Douglas Partners
Geotechnics / Environment / Groundwater

Integrated Practical Solutions

Report on
Preliminary Site (Contamination) Investigation

Granville Park Oval Pavilion
2 Montrose Avenue, Merrylands

Prepared for
Cumberland Council

Project 86543.01
November 2018

Douglas Partners
Geotechnics / Environment / Groundwater

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

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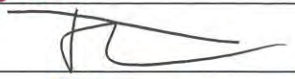
Author		7 November 2018
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1. Introduction

This report presents the results of a preliminary site (contamination) investigation (PSI) undertaken for Granville Park Oval Pavilion, the proposed Granville Park upgrades at 2 Montrose Avenue, Merrylands ('the site', Drawing 1, Appendix A). The investigation was commissioned by Maheir EL Mohamad of Cumberland Council on 6 September 2018 and was undertaken in general accordance with Douglas Partners Pty Ltd (DP) proposal SYD180861 dated 4 September 2018. The PSI is required to support the development application to Council and to assist project planning.

The proposed development will include the demolition of the existing grandstand and some adjacent and temporary structures, and construction of a two level grandstand with internal canteen, kitchen, bar, function area and players shelter. Resurfacing of the pavements for the sections of the existing car park is also proposed. Excavation depths below existing surface levels are still to be determined but are anticipated to be in the order of between 1 and 1.5 m.

The objectives of this PSI are to:

- Identify potential sources of contamination and determine the potential contaminants of concern;
- Identify potential human and environmental receptors;
- Conduct a preliminary investigation of subsurface soil conditions for land use and waste classification purposes; and
- Assess the need for further investigations.

This PSI has been conducted with reference to the National Environment Protection Council (NEPC) *National Environment Protection (Assessment of Site Contamination) Measure* 1999 (amended 2013, NEPC 2013) and includes a review of available historical information, a site walkover, a limited intrusive investigation and development of a preliminary conceptual site model (CSM). In addition, results of the investigation have been used to provide a preliminary *in situ* waste classification of site soils to assist project planning.

The investigation was conducted concurrently with DP's geotechnical investigation.[1]

[1] Douglas Partners Pty Ltd, *'Report on Geotechnical Investigation, Proposed Granville Park Oval Pavilion, 2 Montrose Avenue, Merrylands'*, DP project ref: 86543.00.R.001.Rev0, 23 October 2018 (DP, 2018).

2. Scope of Work

The scope of work for the investigation comprised:

- Review of Lotsearch Enviro Professional Report LS004175 dated 18September 2018 (the Lotsearch Report) which included the following:
  - Historical aerial photographs;
  - Public databases held under the *Contaminated Land Management Act 1997* (CLM Act) and the *Protection of the Environment Operations Act 1997* (POEO Act);
  - Topographic maps;
  - Soils, acid sulphate soils and geological maps;
  - Department of Primary Industry groundwater bore records;
  - Historic maps (including historic UBD);
  - Historic business searches;
- Review of historical title deeds;
- Review of available council records;
- Review of Council Section 10.7 Planning Certificate provided by the client;
- A site walkover to observe current site use and assess the potential for contaminating activities;
- Opportunistic soil sampling from the eight geotechnical boreholes at regular intervals and changes in strata;
- Analysis of 15 soil samples (plus QA/QC samples) at a NATA accredited laboratory for a range of potential common contaminants and parameters including:
  - Eight heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni and Zn);
  - Total recoverable hydrocarbons (TRH);
  - Monocyclic aromatic hydrocarbons (benzene, toluene, ethylbenzene and xylene – BTEX);
  - Polycyclic aromatic hydrocarbons (PAH);
  - Organochlorine pesticides (OCP);
  - Organophosphate pesticides (OPP);
  - Polychlorinated biphenyls (PCB);
  - Phenols (total);
  - Asbestos (40 g samples for screening purposes);
  - pH;
  - Cation exchange capacity (CEC);
- Analysis of two material samples at a NATA accredited laboratory for asbestos identification; and
- Preparation of this PSI report.

3. Site Information

3.1 Site Identification

The site is located within the north western area of Lot 1 Deposited Plan 1170952 and is identified as the grandstand and parking area for Merrylands RSL Rugby Park. It is located within the broader Granville Park which is identified as street address 2 Montrose Avenue, Merrylands. It is within the local government area of Cumberland Council.

The site covers an area of approximately 4,780 m^2 as shown on Drawing 1, Appendix A.

3.2 Site Description

The site is located within the south western area of the wider Granville Park, a large open space with multiple playing fields, car park, canteen, cricket nets and play equipment area. The site is on the western side of the playing field known as Merrylands RSL Rugby Park. At present, the site is occupied by a clubhouse/grandstand associated with rugby field, with canteen, attached BBQ area, covered spectator seating area, changing room facilities and amenities. A detached toilet is present to the west of the grandstand and a number of structures are present on the site including covered storage sheds, shipping containers and a water tank. It has a 279 m long curved frontage to the surrounding playing fields to the north, east and south, which bound the site, and a 150 m frontage to the car park adjacent to Montrose Avenue to the west. A concrete paved area is located to the south of the clubhouse building. A carpark is located to the west and north of the clubhouse building.

Given the age and materials used for construction, it was considered likely that a number of buildings on the site contained hazardous building materials such as: asbestos-containing materials (ACM); high risk synthetic mineral fibre (SMF); PCBs in light fittings; lead paint systems; and lead in ceiling cavity dust.

It was observed, that the clubhouse/grandstand had sustