13/10/2019 (continued)

o,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Beta Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
p,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Endosulfan sulphate	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Aldehyde	mg/kg	0.1	<0.1	-	<0.1	-
Methoxychlor	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Ketone	mg/kg	0.1	<0.1	-	<0.1	-
Isodrin	mg/kg	0.1	<0.1	-	<0.1	-
Mirex	mg/kg	0.1	<0.1	-	<0.1	-
Total CLP OC Pesticides	mg/kg	1	<1	-	<1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	89	-	86	-
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OP Pesticides in Soil Method: AN420 Tested: 13/10/2019

Dichlorvos	mg/kg	0.5	<0.5	-	<0.5	-
Dimethoate	mg/kg	0.5	<0.5	-	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	-	<0.5	-
Fenitrothion	mg/kg	0.2	<0.2	-	<0.2	-
Malathion	mg/kg	0.2	<0.2	-	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	-	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	-	<0.2	-
Bromophos Ethyl	mg/kg	0.2	<0.2	-	<0.2	-
Methidathion	mg/kg	0.5	<0.5	-	<0.5	-
Ethion	mg/kg	0.2	<0.2	-	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	<0.2	-
Total OP Pesticides*	mg/kg	1.7	<1.7	-	<1.7	-

Surrogates

2-fluorobiphenyl (Surrogate)	%	-	94	-	86	-
d14-p-terphenyl (Surrogate)	%	-	92	-	90	-

PCBs in Soil Method: AN420 Tested: 13/10/2019

Arochlor 1016	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1221	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1232	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1242	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1248	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1254	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1260	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1262	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1268	mg/kg	0.2	<0.2	-	<0.2	-
Total PCBs (Arochlors)	mg/kg	1	<1	-	<1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	89	-	86	-
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Parameter	Units	LOR
Sample Number	SE198610.001	SE198610.002
Sample Matrix	Soil	Soil
Sample Date	04 Oct 2019	04 Oct 2019
Sample Name	BH1 0.3-0.5	BH1 1.3-1.5
		BH2 0.35-0.55
		BH2 1.2-1.3

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 15/10/2019

Arsenic, As	mg/kg	1	8	6	3	5
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	13	14	3.6	22
Copper, Cu	mg/kg	0.5	20	15	7.1	14
Nickel, Ni	mg/kg	0.5	7.2	5.5	0.6	20
Lead, Pb	mg/kg	1	19	50	4	12
Zinc, Zn	mg/kg	2	38	30	4.4	34

Mercury in Soil Method: AN312 Tested: 15/10/2019

Mercury	mg/kg	0.05	<0.05	0.09	<0.05	<0.05
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Moisture Content Method: AN002 Tested: 13/10/2019

% Moisture	%w/w	1	17.0	13.5	20.5	23.6
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Fibre Identification in soil Method: AN602 Tested: 15/10/2019

FibreID

Asbestos Detected	No unit	-	No	-	No	-
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SemiQuant

Estimated Fibres*	%w/w	0.01	<0.01	-	<0.01	-
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Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE198610.005 Soil 04 Oct 2019 BH3 0.3-0.7	SE198610.006 Soil 04 Oct 2019 BH3 1.9-2.1	SE198610.007 Soil 04 Oct 2019 BH4 0.3-0.6	SE198610.008 Soil 04 Oct 2019 BH4 1.7-1.9
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VOC's in Soil Method: AN433 Tested: 13/10/2019

Monocyclic Aromatic Hydrocarbons

Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Polycyclic VOCs

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
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Surrogates

d4-1,2-dichloroethane (Surrogate)	%	-	105	111	105	111
d8-toluene (Surrogate)	%	-	87	88	89	91
Bromofluorobenzene (Surrogate)	%	-	89	91	88	90

Totals

Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 13/10/2019

TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20

Surrogates

d4-1,2-dichloroethane (Surrogate)	%	-	105	111	105	111
d8-toluene (Surrogate)	%	-	87	88	89	91
Bromofluorobenzene (Surrogate)	%	-	89	91	88	90

VPH F Bands

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

Parameter	Units	LOR	Sample Number	SE198610.005	SE198610.006	SE198610.007	SE198610.008
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019
			Sample Name	BH3 0.3-0.7	BH3 1.9-2.1	BH4 0.3-0.6	BH4 1.7-1.9

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 13/10/2019

TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210

TRH F Bands

TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 13/10/2019

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.3
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.1	<0.1	<0.1	0.4
Pyrene	mg/kg	0.1	0.1	<0.1	<0.1	0.4
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	0.2
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	0.2
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	2.1
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	2.1

Surrogates

d5-nitrobenzene (Surrogate)	%	-	96	92	100	96
2-fluorobiphenyl (Surrogate)	%	-	94	92	92	92
d14-p-terphenyl (Surrogate)	%	-	96	94	96	90

OC Pesticides in Soil Method: AN420 Tested: 13/10/2019

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	-	<0.1	-
Alpha BHC	mg/kg	0.1	<0.1	-	<0.1	-
Lindane	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor	mg/kg	0.1	<0.1	-	<0.1	-
Aldrin	mg/kg	0.1	<0.1	-	<0.1	-
Beta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Delta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor epoxide	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
Gamma Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
trans-Nonachlor	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Dieldrin	mg/kg	0.2	<0.2	-	<0.2	-
Endrin	mg/kg	0.2	<0.2	-	<0.2	-

Parameter	Sample Number		SE198610.005	SE198610.006	SE198610.007	SE198610.008
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019
	Sample Name		BH3 0.3-0.7	BH3 1.9-2.1	BH4 0.3-0.6	BH4 1.7-1.9
Units	LOR					

OC Pesticides in Soil Method: AN420 Tested: 13/10/2019 (continued)

o,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Beta Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
p,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Endosulfan sulphate	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Aldehyde	mg/kg	0.1	<0.1	-	<0.1	-
Methoxychlor	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Ketone	mg/kg	0.1	<0.1	-	<0.1	-
Isodrin	mg/kg	0.1	<0.1	-	<0.1	-
Mirex	mg/kg	0.1	<0.1	-	<0.1	-
Total CLP OC Pesticides	mg/kg	1	<1	-	<1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	97	-	89	-
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OP Pesticides in Soil Method: AN420 Tested: 13/10/2019

Dichlorvos	mg/kg	0.5	<0.5	-	<0.5	-
Dimethoate	mg/kg	0.5	<0.5	-	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	-	<0.5	-
Fenitrothion	mg/kg	0.2	<0.2	-	<0.2	-
Malathion	mg/kg	0.2	<0.2	-	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	-	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	-	<0.2	-
Bromophos Ethyl	mg/kg	0.2	<0.2	-	<0.2	-
Methidathion	mg/kg	0.5	<0.5	-	<0.5	-
Ethion	mg/kg	0.2	<0.2	-	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	<0.2	-
Total OP Pesticides*	mg/kg	1.7	<1.7	-	<1.7	-

Surrogates

2-fluorobiphenyl (Surrogate)	%	-	94	-	92	-
d14-p-terphenyl (Surrogate)	%	-	96	-	96	-

PCBs in Soil Method: AN420 Tested: 13/10/2019

Arochlor 1016	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1221	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1232	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1242	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1248	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1254	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1260	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1262	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1268	mg/kg	0.2	<0.2	-	<0.2	-
Total PCBs (Arochlors)	mg/kg	1	<1	-	<1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	97	-	89	-
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Parameter	Units	LOR	Sample Number	SE198610.005	SE198610.006	SE198610.007	SE198610.008
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019
			Sample Name	BH3 0.3-0.7	BH3 1.9-2.1	BH4 0.3-0.6	BH4 1.7-1.9

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 15/10/2019

Arsenic, As	mg/kg	1	5	9	17	6
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	8.6	13	10	36
Copper, Cu	mg/kg	0.5	14	21	25	26
Nickel, Ni	mg/kg	0.5	4.4	11	9.7	22
Lead, Pb	mg/kg	1	19	13	16	16
Zinc, Zn	mg/kg	2	32	43	43	68

Mercury in Soil Method: AN312 Tested: 15/10/2019

Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05
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Moisture Content Method: AN002 Tested: 13/10/2019

% Moisture	%w/w	1	18.1	12.0	22.0	18.6
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Fibre Identification in soil Method: AN602 Tested: 15/10/2019

FibreID

Asbestos Detected	No unit	-	No	-	No	-
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SemiQuant

Estimated Fibres*	%w/w	0.01	<0.01	-	<0.01	-
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Parameter	Units	LOR	Sample Number	SE198610.009	SE198610.010	SE198610.011	SE198610.012
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019
			Sample Name	BH5 0.2-0.5	BH5 1.0-1.2	BH6 0.2-0.5	BH6 0.7-1.0

VOC's in Soil Method: AN433 Tested: 13/10/2019

Monocyclic Aromatic Hydrocarbons

Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Polycyclic VOCs

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
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Surrogates

d4-1,2-dichloroethane (Surrogate)	%	-	109	110	121	107
d8-toluene (Surrogate)	%	-	93	95	99	88
Bromofluorobenzene (Surrogate)	%	-	91	89	95	86

Totals

Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 13/10/2019

TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20

Surrogates

d4-1,2-dichloroethane (Surrogate)	%	-	109	110	121	107
d8-toluene (Surrogate)	%	-	93	95	99	88
Bromofluorobenzene (Surrogate)	%	-	91	89	95	86

VPH F Bands

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

Parameter	Sample Number SE198610.009 SE198610.010 SE198610.011 SE198610.012					
	Sample Matrix Soil Soil Soil Soil					
	Sample Date 04 Oct 2019 04 Oct 2019 04 Oct 2019 04 Oct 2019					
	Sample Name BH5 0.2-0.5 BH5 1.0-1.2 BH6 0.2-0.5 BH6 0.7-1.0					
Units	LOR					

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 13/10/2019

TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210

TRH F Bands

TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 13/10/2019

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.3	0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	0.3	0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	1.5	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	1.5	<0.8	<0.8	<0.8

Surrogates

d5-nitrobenzene (Surrogate)	%	-	94	88	94	86
2-fluorobiphenyl (Surrogate)	%	-	92	80	94	90
d14-p-terphenyl (Surrogate)	%	-	96	92	90	94

OC Pesticides in Soil Method: AN420 Tested: 13/10/2019

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	-	<0.1	-
Alpha BHC	mg/kg	0.1	<0.1	-	<0.1	-
Lindane	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor	mg/kg	0.1	<0.1	-	<0.1	-
Aldrin	mg/kg	0.1	<0.1	-	<0.1	-
Beta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Delta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor epoxide	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
Gamma Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
trans-Nonachlor	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Dieldrin	mg/kg	0.2	<0.2	-	<0.2	-
Endrin	mg/kg	0.2	<0.2	-	<0.2	-

Parameter	Sample Number		SE198610.009	SE198610.010	SE198610.011	SE198610.012
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019
	Sample Name		BH5 0.2-0.5	BH5 1.0-1.2	BH6 0.2-0.5	BH6 0.7-1.0
	Units	LOR				

OC Pesticides in Soil Method: AN420 Tested: 13/10/2019 (continued)

o,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Beta Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
p,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Endosulfan sulphate	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Aldehyde	mg/kg	0.1	<0.1	-	<0.1	-
Methoxychlor	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Ketone	mg/kg	0.1	<0.1	-	<0.1	-
Isodrin	mg/kg	0.1	<0.1	-	<0.1	-
Mirex	mg/kg	0.1	<0.1	-	<0.1	-
Total CLP OC Pesticides	mg/kg	1	<1	-	<1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	86	-	96	-
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OP Pesticides in Soil Method: AN420 Tested: 13/10/2019

Dichlorvos	mg/kg	0.5	<0.5	-	<0.5	-
Dimethoate	mg/kg	0.5	<0.5	-	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	-	<0.5	-
Fenitrothion	mg/kg	0.2	<0.2	-	<0.2	-
Malathion	mg/kg	0.2	<0.2	-	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	-	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	-	<0.2	-
Bromophos Ethyl	mg/kg	0.2	<0.2	-	<0.2	-
Methidathion	mg/kg	0.5	<0.5	-	<0.5	-
Ethion	mg/kg	0.2	<0.2	-	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	<0.2	-
Total OP Pesticides*	mg/kg	1.7	<1.7	-	<1.7	-

Surrogates

2-fluorobiphenyl (Surrogate)	%	-	92	-	94	-
d14-p-terphenyl (Surrogate)	%	-	96	-	90	-

PCBs in Soil Method: AN420 Tested: 13/10/2019

Arochlor 1016	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1221	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1232	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1242	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1248	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1254	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1260	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1262	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1268	mg/kg	0.2	<0.2	-	<0.2	-
Total PCBs (Arochlors)	mg/kg	1	<1	-	<1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	86	-	96	-
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Parameter	Units	LOR	Sample Number	SE198610.009	SE198610.010	SE198610.011	SE198610.012
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019
			Sample Name	BH5 0.2-0.5	BH5 1.0-1.2	BH6 0.2-0.5	BH6 0.7-1.0

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 15/10/2019

Arsenic, As	mg/kg	1	11	8	4	7
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	12	13	5.6	18
Copper, Cu	mg/kg	0.5	18	17	6.4	13
Nickel, Ni	mg/kg	0.5	5.9	5.7	2.8	3.8
Lead, Pb	mg/kg	1	32	16	13	14
Zinc, Zn	mg/kg	2	45	27	20	19

Mercury in Soil Method: AN312 Tested: 15/10/2019

Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05
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Moisture Content Method: AN002 Tested: 13/10/2019

% Moisture	%w/w	1	12.7	19.0	6.7	13.3
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Fibre Identification in soil Method: AN602 Tested: 15/10/2019

FibreID

Asbestos Detected	No unit	-	No	-	No	-
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SemiQuant

Estimated Fibres*	%w/w	0.01	<0.01	-	<0.01	-
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Parameter	Units	LOR	Sample Number	SE198610.013	SE198610.014	SE198610.015	SE198610.016
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019
			Sample Name	BH7 0.2-0.4	BH7 0.4-0.6	BH8 0.2-0.5	BH8 0.8-1.0

VOC's in Soil Method: AN433 Tested: 13/10/2019

Monocyclic Aromatic Hydrocarbons

Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Polycyclic VOCs

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
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Surrogates

d4-1,2-dichloroethane (Surrogate)	%	-	109	112	108	117
d8-toluene (Surrogate)	%	-	91	96	92	100
Bromofluorobenzene (Surrogate)	%	-	90	93	87	92

Totals

Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 13/10/2019

TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20

Surrogates

d4-1,2-dichloroethane (Surrogate)	%	-	109	112	108	117
d8-toluene (Surrogate)	%	-	91	96	92	100
Bromofluorobenzene (Surrogate)	%	-	90	93	87	92

VPH F Bands

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

Parameter	Sample Number		SE198610.013	SE198610.014	SE198610.015	SE198610.016
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019
	Sample Name		BH7 0.2-0.4	BH7 0.4-0.6	BH8 0.2-0.5	BH8 0.8-1.0
Units	LOR					

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 13/10/2019

TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210

TRH F Bands

TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 13/10/2019

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8

Surrogates

d5-nitrobenzene (Surrogate)	%	-	94	94	104	96
2-fluorobiphenyl (Surrogate)	%	-	86	92	100	96
d14-p-terphenyl (Surrogate)	%	-	92	88	98	88

OC Pesticides in Soil Method: AN420 Tested: 13/10/2019

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	-	<0.1	-
Alpha BHC	mg/kg	0.1	<0.1	-	<0.1	-
Lindane	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor	mg/kg	0.1	<0.1	-	<0.1	-
Aldrin	mg/kg	0.1	<0.1	-	<0.1	-
Beta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Delta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor epoxide	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
Gamma Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
trans-Nonachlor	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Dieldrin	mg/kg	0.2	<0.2	-	<0.2	-
Endrin	mg/kg	0.2	<0.2	-	<0.2	-

Parameter	Sample Number					
	Sample Matrix					
	Sample Date					
	Sample Name					
	SE198610.013	SE198610.014	SE198610.015	SE198610.016		
	Soil	Soil	Soil	Soil		
	04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019		
	BH7 0.2-0.4	BH7 0.4-0.6	BH8 0.2-0.5	BH8 0.8-1.0		
Units	LOR					

OC Pesticides in Soil Method: AN420 Tested: 13/10/2019 (continued)

o,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Beta Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
p,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Endosulfan sulphate	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Aldehyde	mg/kg	0.1	<0.1	-	<0.1	-
Methoxychlor	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Ketone	mg/kg	0.1	<0.1	-	<0.1	-
Isodrin	mg/kg	0.1	<0.1	-	<0.1	-
Mirex	mg/kg	0.1	<0.1	-	<0.1	-
Total CLP OC Pesticides	mg/kg	1	<1	-	<1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	91	-	95	-
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OP Pesticides in Soil Method: AN420 Tested: 13/10/2019

Dichlorvos	mg/kg	0.5	<0.5	-	<0.5	-
Dimethoate	mg/kg	0.5	<0.5	-	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	-	<0.5	-
Fenitrothion	mg/kg	0.2	<0.2	-	<0.2	-
Malathion	mg/kg	0.2	<0.2	-	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	-	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	-	<0.2	-
Bromophos Ethyl	mg/kg	0.2	<0.2	-	<0.2	-
Methidathion	mg/kg	0.5	<0.5	-	<0.5	-
Ethion	mg/kg	0.2	<0.2	-	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	<0.2	-
Total OP Pesticides*	mg/kg	1.7	<1.7	-	<1.7	-

Surrogates

2-fluorobiphenyl (Surrogate)	%	-	86	-	100	-
d14-p-terphenyl (Surrogate)	%	-	92	-	98	-

PCBs in Soil Method: AN420 Tested: 13/10/2019

Arochlor 1016	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1221	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1232	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1242	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1248	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1254	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1260	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1262	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1268	mg/kg	0.2	<0.2	-	<0.2	-
Total PCBs (Arochlors)	mg/kg	1	<1	-	<1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	91	-	95	-
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Parameter	Units	LOR	Sample Number	SE198610.013	SE198610.014	SE198610.015	SE198610.016
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	04 Oct 2019	04 Oct 2019	04 Oct 2019	04 Oct 2019
			Sample Name	BH7 0.2-0.4	BH7 0.4-0.6	BH8 0.2-0.5	BH8 0.8-1.0

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 15/10/2019

Arsenic, As	mg/kg	1	10	6	4	4
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	11	17	11	6.7
Copper, Cu	mg/kg	0.5	16	10	14	5.8
Nickel, Ni	mg/kg	0.5	4.4	2.5	1.8	2.2
Lead, Pb	mg/kg	1	35	26	22	30
Zinc, Zn	mg/kg	2	34	18	13	21

Mercury in Soil Method: AN312 Tested: 15/10/2019

Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	0.06
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Moisture Content Method: AN002 Tested: 13/10/2019

% Moisture	%w/w	1	11.6	12.9	17.6	10.6
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Fibre Identification in soil Method: AN602 Tested: 15/10/2019

FibreID

Asbestos Detected	No unit	-	No	-	No	-
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SemiQuant

Estimated Fibres*	%w/w	0.01	<0.01	-	<0.01	-
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		Sample Number	SE198610.017
		Sample Matrix	Soil
		Sample Date	04 Oct 2019
		Sample Name	Dup 1
Parameter	Units	LOR	

VOC's in Soil Method: AN433 Tested: 13/10/2019

Monocyclic Aromatic Hydrocarbons

Benzene	mg/kg	0.1	<0.1
Toluene	mg/kg	0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2
o-xylene	mg/kg	0.1	<0.1

Polycyclic VOCs

Naphthalene	mg/kg	0.1	<0.1
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Surrogates

d4-1,2-dichloroethane (Surrogate)	%	-	113
d8-toluene (Surrogate)	%	-	91
Bromofluorobenzene (Surrogate)	%	-	92

Totals

Total Xylenes	mg/kg	0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 13/10/2019

TRH C6-C10	mg/kg	25	<25
TRH C6-C9	mg/kg	20	<20

Surrogates

d4-1,2-dichloroethane (Surrogate)	%	-	113
d8-toluene (Surrogate)	%	-	91
Bromofluorobenzene (Surrogate)	%	-	92

		Sample Number	SE198610.017
		Sample Matrix	Soil
		Sample Date	04 Oct 2019
		Sample Name	Dup 1
Parameter	Units	LOR	

Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 13/10/2019 (continued)

VPH F Bands

Benzene (F0)	mg/kg	0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 13/10/2019

TRH C10-C14	mg/kg	20	<20
TRH C15-C28	mg/kg	45	<45
TRH C29-C36	mg/kg	45	<45
TRH C37-C40	mg/kg	100	<100
TRH C10-C36 Total	mg/kg	110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210

TRH F Bands

TRH >C10-C16	mg/kg	25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 13/10/2019

Naphthalene	mg/kg	0.1	-
2-methylnaphthalene	mg/kg	0.1	-
1-methylnaphthalene	mg/kg	0.1	-
Acenaphthylene	mg/kg	0.1	-
Acenaphthene	mg/kg	0.1	-
Fluorene	mg/kg	0.1	-
Phenanthrene	mg/kg	0.1	-
Anthracene	mg/kg	0.1	-
Fluoranthene	mg/kg	0.1	-
Pyrene	mg/kg	0.1	-
Benzo(a)anthracene	mg/kg	0.1	-
Chrysene	mg/kg	0.1	-
Benzo(b&j)fluoranthene	mg/kg	0.1	-
Benzo(k)fluoranthene	mg/kg	0.1	-
Benzo(a)pyrene	mg/kg	0.1	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-
Dibenzo(ah)anthracene	mg/kg	0.1	-
Benzo(ghi)perylene	mg/kg	0.1	-
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	-
Total PAH (18)	mg/kg	0.8	-
Total PAH (NEPM/WHO 16)	mg/kg	0.8	-

		Sample Number	SE198610.017
		Sample Matrix	Soil
		Sample Date	04 Oct 2019
		Sample Name	Dup 1
Parameter	Units	LOR	

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 13/10/2019 (continued)
Surrogates

d5-nitrobenzene (Surrogate)	%	-	-
2-fluorobiphenyl (Surrogate)	%	-	-
d14-p-terphenyl (Surrogate)	%	-	-

OC Pesticides in Soil Method: AN420 Tested: 13/10/2019

Hexachlorobenzene (HCB)	mg/kg	0.1	-
Alpha BHC	mg/kg	0.1	-
Lindane	mg/kg	0.1	-
Heptachlor	mg/kg	0.1	-
Aldrin	mg/kg	0.1	-
Beta BHC	mg/kg	0.1	-
Delta BHC	mg/kg	0.1	-
Heptachlor epoxide	mg/kg	0.1	-
o,p'-DDE	mg/kg	0.1	-
Alpha Endosulfan	mg/kg	0.2	-
Gamma Chlordane	mg/kg	0.1	-
Alpha Chlordane	mg/kg	0.1	-
trans-Nonachlor	mg/kg	0.1	-
p,p'-DDE	mg/kg	0.1	-
Dieldrin	mg/kg	0.2	-
Endrin	mg/kg	0.2	-
o,p'-DDD	mg/kg	0.1	-
o,p'-DDT	mg/kg	0.1	-
Beta Endosulfan	mg/kg	0.2	-
p,p'-DDD	mg/kg	0.1	-
p,p'-DDT	mg/kg	0.1	-
Endosulfan sulphate	mg/kg	0.1	-
Endrin Aldehyde	mg/kg	0.1	-
Methoxychlor	mg/kg	0.1	-
Endrin Ketone	mg/kg	0.1	-
Isodrin	mg/kg	0.1	-
Mirex	mg/kg	0.1	-
Total CLP OC Pesticides	mg/kg	1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-
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		Sample Number	SE198610.017
		Sample Matrix	Soil
		Sample Date	04 Oct 2019
		Sample Name	Dup 1
Parameter	Units	LOR	

OP Pesticides in Soil Method: AN420 Tested: 13/10/2019

Dichlorvos	mg/kg	0.5	-
Dimethoate	mg/kg	0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	-
Fenitrothion	mg/kg	0.2	-
Malathion	mg/kg	0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-
Bromophos Ethyl	mg/kg	0.2	-
Methidathion	mg/kg	0.5	-
Ethion	mg/kg	0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-
Total OP Pesticides*	mg/kg	1.7	-

Surrogates

2-fluorobiphenyl (Surrogate)	%	-	-
d14-p-terphenyl (Surrogate)	%	-	-

PCBs in Soil Method: AN420 Tested: 13/10/2019

Arochlor 1016	mg/kg	0.2	-
Arochlor 1221	mg/kg	0.2	-
Arochlor 1232	mg/kg	0.2	-
Arochlor 1242	mg/kg	0.2	-
Arochlor 1248	mg/kg	0.2	-
Arochlor 1254	mg/kg	0.2	-
Arochlor 1260	mg/kg	0.2	-
Arochlor 1262	mg/kg	0.2	-
Arochlor 1268	mg/kg	0.2	-
Total PCBs (Arochlors)	mg/kg	1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-
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Sample Number SE198610.017
Sample Matrix Soil
Sample Date 04 Oct 2019
Sample Name Dup 1

Parameter Units LOR

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 15/10/2019

Arsenic, As	mg/kg	1	4
Cadmium, Cd	mg/kg	0.3	<0.3
Chromium, Cr	mg/kg	0.5	11
Copper, Cu	mg/kg	0.5	13
Nickel, Ni	mg/kg	0.5	3.7
Lead, Pb	mg/kg	1	25
Zinc, Zn	mg/kg	2	31

Mercury in Soil Method: AN312 Tested: 15/10/2019

Mercury	mg/kg	0.05	<0.05
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Moisture Content Method: AN002 Tested: 13/10/2019

% Moisture	%w/w	1	15.8
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Fibre Identification in soil Method: AN602 Tested: 17/10/2019

FibreID

Asbestos Detected	No unit	-	-
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SemiQuant

Estimated Fibres*	%w/w	0.01	-
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MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Mercury in Soil Method: ME-(AU)-[ENV]AN312

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB185381	mg/kg	0.05	<0.05	0%	97%	100%

Moisture Content Method: ME-(AU)-[ENV]AN002

Parameter	QC Reference	Units	LOR	DUP %RPD
% Moisture	LB185198	%w/w	1	7 - 8%

OC Pesticides in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Hexachlorobenzene (HCB)	LB185193	mg/kg	0.1	<0.1	0%	NA
Alpha BHC	LB185193	mg/kg	0.1	<0.1	0%	NA
Lindane	LB185193	mg/kg	0.1	<0.1	0%	NA
Heptachlor	LB185193	mg/kg	0.1	<0.1	0%	93%
Aldrin	LB185193	mg/kg	0.1	<0.1	0%	89%
Beta BHC	LB185193	mg/kg	0.1	<0.1	0%	NA
Delta BHC	LB185193	mg/kg	0.1	<0.1	0%	87%
Heptachlor epoxide	LB185193	mg/kg	0.1	<0.1	0%	NA
o,p'-DDE	LB185193	mg/kg	0.1	<0.1	0%	NA
Alpha Endosulfan	LB185193	mg/kg	0.2	<0.2	0%	NA
Gamma Chlordane	LB185193	mg/kg	0.1	<0.1	0%	NA
Alpha Chlordane	LB185193	mg/kg	0.1	<0.1	0%	NA
trans-Nonachlor	LB185193	mg/kg	0.1	<0.1	0%	NA
p,p'-DDE	LB185193	mg/kg	0.1	<0.1	0%	NA
Dieldrin	LB185193	mg/kg	0.2	<0.2	0%	93%
Endrin	LB185193	mg/kg	0.2	<0.2	0%	98%
o,p'-DDD	LB185193	mg/kg	0.1	<0.1	0%	NA
o,p'-DDT	LB185193	mg/kg	0.1	<0.1	0%	NA
Beta Endosulfan	LB185193	mg/kg	0.2	<0.2	0%	NA
p,p'-DDD	LB185193	mg/kg	0.1	<0.1	0%	NA
p,p'-DDT	LB185193	mg/kg	0.1	<0.1	0%	78%
Endosulfan sulphate	LB185193	mg/kg	0.1	<0.1	0%	NA
Endrin Aldehyde	LB185193	mg/kg	0.1	<0.1	0%	NA
Methoxychlor	LB185193	mg/kg	0.1	<0.1	0%	NA
Endrin Ketone	LB185193	mg/kg	0.1	<0.1	0%	NA
Isodrin	LB185193	mg/kg	0.1	<0.1	0%	NA
Mirex	LB185193	mg/kg	0.1	<0.1	0%	NA
Total CLP OC Pesticides	LB185193	mg/kg	1	<1	0%	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB185193	%	-	77%	3%	73%

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

OP Pesticides in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dichlorvos	LB185193	mg/kg	0.5	<0.5	0%	102%	64%
Dimethoate	LB185193	mg/kg	0.5	<0.5	0%	NA	NA
Diazinon (Dimpylate)	LB185193	mg/kg	0.5	<0.5	0%	107%	99%
Fenitrothion	LB185193	mg/kg	0.2	<0.2	0%	NA	NA
Malathion	LB185193	mg/kg	0.2	<0.2	0%	NA	NA
Chlorpyrifos (Chlorpyrifos Ethyl)	LB185193	mg/kg	0.2	<0.2	0%	110%	103%
Parathion-ethyl (Parathion)	LB185193	mg/kg	0.2	<0.2	0%	NA	NA
Bromophos Ethyl	LB185193	mg/kg	0.2	<0.2	0%	NA	NA
Methidathion	LB185193	mg/kg	0.5	<0.5	0%	NA	NA
Ethion	LB185193	mg/kg	0.2	<0.2	0%	80%	78%
Azinphos-methyl (Guthion)	LB185193	mg/kg	0.2	<0.2	0%	NA	NA
Total OP Pesticides*	LB185193	mg/kg	1.7	<1.7	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
2-fluorobiphenyl (Surrogate)	LB185193	%	-	104%	7%	94%	98%
d14-p-terphenyl (Surrogate)	LB185193	%	-	100%	2%	92%	94%

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB185193	mg/kg	0.1	<0.1	0%	124%	120%
2-methylnaphthalene	LB185193	mg/kg	0.1	<0.1	0%	NA	NA
1-methylnaphthalene	LB185193	mg/kg	0.1	<0.1	0%	NA	NA
Acenaphthylene	LB185193	mg/kg	0.1	<0.1	0%	129%	123%
Acenaphthene	LB185193	mg/kg	0.1	<0.1	0%	121%	118%
Fluorene	LB185193	mg/kg	0.1	<0.1	0%	NA	NA
Phenanthrene	LB185193	mg/kg	0.1	<0.1	0%	136%	129%
Anthracene	LB185193	mg/kg	0.1	<0.1	0%	124%	125%
Fluoranthene	LB185193	mg/kg	0.1	<0.1	0%	129%	127%
Pyrene	LB185193	mg/kg	0.1	<0.1	0%	132%	126%
Benzo(a)anthracene	LB185193	mg/kg	0.1	<0.1	0%	NA	NA
Chrysene	LB185193	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(b&j)fluoranthene	LB185193	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(k)fluoranthene	LB185193	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(a)pyrene	LB185193	mg/kg	0.1	<0.1	0%	129%	132%
Indeno(1,2,3-cd)pyrene	LB185193	mg/kg	0.1	<0.1	0%	NA	NA
Dibenzo(ah)anthracene	LB185193	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(ghi)perylene	LB185193	mg/kg	0.1	<0.1	0%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=0	LB185193	TEQ (mg/kg)	0.2	<0.2	0%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=LOR	LB185193	TEQ (mg/kg)	0.3	<0.3	0%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	LB185193	TEQ (mg/kg)	0.2	<0.2	0%	NA	NA
Total PAH (18)	LB185193	mg/kg	0.8	<0.8	0%	NA	NA
Total PAH (NEPM/WHO 16)	LB185193	mg/kg	0.8	<0.8			

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d5-nitrobenzene (Surrogate)	LB185193	%	-	96%	2%	96%	100%
2-fluorobiphenyl (Surrogate)	LB185193	%	-	104%	7%	94%	98%
d14-p-terphenyl (Surrogate)	LB185193	%	-	100%	2%	92%	94%

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

PCBs in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Arochlor 1016	LB185193	mg/kg	0.2	<0.2	0%	NA
Arochlor 1221	LB185193	mg/kg	0.2	<0.2	0%	NA
Arochlor 1232	LB185193	mg/kg	0.2	<0.2	0%	NA
Arochlor 1242	LB185193	mg/kg	0.2	<0.2	0%	NA
Arochlor 1248	LB185193	mg/kg	0.2	<0.2	0%	NA
Arochlor 1254	LB185193	mg/kg	0.2	<0.2	0%	NA
Arochlor 1260	LB185193	mg/kg	0.2	<0.2	0%	88%
Arochlor 1262	LB185193	mg/kg	0.2	<0.2	0%	NA
Arochlor 1268	LB185193	mg/kg	0.2	<0.2	0%	NA
Total PCBs (Arochlors)	LB185193	mg/kg	1	<1	0%	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB185193	%	-	77%	3%	77%

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: ME-(AU)-[ENV]AN040/AN320

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB185367	mg/kg	1	<1	14 - 20%	104%	83%
Cadmium, Cd	LB185367	mg/kg	0.3	<0.3	0%	82%	82%
Chromium, Cr	LB185367	mg/kg	0.5	<0.5	14 - 16%	96%	88%
Copper, Cu	LB185367	mg/kg	0.5	<0.5	4 - 8%	102%	85%
Nickel, Ni	LB185367	mg/kg	0.5	<0.5	10 - 15%	101%	85%
Lead, Pb	LB185367	mg/kg	1	<1	3 - 15%	105%	75%
Zinc, Zn	LB185367	mg/kg	2	<2.0	11%	102%	81%

TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C10-C14	LB185193	mg/kg	20	<20	0%	88%	95%
TRH C15-C28	LB185193	mg/kg	45	<45	0%	90%	75%
TRH C29-C36	LB185193	mg/kg	45	<45	0%	75%	88%
TRH C37-C40	LB185193	mg/kg	100	<100	0%	NA	NA
TRH C10-C36 Total	LB185193	mg/kg	110	<110	0%	NA	NA
TRH C10-C40 Total (F bands)	LB185193	mg/kg	210	<210	0%	NA	NA

TRH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH >C10-C16	LB185193	mg/kg	25	<25	0%	93%	88%
TRH >C10-C16 - Naphthalene (F2)	LB185193	mg/kg	25	<25	0%	NA	NA
TRH >C16-C34 (F3)	LB185193	mg/kg	90	<90	0%	75%	73%
TRH >C34-C40 (F4)	LB185193	mg/kg	120	<120	0%	80%	NA

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA', the results are less than the LOR and thus the RPD is not applicable.

VOC's in Soil Method: ME-(AU)-[ENV]AN433

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene	LB185190	mg/kg	0.1	<0.1	0%	84%	77%
Toluene	LB185190	mg/kg	0.1	<0.1	0%	89%	87%
Ethylbenzene	LB185190	mg/kg	0.1	<0.1	0%	89%	84%
m/p-xylene	LB185190	mg/kg	0.2	<0.2	0%	89%	86%
o-xylene	LB185190	mg/kg	0.1	<0.1	0%	90%	87%

Polycyclic VOCs

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB185190	mg/kg	0.1	<0.1	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d4-1,2-dichloroethane (Surrogate)	LB185190	%	-	113%	11%	90%	90%
d8-toluene (Surrogate)	LB185190	%	-	98%	12%	89%	89%
Bromofluorobenzene (Surrogate)	LB185190	%	-	94%	7%	90%	88%

Totals

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Total Xylenes	LB185190	mg/kg	0.3	<0.3	0%	NA	NA
Total BTEX	LB185190	mg/kg	0.6	<0.6	0%	NA	NA

Volatile Petroleum Hydrocarbons in Soil Method: ME-(AU)-[ENV]AN433

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C6-C10	LB185190	mg/kg	25	<25	0%	85%	77%
TRH C6-C9	LB185190	mg/kg	20	<20	0%	86%	79%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d4-1,2-dichloroethane (Surrogate)	LB185190	%	-	113%	11%	90%	90%
d8-toluene (Surrogate)	LB185190	%	-	98%	12%	89%	89%
Bromofluorobenzene (Surrogate)	LB185190	%	-	94%	7%	90%	88%

VPH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene (F0)	LB185190	mg/kg	0.1	<0.1	0%	NA	NA
TRH C6-C10 minus BTEX (F1)	LB185190	mg/kg	25	<25	0%	83%	73%

METHOD

METHODOLOGY SUMMARY

AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic 'clues', which provide a reasonable degree of certainty, dispersion staining is a mandatory 'clue' for positive identification. If sufficient 'clues' are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocally identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.

METHOD

METHODOLOGY SUMMARY

AN602

AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states: "Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

AN602

The sample can be reported "no asbestos found at the reporting limit of 0.1 g/kg" (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if-

- (a) no trace asbestos fibres have been detected (i.e. no 'respirable' fibres);
- (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg; and
- (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	QFH	QC result is above the upper tolerance
**	Indicative data, theoretical holding time exceeded.	QFL	QC result is below the lower tolerance
		-	The sample was not analysed for this analyte
		NVL	Not Validated

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the "Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.

Note that in terms of units of radioactivity:

- a. 1 Bq is equivalent to 27 pCi
- b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/pv.sgsvr/en-gb/environment.

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STATEMENT OF QA/QC PERFORMANCE

SE198610 R0

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Order Number **PO# 2905**
Samples 17

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SGS Reference **SE198610 R0**
Date Received 04 Oct 2019
Date Reported 17 Oct 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Surrogate	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	1 item
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SAMPLE SUMMARY

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.3-0.5	SE198610.001	LB185407	04 Oct 2019	04 Oct 2019	03 Oct 2020	15 Oct 2019	03 Oct 2020	17 Oct 2019
BH2 0.35-0.55	SE198610.003	LB185407	04 Oct 2019	04 Oct 2019	03 Oct 2020	15 Oct 2019	03 Oct 2020	17 Oct 2019
BH3 0.3-0.7	SE198610.005	LB185407	04 Oct 2019	04 Oct 2019	03 Oct 2020	15 Oct 2019	03 Oct 2020	17 Oct 2019
BH4 0.3-0.6	SE198610.007	LB185407	04 Oct 2019	04 Oct 2019	03 Oct 2020	15 Oct 2019	03 Oct 2020	17 Oct 2019
BH5 0.2-0.5	SE198610.009	LB185407	04 Oct 2019	04 Oct 2019	03 Oct 2020	15 Oct 2019	03 Oct 2020	17 Oct 2019
BH6 0.2-0.5	SE198610.011	LB185407	04 Oct 2019	04 Oct 2019	03 Oct 2020	15 Oct 2019	03 Oct 2020	17 Oct 2019
BH7 0.2-0.4	SE198610.013	LB185407	04 Oct 2019	04 Oct 2019	03 Oct 2020	15 Oct 2019	03 Oct 2020	17 Oct 2019
BH8 0.2-0.5	SE198610.015	LB185407	04 Oct 2019	04 Oct 2019	03 Oct 2020	15 Oct 2019	03 Oct 2020	17 Oct 2019

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.3-0.5	SE198610.001	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH1 1.3-1.5	SE198610.002	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH2 0.35-0.55	SE198610.003	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH2 1.2-1.3	SE198610.004	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH3 0.3-0.7	SE198610.005	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH3 1.9-2.1	SE198610.006	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH4 0.3-0.6	SE198610.007	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH4 1.7-1.9	SE198610.008	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH5 0.2-0.5	SE198610.009	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH5 1.0-1.2	SE198610.010	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH6 0.2-0.5	SE198610.011	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH6 0.7-1.0	SE198610.012	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH7 0.2-0.4	SE198610.013	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH7 0.4-0.6	SE198610.014	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH8 0.2-0.5	SE198610.015	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
BH8 0.8-1.0	SE198610.016	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019
Dup 1	SE198610.017	LB185381	04 Oct 2019	04 Oct 2019	01 Nov 2019	15 Oct 2019	01 Nov 2019	17 Oct 2019

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.3-0.5	SE198610.001	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH1 1.3-1.5	SE198610.002	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH2 0.35-0.55	SE198610.003	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH2 1.2-1.3	SE198610.004	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH3 0.3-0.7	SE198610.005	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH3 1.9-2.1	SE198610.006	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH4 0.3-0.6	SE198610.007	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH4 1.7-1.9	SE198610.008	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH5 0.2-0.5	SE198610.009	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH5 1.0-1.2	SE198610.010	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH6 0.2-0.5	SE198610.011	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH6 0.7-1.0	SE198610.012	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH7 0.2-0.4	SE198610.013	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH7 0.4-0.6	SE198610.014	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH8 0.2-0.5	SE198610.015	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
BH8 0.8-1.0	SE198610.016	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019
Dup 1	SE198610.017	LB185198	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	18 Oct 2019	16 Oct 2019

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.3-0.5	SE198610.001	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH1 1.3-1.5	SE198610.002	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH2 0.35-0.55	SE198610.003	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH2 1.2-1.3	SE198610.004	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH3 0.3-0.7	SE198610.005	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH3 1.9-2.1	SE198610.006	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH4 0.3-0.6	SE198610.007	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH4 1.7-1.9	SE198610.008	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH5 0.2-0.5	SE198610.009	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH5 1.0-1.2	SE198610.010	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

OC Pesticides in Soil (continued)

Method: ME-(AU)-ENVJAN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH6 0.2-0.5	SE198610.011	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH6 0.7-1.0	SE198610.012	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH7 0.2-0.4	SE198610.013	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH7 0.4-0.6	SE198610.014	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH8 0.2-0.5	SE198610.015	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH8 0.8-1.0	SE198610.016	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
Dup 1	SE198610.017	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019

OP Pesticides in Soil

Method: ME-(AU)-ENVJAN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.3-0.5	SE198610.001	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH1 1.3-1.5	SE198610.002	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH2 0.35-0.55	SE198610.003	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH2 1.2-1.3	SE198610.004	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH3 0.3-0.7	SE198610.005	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH3 1.9-2.1	SE198610.006	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH4 0.3-0.6	SE198610.007	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH4 1.7-1.9	SE198610.008	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH5 0.2-0.5	SE198610.009	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH5 1.0-1.2	SE198610.010	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH6 0.2-0.5	SE198610.011	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH6 0.7-1.0	SE198610.012	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH7 0.2-0.4	SE198610.013	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH7 0.4-0.6	SE198610.014	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH8 0.2-0.5	SE198610.015	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH8 0.8-1.0	SE198610.016	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
Dup 1	SE198610.017	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-ENVJAN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.3-0.5	SE198610.001	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH1 1.3-1.5	SE198610.002	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH2 0.35-0.55	SE198610.003	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH2 1.2-1.3	SE198610.004	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH3 0.3-0.7	SE198610.005	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH3 1.9-2.1	SE198610.006	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH4 0.3-0.6	SE198610.007	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH4 1.7-1.9	SE198610.008	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH5 0.2-0.5	SE198610.009	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH5 1.0-1.2	SE198610.010	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH6 0.2-0.5	SE198610.011	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH6 0.7-1.0	SE198610.012	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH7 0.2-0.4	SE198610.013	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH7 0.4-0.6	SE198610.014	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH8 0.2-0.5	SE198610.015	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH8 0.8-1.0	SE198610.016	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
Dup 1	SE198610.017	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019

PCBs in Soil

Method: ME-(AU)-ENVJAN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.3-0.5	SE198610.001	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH1 1.3-1.5	SE198610.002	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH2 0.35-0.55	SE198610.003	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH2 1.2-1.3	SE198610.004	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH3 0.3-0.7	SE198610.005	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH3 1.9-2.1	SE198610.006	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH4 0.3-0.6	SE198610.007	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH4 1.7-1.9	SE198610.008	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH5 0.2-0.5	SE198610.009	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH5 1.0-1.2	SE198610.010	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH6 0.2-0.5	SE198610.011	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019



HOLDING TIME SUMMARY

SE198610 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH6 0.7-1.0	SE198610.012	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH7 0.2-0.4	SE198610.013	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH7 0.4-0.6	SE198610.014	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH8 0.2-0.5	SE198610.015	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH8 0.8-1.0	SE198610.016	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
Dup 1	SE198610.017	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.3-0.5	SE198610.001	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH1 1.3-1.5	SE198610.002	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH2 0.35-0.55	SE198610.003	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH2 1.2-1.3	SE198610.004	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH3 0.3-0.7	SE198610.005	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH3 1.9-2.1	SE198610.006	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH4 0.3-0.6	SE198610.007	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH4 1.7-1.9	SE198610.008	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH5 0.2-0.5	SE198610.009	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH5 1.0-1.2	SE198610.010	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH6 0.2-0.5	SE198610.011	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH6 0.7-1.0	SE198610.012	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH7 0.2-0.4	SE198610.013	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH7 0.4-0.6	SE198610.014	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH8 0.2-0.5	SE198610.015	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
BH8 0.8-1.0	SE198610.016	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019
Dup 1	SE198610.017	LB185367	04 Oct 2019	04 Oct 2019	01 Apr 2020	15 Oct 2019	01 Apr 2020	17 Oct 2019

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN430

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.3-0.5	SE198610.001	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH1 1.3-1.5	SE198610.002	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH2 0.35-0.55	SE198610.003	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH2 1.2-1.3	SE198610.004	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH3 0.3-0.7	SE198610.005	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH3 1.9-2.1	SE198610.006	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH4 0.3-0.6	SE198610.007	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH4 1.7-1.9	SE198610.008	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH5 0.2-0.5	SE198610.009	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH5 1.0-1.2	SE198610.010	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH6 0.2-0.5	SE198610.011	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH6 0.7-1.0	SE198610.012	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH7 0.2-0.4	SE198610.013	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH7 0.4-0.6	SE198610.014	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH8 0.2-0.5	SE198610.015	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
BH8 0.8-1.0	SE198610.016	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019
Dup 1	SE198610.017	LB185193	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	17 Oct 2019

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.3-0.5	SE198610.001	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH1 1.3-1.5	SE198610.002	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH2 0.35-0.55	SE198610.003	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH2 1.2-1.3	SE198610.004	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH3 0.3-0.7	SE198610.005	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH3 1.9-2.1	SE198610.006	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH4 0.3-0.6	SE198610.007	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH4 1.7-1.9	SE198610.008	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH5 0.2-0.5	SE198610.009	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH5 1.0-1.2	SE198610.010	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH6 0.2-0.5	SE198610.011	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH6 0.7-1.0	SE198610.012	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

VOC's in Soil (continued)

Method: ME-(AU)-ENVJAN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH7 0.2-0.4	SE198610.013	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH7 0.4-0.6	SE198610.014	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH8 0.2-0.5	SE198610.015	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH8 0.8-1.0	SE198610.016	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
Dup 1	SE198610.017	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-ENVJAN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.3-0.5	SE198610.001	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH1 1.3-1.5	SE198610.002	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH2 0.35-0.55	SE198610.003	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH2 1.2-1.3	SE198610.004	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH3 0.3-0.7	SE198610.005	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH3 1.9-2.1	SE198610.006	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH4 0.3-0.6	SE198610.007	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH4 1.7-1.9	SE198610.008	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH5 0.2-0.5	SE198610.009	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH5 1.0-1.2	SE198610.010	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH6 0.2-0.5	SE198610.011	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH6 0.7-1.0	SE198610.012	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH7 0.2-0.4	SE198610.013	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH7 0.4-0.6	SE198610.014	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH8 0.2-0.5	SE198610.015	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
BH8 0.8-1.0	SE198610.016	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019
Dup 1	SE198610.017	LB185190	04 Oct 2019	04 Oct 2019	18 Oct 2019	13 Oct 2019	22 Nov 2019	16 Oct 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1 0.3-0.5	SE198610.001	%	60 - 130%	89
	BH2 0.35-0.55	SE198610.003	%	60 - 130%	86
	BH3 0.3-0.7	SE198610.005	%	60 - 130%	97
	BH4 0.3-0.6	SE198610.007	%	60 - 130%	89
	BH5 0.2-0.5	SE198610.009	%	60 - 130%	86
	BH6 0.2-0.5	SE198610.011	%	60 - 130%	96
	BH7 0.2-0.4	SE198610.013	%	60 - 130%	91
	BH8 0.2-0.5	SE198610.015	%	60 - 130%	95

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1 0.3-0.5	SE198610.001	%	60 - 130%	94
	BH2 0.35-0.55	SE198610.003	%	60 - 130%	86
	BH3 0.3-0.7	SE198610.005	%	60 - 130%	94
	BH4 0.3-0.6	SE198610.007	%	60 - 130%	92
	BH5 0.2-0.5	SE198610.009	%	60 - 130%	92
	BH6 0.2-0.5	SE198610.011	%	60 - 130%	94
	BH7 0.2-0.4	SE198610.013	%	60 - 130%	86
	BH8 0.2-0.5	SE198610.015	%	60 - 130%	100
d14-p-terphenyl (Surrogate)	BH1 0.3-0.5	SE198610.001	%	60 - 130%	92
	BH2 0.35-0.55	SE198610.003	%	60 - 130%	90
	BH3 0.3-0.7	SE198610.005	%	60 - 130%	96
	BH4 0.3-0.6	SE198610.007	%	60 - 130%	96
	BH5 0.2-0.5	SE198610.009	%	60 - 130%	96
	BH6 0.2-0.5	SE198610.011	%	60 - 130%	90
	BH7 0.2-0.4	SE198610.013	%	60 - 130%	92
	BH8 0.2-0.5	SE198610.015	%	60 - 130%	98

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1 0.3-0.5	SE198610.001	%	70 - 130%	94
	BH1 1.3-1.5	SE198610.002	%	70 - 130%	92
	BH2 0.35-0.55	SE198610.003	%	70 - 130%	86
	BH2 1.2-1.3	SE198610.004	%	70 - 130%	100
	BH3 0.3-0.7	SE198610.005	%	70 - 130%	94
	BH3 1.9-2.1	SE198610.006	%	70 - 130%	92
	BH4 0.3-0.6	SE198610.007	%	70 - 130%	92
	BH4 1.7-1.9	SE198610.008	%	70 - 130%	92
	BH5 0.2-0.5	SE198610.009	%	70 - 130%	92
	BH5 1.0-1.2	SE198610.010	%	70 - 130%	80
	BH6 0.2-0.5	SE198610.011	%	70 - 130%	94
	BH6 0.7-1.0	SE198610.012	%	70 - 130%	90
	BH7 0.2-0.4	SE198610.013	%	70 - 130%	86
	BH7 0.4-0.6	SE198610.014	%	70 - 130%	92
	BH8 0.2-0.5	SE198610.015	%	70 - 130%	100
	BH8 0.8-1.0	SE198610.016	%	70 - 130%	96
d14-p-terphenyl (Surrogate)	BH1 0.3-0.5	SE198610.001	%	70 - 130%	92
	BH1 1.3-1.5	SE198610.002	%	70 - 130%	94
	BH2 0.35-0.55	SE198610.003	%	70 - 130%	90
	BH2 1.2-1.3	SE198610.004	%	70 - 130%	92
	BH3 0.3-0.7	SE198610.005	%	70 - 130%	96
	BH3 1.9-2.1	SE198610.006	%	70 - 130%	94
	BH4 0.3-0.6	SE198610.007	%	70 - 130%	96
	BH4 1.7-1.9	SE198610.008	%	70 - 130%	90
	BH5 0.2-0.5	SE198610.009	%	70 - 130%	96
	BH5 1.0-1.2	SE198610.010	%	70 - 130%	92
	BH6 0.2-0.5	SE198610.011	%	70 - 130%	90
	BH6 0.7-1.0	SE198610.012	%	70 - 130%	94
	BH7 0.2-0.4	SE198610.013	%	70 - 130%	92
	BH7 0.4-0.6	SE198610.014	%	70 - 130%	88
	BH8 0.2-0.5	SE198610.015	%	70 - 130%	98
	BH8 0.8-1.0	SE198610.016	%	70 - 130%	88

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d5-nitrobenzene (Surrogate)	BH1 0.3-0.5	SE198610.001	%	70 - 130%	90
	BH1 1.3-1.5	SE198610.002	%	70 - 130%	0 †
	BH2 0.35-0.55	SE198610.003	%	70 - 130%	90
	BH2 1.2-1.3	SE198610.004	%	70 - 130%	94
	BH3 0.3-0.7	SE198610.005	%	70 - 130%	96
	BH3 1.9-2.1	SE198610.006	%	70 - 130%	92
	BH4 0.3-0.6	SE198610.007	%	70 - 130%	100
	BH4 1.7-1.9	SE198610.008	%	70 - 130%	96
	BH5 0.2-0.5	SE198610.009	%	70 - 130%	94
	BH5 1.0-1.2	SE198610.010	%	70 - 130%	88
	BH6 0.2-0.5	SE198610.011	%	70 - 130%	94
	BH6 0.7-1.0	SE198610.012	%	70 - 130%	86
	BH7 0.2-0.4	SE198610.013	%	70 - 130%	94
	BH7 0.4-0.6	SE198610.014	%	70 - 130%	94
	BH8 0.2-0.5	SE198610.015	%	70 - 130%	104
	BH8 0.8-1.0	SE198610.016	%	70 - 130%	96

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1 0.3-0.5	SE198610.001	%	60 - 130%	89
	BH2 0.35-0.55	SE198610.003	%	60 - 130%	86
	BH3 0.3-0.7	SE198610.005	%	60 - 130%	97
	BH4 0.3-0.6	SE198610.007	%	60 - 130%	89
	BH5 0.2-0.5	SE198610.009	%	60 - 130%	86
	BH6 0.2-0.5	SE198610.011	%	60 - 130%	96
	BH7 0.2-0.4	SE198610.013	%	60 - 130%	91
	BH8 0.2-0.5	SE198610.015	%	60 - 130%	95

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1 0.3-0.5	SE198610.001	%	60 - 130%	92
	BH1 1.3-1.5	SE198610.002	%	60 - 130%	89
	BH2 0.35-0.55	SE198610.003	%	60 - 130%	94
	BH2 1.2-1.3	SE198610.004	%	60 - 130%	93
	BH3 0.3-0.7	SE198610.005	%	60 - 130%	89
	BH3 1.9-2.1	SE198610.006	%	60 - 130%	91
	BH4 0.3-0.6	SE198610.007	%	60 - 130%	88
	BH4 1.7-1.9	SE198610.008	%	60 - 130%	90
	BH5 0.2-0.5	SE198610.009	%	60 - 130%	91
	BH5 1.0-1.2	SE198610.010	%	60 - 130%	89
	BH6 0.2-0.5	SE198610.011	%	60 - 130%	95
	BH6 0.7-1.0	SE198610.012	%	60 - 130%	86
	BH7 0.2-0.4	SE198610.013	%	60 - 130%	90
	BH7 0.4-0.6	SE198610.014	%	60 - 130%	93
	BH8 0.2-0.5	SE198610.015	%	60 - 130%	87
	BH8 0.8-1.0	SE198610.016	%	60 - 130%	92
	Dup 1	SE198610.017	%	60 - 130%	92
d4-1,2-dichloroethane (Surrogate)	BH1 0.3-0.5	SE198610.001	%	60 - 130%	109
	BH1 1.3-1.5	SE198610.002	%	60 - 130%	100
	BH2 0.35-0.55	SE198610.003	%	60 - 130%	110
	BH2 1.2-1.3	SE198610.004	%	60 - 130%	111
	BH3 0.3-0.7	SE198610.005	%	60 - 130%	105
	BH3 1.9-2.1	SE198610.006	%	60 - 130%	111
	BH4 0.3-0.6	SE198610.007	%	60 - 130%	105
	BH4 1.7-1.9	SE198610.008	%	60 - 130%	111
	BH5 0.2-0.5	SE198610.009	%	60 - 130%	109
	BH5 1.0-1.2	SE198610.010	%	60 - 130%	110
	BH6 0.2-0.5	SE198610.011	%	60 - 130%	121
	BH6 0.7-1.0	SE198610.012	%	60 - 130%	107
	BH7 0.2-0.4	SE198610.013	%	60 - 130%	109
	BH7 0.4-0.6	SE198610.014	%	60 - 130%	112
	BH8 0.2-0.5	SE198610.015	%	60 - 130%	108

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d4-1,2-dichloroethane (Surrogate)	BH8 0.8-1.0	SE198610.016	%	60 - 130%	117
	Dup 1	SE198610.017	%	60 - 130%	113
d8-toluene (Surrogate)	BH1 0.3-0.5	SE198610.001	%	60 - 130%	91
	BH1 1.3-1.5	SE198610.002	%	60 - 130%	85
	BH2 0.35-0.55	SE198610.003	%	60 - 130%	94
	BH2 1.2-1.3	SE198610.004	%	60 - 130%	95
	BH3 0.3-0.7	SE198610.005	%	60 - 130%	87
	BH3 1.9-2.1	SE198610.006	%	60 - 130%	88
	BH4 0.3-0.6	SE198610.007	%	60 - 130%	89
	BH4 1.7-1.9	SE198610.008	%	60 - 130%	91
	BH5 0.2-0.5	SE198610.009	%	60 - 130%	93
	BH5 1.0-1.2	SE198610.010	%	60 - 130%	95
	BH6 0.2-0.5	SE198610.011	%	60 - 130%	99
	BH6 0.7-1.0	SE198610.012	%	60 - 130%	88
	BH7 0.2-0.4	SE198610.013	%	60 - 130%	91
	BH7 0.4-0.6	SE198610.014	%	60 - 130%	96
	BH8 0.2-0.5	SE198610.015	%	60 - 130%	92
	BH8 0.8-1.0	SE198610.016	%	60 - 130%	100
	Dup 1	SE198610.017	%	60 - 130%	91

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1 0.3-0.5	SE198610.001	%	60 - 130%	92
	BH1 1.3-1.5	SE198610.002	%	60 - 130%	89
	BH2 0.35-0.55	SE198610.003	%	60 - 130%	94
	BH2 1.2-1.3	SE198610.004	%	60 - 130%	93
	BH3 0.3-0.7	SE198610.005	%	60 - 130%	89
	BH3 1.9-2.1	SE198610.006	%	60 - 130%	91
	BH4 0.3-0.6	SE198610.007	%	60 - 130%	88
	BH4 1.7-1.9	SE198610.008	%	60 - 130%	90
	BH5 0.2-0.5	SE198610.009	%	60 - 130%	91
	BH5 1.0-1.2	SE198610.010	%	60 - 130%	89
	BH6 0.2-0.5	SE198610.011	%	60 - 130%	95
	BH6 0.7-1.0	SE198610.012	%	60 - 130%	86
	BH7 0.2-0.4	SE198610.013	%	60 - 130%	90
	BH7 0.4-0.6	SE198610.014	%	60 - 130%	93
	BH8 0.2-0.5	SE198610.015	%	60 - 130%	87
	BH8 0.8-1.0	SE198610.016	%	60 - 130%	92
	Dup 1	SE198610.017	%	60 - 130%	92
d4-1,2-dichloroethane (Surrogate)	BH1 0.3-0.5	SE198610.001	%	60 - 130%	109
	BH1 1.3-1.5	SE198610.002	%	60 - 130%	100
	BH2 0.35-0.55	SE198610.003	%	60 - 130%	110
	BH2 1.2-1.3	SE198610.004	%	60 - 130%	111
	BH3 0.3-0.7	SE198610.005	%	60 - 130%	105
	BH3 1.9-2.1	SE198610.006	%	60 - 130%	111
	BH4 0.3-0.6	SE198610.007	%	60 - 130%	105
	BH4 1.7-1.9	SE198610.008	%	60 - 130%	111
	BH5 0.2-0.5	SE198610.009	%	60 - 130%	109
	BH5 1.0-1.2	SE198610.010	%	60 - 130%	110
	BH6 0.2-0.5	SE198610.011	%	60 - 130%	121
	BH6 0.7-1.0	SE198610.012	%	60 - 130%	107
	BH7 0.2-0.4	SE198610.013	%	60 - 130%	109
	BH7 0.4-0.6	SE198610.014	%	60 - 130%	112
	BH8 0.2-0.5	SE198610.015	%	60 - 130%	108
	BH8 0.8-1.0	SE198610.016	%	60 - 130%	117
	Dup 1	SE198610.017	%	60 - 130%	113
d8-toluene (Surrogate)	BH1 0.3-0.5	SE198610.001	%	60 - 130%	91
	BH1 1.3-1.5	SE198610.002	%	60 - 130%	85
	BH2 0.35-0.55	SE198610.003	%	60 - 130%	94
	BH2 1.2-1.3	SE198610.004	%	60 - 130%	95
	BH3 0.3-0.7	SE198610.005	%	60 - 130%	87

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons In Soil (continued)**Method: ME-(AU)-[ENV]AN433**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	BH3 1.9-2.1	SE198610.006	%	60 - 130%	88
	BH4 0.3-0.6	SE198610.007	%	60 - 130%	89
	BH4 1.7-1.9	SE198610.008	%	60 - 130%	91
	BH5 0.2-0.5	SE198610.009	%	60 - 130%	93
	BH5 1.0-1.2	SE198610.010	%	60 - 130%	95
	BH6 0.2-0.5	SE198610.011	%	60 - 130%	99
	BH6 0.7-1.0	SE198610.012	%	60 - 130%	88
	BH7 0.2-0.4	SE198610.013	%	60 - 130%	91
	BH7 0.4-0.6	SE198610.014	%	60 - 130%	96
	BH8 0.2-0.5	SE198610.015	%	60 - 130%	92
	BH8 0.8-1.0	SE198610.016	%	60 - 130%	100
	Dup 1	SE198610.017	%	60 - 130%	91

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-ENVJAN312

Sample Number	Parameter	Units	LOR	Result
LB185381.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB185193.001	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
	Alpha BHC	mg/kg	0.1	<0.1
	Lindane	mg/kg	0.1	<0.1
	Heptachlor	mg/kg	0.1	<0.1
	Aldrin	mg/kg	0.1	<0.1
	Beta BHC	mg/kg	0.1	<0.1
	Delta BHC	mg/kg	0.1	<0.1
	Heptachlor epoxide	mg/kg	0.1	<0.1
	Alpha Endosulfan	mg/kg	0.2	<0.2
	Gamma Chlordane	mg/kg	0.1	<0.1
	Alpha Chlordane	mg/kg	0.1	<0.1
	p,p'-DDE	mg/kg	0.1	<0.1
	Dieldrin	mg/kg	0.2	<0.2
	Endrin	mg/kg	0.2	<0.2
	Beta Endosulfan	mg/kg	0.2	<0.2
	p,p'-DDD	mg/kg	0.1	<0.1
	p,p'-DDT	mg/kg	0.1	<0.1
	Endosulfan sulphate	mg/kg	0.1	<0.1
	Endrin Aldehyde	mg/kg	0.1	<0.1
	Methoxychlor	mg/kg	0.1	<0.1
	Endrin Ketone	mg/kg	0.1	<0.1
Surrogates	Isodrin	mg/kg	0.1	<0.1
	Mirex	mg/kg	0.1	<0.1
	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	77

OP Pesticides in Soil

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB185193.001	Dichlorvos	mg/kg	0.5	<0.5
	Dimethoate	mg/kg	0.5	<0.5
	Diazinon (Dimpylate)	mg/kg	0.5	<0.5
	Fenitrothion	mg/kg	0.2	<0.2
	Malathion	mg/kg	0.2	<0.2
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
	Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
	Bromophos Ethyl	mg/kg	0.2	<0.2
	Methidathion	mg/kg	0.5	<0.5
	Ethion	mg/kg	0.2	<0.2
	Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
Surrogates	2-fluorobiphenyl (Surrogate)	%	-	104
	d14-p-terphenyl (Surrogate)	%	-	100

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB185193.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]JAN420

Sample Number	Parameter	Units	LOR	Result
LB185193.001	Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
	Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
	Benzo(ghi)perylene	mg/kg	0.1	<0.1
	Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates			
	d5-nitrobenzene (Surrogate)	%	-	96
	2-fluorobiphenyl (Surrogate)	%	-	104
	d14-p-terphenyl (Surrogate)	%	-	100

PCBs in Soil

Method: ME-(AU)-[ENV]JAN420

Sample Number	Parameter	Units	LOR	Result
LB185193.001	Arochlor 1016	mg/kg	0.2	<0.2
	Arochlor 1221	mg/kg	0.2	<0.2
	Arochlor 1232	mg/kg	0.2	<0.2
	Arochlor 1242	mg/kg	0.2	<0.2
	Arochlor 1248	mg/kg	0.2	<0.2
	Arochlor 1254	mg/kg	0.2	<0.2
	Arochlor 1260	mg/kg	0.2	<0.2
	Arochlor 1262	mg/kg	0.2	<0.2
	Arochlor 1268	mg/kg	0.2	<0.2
	Total PCBs (Arochlors)	mg/kg	1	<1
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	77

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]JAN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB185367.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.5	<0.5
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]JAN403

Sample Number	Parameter	Units	LOR	Result
LB185193.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

Method: ME-(AU)-[ENV]JAN433

Sample Number		Parameter	Units	LOR	Result
LB185190.001	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	113
		d8-toluene (Surrogate)	%	-	98
		Bromofluorobenzene (Surrogate)	%	-	94
	Totals	Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]JAN433

Sample Number	Parameter	Units	LOR	Result
LB185190.001	TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]JAN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE198610.010	LB185381.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE198610.017	LB185381.022	Mercury	mg/kg	0.05	<0.05	<0.05	187	0

Moisture Content

Method: ME-(AU)-[ENV]JAN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE198610.010	LB185198.011	% Moisture	%w/w	1	19.0	20.3	35	7
SE198610.017	LB185198.019	% Moisture	%w/w	1	15.8	14.6	37	8

OC Pesticides in Soil

Method: ME-(AU)-[ENV]JAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE198610.015	LB185193.023	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Lindane	mg/kg	0.1	<0.1	<0.1	200	0
		Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
		Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
		Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
		Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
		Endrin	mg/kg	0.2	<0.2	<0.2	200	0
		o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
		p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
		Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
		Mirex	mg/kg	0.1	<0.1	<0.1	200	0
				Total CLP OC Pesticides	mg/kg	1	<1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.14	30	3

OP Pesticides in Soil

Method: ME-(AU)-[ENV]JAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE198610.011	LB185193.024	Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
		Malathion	mg/kg	0.2	<0.2	<0.2	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
		Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
		Ethion	mg/kg	0.2	<0.2	<0.2	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	7
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]JAN420

Original	Duplicate	Parameter	Units	LOR
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Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE198610.011	LB185193.024	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
		Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
		Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluoranthene	mg/kg	0.1	<0.1	<0.1	197	0
		Pyrene	mg/kg	0.1	<0.1	<0.1	184	0
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
		Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
			TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
		Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
			TEQ (mg/kg)	0.3	<0.3	<0.3	134	0
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	175	0
			TEQ (mg/kg)	0.2	<0.2	<0.2	175	0
		Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	2
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	7
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE198610.015	LB185193.023	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
		Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	3

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE198610.010	LB185367.014	Arsenic, As	mg/kg	1	8	7	43	14
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	13	11	34	14
		Copper, Cu	mg/kg	0.5	17	18	33	8
		Nickel, Ni	mg/kg	0.5	5.7	5.2	39	10
		Lead, Pb	mg/kg	1	16	13	37	15
		Zinc, Zn	mg/kg	2	27	24	38	11
SE198610.017	LB185367.022	Arsenic, As	mg/kg	1	4	5	52	20
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	11	13	34	16
		Copper, Cu	mg/kg	0.5	13	13	34	4
		Nickel, Ni	mg/kg	0.5	3.7	4.3	42	15
		Lead, Pb	mg/kg	1	25	24	34	3
		Zinc, Zn	mg/kg	2	31	34	36	11

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate	Parameter	Units	LOR
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Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = \frac{|OriginalResult - ReplicateResult|}{Mean} \times 100$

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: $MAD = 100 \times \frac{SDL}{Mean} + LR$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-ENVJAN403

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE198610.011	LB185193.025	TRH C10-C14	mg/kg	20	<20	<20	200	0
		TRH C15-C28	mg/kg	45	<45	<45	200	0
		TRH C29-C36	mg/kg	45	<45	<45	200	0
		TRH C37-C40	mg/kg	100	<100	<100	200	0
		TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
		TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	mg/kg	25	<25	<25	200	0
		TRH >C10-C16	mg/kg	25	<25	<25	200	0
		TRH >C10-C16 - Naphthalene (F2)	mg/kg	90	<90	<90	200	0
		TRH >C16-C34 (F3)	mg/kg	120	<120	<120	200	0
SE198610.017	LB185193.022	TRH C10-C14	mg/kg	20	<20	<20	200	0
		TRH C15-C28	mg/kg	45	<45	<45	200	0
		TRH C29-C36	mg/kg	45	<45	<45	200	0
		TRH C37-C40	mg/kg	100	<100	<100	200	0
		TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
		TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	mg/kg	25	<25	<25	200	0
		TRH >C10-C16	mg/kg	25	<25	<25	200	0
		TRH >C10-C16 - Naphthalene (F2)	mg/kg	90	<90	<90	200	0
		TRH >C16-C34 (F3)	mg/kg	120	<120	<120	200	0

VOC's in Soil

Method: ME-(AU)-ENVJAN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE198610.010	LB185190.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
	Surrogates	d4-1,2-dichloroethane (Surrogate)		mg/kg	-	11.0	9.9	50	11
		d8-toluene (Surrogate)		mg/kg	-	9.5	8.4	50	12
		Bromofluorobenzene (Surrogate)		mg/kg	-	8.9	8.3	50	7
	Totals	Total Xylenes		mg/kg	0.3	<0.3	<0.3	200	0
		Total BTEX		mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-ENVJAN433

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE198610.010	LB185190.014	TRH C6-C10	mg/kg	25	<25	<25	200	0	
		TRH C6-C9	mg/kg	20	<20	<20	200	0	
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.0	9.9	30	11
			d8-toluene (Surrogate)	mg/kg	-	9.5	8.4	30	12
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.9	8.3	30	7
		VPF F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB185381.002	Mercury	mg/kg	0.05	0.19	0.2	70 - 130	97

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB185193.002	Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	93
	Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	89
	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	87
	Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	93
	Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	98
	p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	78
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.11	0.15	40 - 130	73

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB185193.002	Dichlorvos	mg/kg	0.5	2.0	2	60 - 140	102
	Diazinon (Dimpylate)	mg/kg	0.5	2.1	2	60 - 140	107
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.2	2	60 - 140	110
	Ethion	mg/kg	0.2	1.6	2	60 - 140	80
Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94
	d14-p-terphenyl (Surrogate)	mg/ka	-	0.5	0.5	40 - 130	92

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB185193.002	Naphthalene	mg/kg	0.1	5.0	4	60 - 140	124
	Acenaphthylene	mg/kg	0.1	5.2	4	60 - 140	129
	Acenaphthene	mg/kg	0.1	4.8	4	60 - 140	121
	Phenanthrene	mg/kg	0.1	5.5	4	60 - 140	136
	Anthracene	mg/kg	0.1	5.0	4	60 - 140	124
	Fluoranthene	mg/kg	0.1	5.1	4	60 - 140	129
	Pyrene	mg/kg	0.1	5.3	4	60 - 140	132
	Benzo(a)pyrene	mg/kg	0.1	5.2	4	60 - 140	129
Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	96
	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB185193.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	88

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB185367.002	Arsenic, As	mg/kg	1	330	318.22	80 - 120	104
	Cadmium, Cd	mg/kg	0.3	3.8	4.62	80 - 120	82
	Chromium, Cr	mg/kg	0.5	37	38.31	80 - 120	96
	Copper, Cu	mg/kg	0.5	300	290	80 - 120	102
	Nickel, Ni	mg/kg	0.5	190	187	80 - 120	101
	Lead, Pb	mg/kg	1	94	89.9	80 - 120	105
	Zinc, Zn	mg/kg	2	280	273	80 - 120	102

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB185193.002	TRH C10-C14	mg/kg	20	35	40	60 - 140	88	
	TRH C15-C28	mg/kg	45	<45	40	60 - 140	90	
	TRH C29-C36	mg/kg	45	<45	40	60 - 140	75	
	TRH F Bands	TRH >C10-C16	mg/kg	25	37	40	60 - 140	93
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	75
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	80

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR
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Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB185190.002	Monocyclic	Benzene	mg/kg	0.1	4.2	5	60 - 140 84
	Aromatic	Toluene	mg/kg	0.1	4.4	5	60 - 140 89
		Ethylbenzene	mg/kg	0.1	4.5	5	60 - 140 89
		m/p-xylene	mg/kg	0.2	8.9	10	60 - 140 89
		o-xylene	mg/kg	0.1	4.5	5	60 - 140 90
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.0	10	70 - 130 90
		d8-toluene (Surrogate)	mg/kg	-	8.9	10	70 - 130 89
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.0	10	70 - 130 90

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB185190.002	TRH C6-C10	mg/kg	25	79	92.5	60 - 140	85	
	TRH C6-C9	mg/kg	20	69	80	60 - 140	86	
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.0	10	70 - 130	90
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.0	10	70 - 130	90
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	52	62.5	60 - 140	83

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub-sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE198610.001	LB185381.004	Mercury	mg/kg	0.05	0.21	<0.05	0.2	100

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE198610.001	LB185193.004	Dichlorvos	mg/kg	0.5	1.3	<0.5	2	64
		Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
		Diazinon (Dimpylate)	mg/kg	0.5	2.0	<0.5	2	99
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
		Malathion	mg/kg	0.2	<0.2	<0.2	-	-
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.1	<0.2	2	103
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
		Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
		Ethion	mg/kg	0.2	1.6	<0.2	2	78
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
		Total OP Pesticides*	mg/kg	1.7	6.9	<1.7	-	-
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	98
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	94

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE198610.001	LB185193.004	Naphthalene	mg/kg	0.1	4.8	<0.1	4	120
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	5.0	<0.1	4	123
		Acenaphthene	mg/kg	0.1	4.7	<0.1	4	118
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	5.2	<0.1	4	129
		Anthracene	mg/kg	0.1	5.0	<0.1	4	125
		Fluoranthene	mg/kg	0.1	5.2	<0.1	4	127
		Pyrene	mg/kg	0.1	5.1	<0.1	4	126
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
		Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(a)pyrene	mg/kg	0.1	5.3	<0.1	4	132
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	5.3	<0.2	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	5.5	<0.3	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	5.4	<0.2	-	-
		Total PAH (18)	mg/kg	0.8	40	<0.8	-	-
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	-	100
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	98
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	94

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE198610.001	LB185367.004	Arsenic, As	mg/kg	1	49	8	50	83
		Cadmium, Cd	mg/kg	0.3	41	<0.3	50	82
		Chromium, Cr	mg/kg	0.5	56	13	50	88
		Copper, Cu	mg/kg	0.5	62	20	50	85
		Nickel, Ni	mg/kg	0.5	50	7.2	50	85
		Lead, Pb	mg/kg	1	57	19	50	75
		Zinc, Zn	mg/kg	2	79	38	50	81

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number	Parameter	Units	LOR
-----------	---------------	-----------	-------	-----

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub-sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE198610.001	LB185193.024	TRH C10-C14	mg/kg	20	38	<20	40	95
		TRH C15-C28	mg/kg	45	<45	<45	40	75
		TRH C29-C36	mg/kg	45	<45	<45	40	88
		TRH C37-C40	mg/kg	100	<100	<100	-	-
		TRH C10-C36 Total	mg/kg	110	<110	<110	-	-
		TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	mg/kg	25	35	<25	40	88
		TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	35	<25	-	-
		TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	73
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE198610.001	LB185190.004	Monocyclic	Benzene	mg/kg	0.1	3.9	<0.1	5	77
			Aromatic	Toluene	mg/kg	0.1	4.3	<0.1	5
			Ethylbenzene	mg/kg	0.1	4.2	<0.1	5	84
			m/p-xylene	mg/kg	0.2	8.6	<0.2	10	86
			o-xylene	mg/kg	0.1	4.4	<0.1	5	87
			Polycyclic	Naphthalene	mg/kg	0.1	4.3	<0.1	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.0	10.9	10	90
			d8-toluene (Surrogate)	mg/kg	-	8.9	9.1	10	89
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.8	9.2	10	88
		Totals	Total Xylenes	mg/kg	0.3	13	<0.3	-	-
			Total BTEX	mg/kg	0.6	25	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE198610.001	LB185190.004	TRH C6-C10	mg/kg	25	71	<25	92.5	77	
		TRH C6-C9	mg/kg	20	64	<20	80	79	
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.0	10.9	10	90
			d8-toluene (Surrogate)	mg/kg	-	8.9	9.1	10	89
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.8	9.2	-	88
		VPH F	Benzene (F0)	mg/kg	0.1	3.9	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	46	<25	62.5	73

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

id samples expressed on a dry weight basis.

criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022_QA_QC_Plan.pdf

- * NATA accreditation does not cover the performance of this service .
- ** Indicative data, theoretical holding time exceeded.
- Sample not analysed for this analyte.
- IS Insufficient sample for analysis.
- LNR Sample listed, but not received.
- LOR Limit of reporting.
- QFH QC result is above the upper tolerance.
- QFL QC result is below the lower tolerance.

- ① At least 2 of 3 surrogates are within acceptance criteria.
- ② RPD failed acceptance criteria due to sample heterogeneity.
- ③ Results less than 5 times LOR preclude acceptance criteria for RPD.
- ④ Recovery failed acceptance criteria due to matrix interference.
- ⑤ Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
- ⑥ LOR was raised due to sample matrix interference.
- ⑦ LOR was raised due to dilution of significantly high concentration of analyte in sample.
- ⑧ Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
- ⑨ Recovery failed acceptance criteria due to sample heterogeneity.
- ⑩ LOR was raised due to high conductivity of the sample (required dilution).
- † Refer to Analytical Report comments for further information.

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Page 1 of 1

Email: au.samplerreceipt.sydney@sgs.com

Contact Name: Woochul Yang

Email Results: wyang@assetgeo.com.au

Received: 04 – Oct – 2019

Dup 1	4.10.19	17	•	1	x														Jar
Trip1	4.10.19		•	1															Jar
Relinquished By: Ilia Rostami		Date/Time: 09/10/19				Received By: JIL				Date/Time: 4/10/19 1:40pm									
Relinquished By:		Date/Time:				Received By:				Date/Time:									
Samples Intact: Yes/ No		Temperature: Ambient / Chilled				Sample Cooler Sealed: Yes/ No				Laboratory Quotation No:									
		Comments:																	

APPENDIX F

Logs

Borehole Log

BH no: BH1
sheet: 1 of 1
job no.: 5410-2

client: Geoff Nines Fong & Partners
principal: St Dominic's School
project: Proposed Alterations & Additions
location: 21 Copeland Street, Kingswood NSW
equipment: Geoprobe rig
diameter: 57mm **inclination:** -90° **bearing:** --- **E:** **N:**
started: 4.10.2019
finished: 4.10.2019
logged: WY
checked: MAG
RL surface: 57.4 m approx.
datum: AHD

drilling information						material information						
method	support	water	notes samples, tests, etc	RL	depth metres	graphic log	USCS symbol	material description soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	hand penetro- meter kPa 100 200 300 400	structure and additional observations
D	None	None observed			0.2		SC	Topsoil / Fill, Clayey SAND, fine grained, dark brown	D	D?		Topsoil / Fill
			D-BH1, ACM	57		CL	Fill, Sandy CLAY, low plasticity, orange/dark brown ;sand, medium to coarse grained, subrounded to subangular; fragment of artificial material (concrete?)	<Wp	F-St?		Fill	
			D-BH1	56	1							
					2							
					2.1		CL	Snady Silty CLAY, low plasticity, brown/orange/red ; sand, fine grained; trace gravel, fine grained, angular	<Wp	St-H?		Residual
					3							
					3			Tube terminated at 3.0m, reachnig target depth. Borehole No: BH1 terminated at 3m				
					54							
					4							
					53							
					5							
					52							
					6							
					51							
					7							

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Borehole Log

BH no: BH2
sheet: 1 of 1
job no.: 5410-2

client: Geoff Nines Fong & Partners
principal: St Dominic's School
project: Proposed Alterations & Additions
location: 21 Copeland Street, Kingswood NSW
equipment: Geoprobe rig
diameter: 57mm **inclination:** -90° **bearing:** --- **E:** **N:**
started: 4.10.2019
finished: 4.10.2019
logged: WY
checked: MAG
RL surface: 57.5 m approx.
datum: AHD

drilling information						material information						
method	support	water	notes samples, tests, etc	RL	depth metres	graphic log	USCS symbol	material description soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	100 hand penetro- meter kPa 200 300 400	structure and additional observations
D	None	None observed					SC	Topsoil / Fill, Clayey SAND, fine grained, dark brown	M	MD?		Topsoil / Fill
			D-BH2, ACM	57	0.35		CL	Fill, Silty CLAY, low to medium plasticity, pale brown / pale red / brown	<Wp	F-St?		Fill
					0.7		CL	Fill, Sandy CLAY, low plasticity, orange/dark brown ; sand, medium to coarse grained, subrounded to subangular; fragment of artificial material (concrete?)	<Wp	F-St?		Fill
			D-BH2		1.3		CL	Snady Silty CLAY, low plasticity, brown/orange/red ; sand, fine grained; trace gravel, fine grained, angular	<Wp	VSt-H?		Residual
					3			Tube terminated at 3.0m, reachnig target depth. Borehole No: BH2 terminated at 3m				
					54							
					4							
					53							
					5							
					52							
					6							
					51							
					7							

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Borehole Log

BH no: **BH3**

sheet: 1 of 1

job no.: 5410-2

client:	Geoff Nines Fong & Partners	started:	4.10.2019
principal:	St Dominic's School	finished:	4.10.2019
project:	Proposed Alterations & Additions	logged:	WY
location:	21 Copeland Street, Kingswood NSW	checked:	MAG
equipment:	Geoprobe rig	RL surface:	57.6 m approx.
diameter:	57mm	inclination:	-90°
	bearing: ---	E:	
		N:	
		datum:	AHD

drilling information						material information						
method	support	water	notes samples, tests, etc	RL	depth metres	graphic log	USCS symbol	material description soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	hand penetro- meter kPa 100 200 300 400	structure and additional observations
D	None	None observed		57	0.3		SC	Topsoil / Fill, Clayey SAND, fine grained, dark brown	M	L-MD?		Topsoil / Fill
			D-BH3, ACM, Dup, Trip			CL	Fill, Sandy CLAY, low plasticity, orange/dark brown ;sand, medium to coarse grained, subrounded to subangular	<Wp	F-St?		Fill	
					1.5		CH	Fill, CLAY, medium to high plasticity, grey / dark grey	<Wp	F-St?		Fill
			D-BH3		2.1		CL	Snady Silty CLAY, low plasticity, brown/orange/red ; sand, fine grained; trace gravel, fine grained, angular	<Wp	VSt-H?		Residual
					3			Tube terminated at 3.0m, reachnig target depth. Borehole No: BH3 terminated at 3m				
					4							
					5							
					6							
					7							

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Borehole Log

BH no: **BH4**

sheet: 1 of 1

job no.: 5410-2

client:	Geoff Nines Fong & Partners	started:	4.10.2019
principal:	St Dominic's School	finished:	4.10.2019
project:	Proposed Alterations & Additions	logged:	WY
location:	21 Copeland Street, Kingswood NSW	checked:	MAG
equipment:	Geoprobe rig	RL surface:	57.5 m approx.
diameter:	57mm	inclination:	-90°
	bearing: ---	E:	
		N:	
		datum:	AHD

drilling information						material information						
method	support	water	notes samples, tests, etc	RL	depth metres	graphic log	USCS symbol	material description soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	100 hand penetro- meter kPa 200 300 400	structure and additional observations
D	None	None observed					SC	Topsoil / Fill, Clayey SAND, fine grained, dark brown	M	L-MD?		Topsoil / Fill
			D-BH4, ACM	57	0.3		CL	Fill, Sandy CLAY, low plasticity, orange/dark brown ;sand, medium to coarse grained, subrounded to subangular	<Wp	St-VSt?		Fill
					1				<<Wp			
					56				<Wp			
			D-BH4		2	1.9		CL	Snady Silty CLAY, low plasticity, brown/orange/red ; sand, fine grained; trace gravel, fine grained, angular	<Wp	VSt-H?	
					55							
					3			Tube terminated at 3.0m, reachnig target depth. Borehole No: BH4 terminated at 3m				
					54							
					4							
					53							
					5							
					52							
					6							
					51							
					7							

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Borehole Log

BH no: **BH5**
sheet: 1 of 1
job no.: 5410-2

client: Geoff Nines Fong & Partners
principal: St Dominic's School
project: Proposed Alterations & Additions
location: 21 Copeland Street, Kingswood NSW
equipment: Geoprobe rig
diameter: 57mm **inclination:** -90° **bearing:** --- **E:** **N:**
started: 4.10.2019
finished: 4.10.2019
logged: WY
checked: MAG
RL surface: 57.4 m approx.
datum: AHD

drilling information						material information						
method	support	water	notes samples, tests, etc	RL	depth metres	graphic log	USCS symbol	material description soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	100 hand penetro- meter kPa 200 300 400	structure and additional observations
D	None	None observed					SC	Topsoil / Fill, Clayey SAND, fine grained, dark brown	M	L-MD?		Topsoil / Fill
			D-BH5, ACM	57	0.2		CL	Fill, Sandy CLAY, low plasticity, orange/dark brown ; sand, medium to coarse grained, subrounded to subangular	<Wp	St-Vst?		Fill
					1							
			D-BH5		1.2		CL	Snady Silty CLAY, low plasticity, brown/orange/red ; sand, fine grained; trace gravel, fine grained, subangular	<Wp	VSt-H?		Residual
				56								
					2							
					55							
					3							
					3			Tube terminated at 3.0m, reachnig target depth. Borehole No: BH5 terminated at 3m				
					54							
					4							
					53							
					5							
					52							
					6							
					51							
					7							

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Borehole Log

BH no: **BH6**
 sheet: 1 of 1
 job no.: 5410-2

client: Geoff Nines Fong & Partners
principal: St Dominic's School
project: Proposed Alterations & Additions
location: 21 Copeland Street, Kingswood NSW
equipment: Geoprobe rig
diameter: 57mm **inclination:** -90° **bearing:** --- **E:** **N:**
started: 4.10.2019
finished: 4.10.2019
logged: WY
checked: MAG
RL surface: 57.4 m approx.
datum: AHD

drilling information						material information						
method	support	water	notes samples, tests, etc	RL	depth metres	graphic log	USCS symbol	material description soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	hand penetro- meter kPa	structure and additional observations
D	None	None observed		57	0.2		SC	Topsoil / Fill, Clayey SAND, fine grained, dark brown	M	L-MD?	100	Topsoil / Fill
			D-BH6, ACM				CL	Fill, Sandy CLAY, low plasticity, red / grey brown ;sand, fine grained	<Wp	F-St?	200	Fill
			D-BH6		1							
					1		CL	Snady Silty CLAY, low plasticity, brown/orange/red ; sand, fine grained; trace gravel, fine grained, subangular	<Wp	VSt-H?	300	Residual
					56							
					2							
					55							
					3							
					3			Tube terminated at 3.0m, reachnig target depth. Borehole No: BH6 terminated at 3m				
					54							
					4							
					53							
					5							
					52							
					6							
					51							
					7							

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Borehole Log

BH no: **BH7**

sheet: 1 of 1

job no.: 5410-2

client:	Geoff Nines Fong & Partners	started:	4.10.2019
principal:	St Dominic's School	finished:	4.10.2019
project:	Proposed Alterations & Additions	logged:	WY
location:	21 Copeland Street, Kingswood NSW	checked:	MAG
equipment:	Geoprobe rig	RL surface:	57.5 m approx.
diameter:	57mm	inclination:	-90°
bearing:	---	E:	
N:		datum:	AHD

drilling information						material information							
method	support	water	notes samples, tests, etc	RL	depth metres	graphic log	USCS symbol	material description soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	hand penetro- meter kPa 100 200 300 400	structure and additional observations	
D	None	None observed					SC	Topsoil / Fill, Clayey SAND, fine grained, dark brown	D	L-MD?		Topsoil / Fill	
			D-BH7, ACM		0.2		CL	Fill, Sandy CLAY, low plasticity, orange/dark brown ; sand, medium to coarse grained, subrounded to subangular; fragment of artificial material (concrete?)	<Wp	F-St?		Fill	
				57									
			D-BH7		0.8		CL	Snady Silty CLAY, low plasticity, brown/orange/red ; sand, fine grained; trace gravel, fine grained, subangular	<Wp	St-H?		Residual	
					1								
					56								
					2								
					55								
					3								
					3			Tube terminated at 3.0m, reachnig target depth. Borehole No: BH7 terminated at 3m					
					54								
					4								
					53								
					5								
					52								
					6								
					51								
					7								

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job no.: 5410-2

drilling information						material information						
method	support	water	notes samples, tests, etc	RL	depth metres	graphic log	USCS symbol	material description soil type: plasticity or particle characteristics, colour, secondary and minor components.	moisture condition	consistency/ density index	100 hand 200 penetro- kPa 300 400 meter	structure and additional observations
D	None	None observed		57	0.2		SC	Topsoil / Fill, Clayey SAND, fine grained, dark brown	M	MD?		Topsoil / Fill
			D-BH8, ACM				CL	Fill, Sandy CLAY, low plasticity, orange/dark brown ;sand, medium to coarse grained, subrounded to subangular	<Wp	F-St?	Fill	
			D-BH8			1						
						1		CL	Snady Silty CLAY, low plasticity, brown/orange/red ; sand, fine grained; trace gravel, fine grained, subangular	<<Wp	VSt-H?	Residual
				56								
					2							
				55								
					2.5		CL	Shaley CLAY, low plasticity, grey / dark grey / orange	<<Wp	VSt-H?		Residual
					3							
					3			Tube terminated at 3.0m, reachnig target depth. Borehole No: BH8 terminated at 3m				
				54								
					4							
				53								
					5							
				52								
					6							
				51								
					7							

Borehole Log - Revision 10

Document Set ID: 8951961
Version: 1, Version Date: 05/12/2019

APPENDIX G

Important Information about your Environmental Report

SCOPE OF SERVICES

The environmental report ("the report") has been prepared in accordance with the scope of services as set out in the contract, or as otherwise agreed, between the Client and Asset Geotechnical Engineering Pty Ltd ("Asset"), for the specific site investigated. The scope of work may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

The report should not be used if there have been changes to the project, without first consulting with Asset to assess if the report's recommendations are still valid. Asset does not accept responsibility for problems that occur due to project changes if they are not consulted.

RELIANCE ON DATA

Asset has relied on data provided by the Client and other individuals and organizations, to prepare the report. Such data may include surveys, analyses, designs, maps and plans. Asset has not verified the accuracy or completeness of the data except as stated in the report. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations ("conclusions") are based in whole or part on the data, Asset will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to Asset.

LIMITATIONS OF SITE INVESTIGATION

The investigation program undertaken is a professional estimate of the scope of investigation required to provide a general profile of subsurface conditions. The data derived from the site investigation program and subsequent laboratory testing are extrapolated across the site to form an inferred geological model, and an engineering opinion is rendered about overall subsurface conditions and their likely behavior with regard to the proposed development. Despite investigation, the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies.

The engineering logs are the subjective interpretation of subsurface conditions at a particular location and time, made by trained personnel. The actual interface between materials may be more gradual or abrupt than a report indicates.

Therefore, the recommendations in the report can only be regarded as preliminary. Asset should be retained during the project implementation to assess if the report's recommendations are valid and whether or not changes should be considered as the project proceeds.

SUBSURFACE CONDITIONS ARE TIME DEPENDENT

Subsurface conditions can be modified by changing natural forces or man-made influences. The report is based on conditions that existed at the time of subsurface exploration. Construction operations adjacent to the site, and natural events such as floods, or ground water fluctuations, may also affect subsurface conditions, and thus the continuing adequacy of a report. Asset should be kept apprised of any such events, and should be consulted to determine if any additional tests are necessary.

VERIFICATION OF SITE CONDITIONS

Where ground conditions encountered at the site differ significantly from those anticipated in the report, either due to natural variability of subsurface conditions or construction activities, it is a condition of the report that Asset be notified of any variations and be provided with an opportunity to review the recommendations of this report. Recognition

of change of soil and rock conditions requires experience and it is recommended that a suitably experienced environmental engineer be engaged to visit the site with sufficient frequency to detect if conditions have changed significantly.

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REPORT FOR BENEFIT OF CLIENT

The report has been prepared for the benefit of the Client and no other party. Asset assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of Asset or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own inquiries and obtain independent advice in relation to such matters.

DATA MUST NOT BE SEPARATED FROM THE REPORT

The report as a whole presents the site assessment, and must not be copied in part or altered in any way.

Logs, figures, drawings, test results etc. included in our reports are developed by professionals based on their interpretation of field logs (assembled by field personnel) and laboratory evaluation of field samples. These data should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

PARTIAL USE OF REPORT

Where the recommendations of the report are only partially followed, there may be significant implications for the project and could lead to problems. Consult Asset if you are not intending to follow all of the report recommendations, to assess what the implications could be. Asset does not accept responsibility for problems that develop where the report recommendations have only been partially followed if they have not been consulted.

OTHER LIMITATIONS

Asset will not be liable to update or revise the report to take into account any events or emergent circumstances or fact occurring or becoming apparent after the date of the report.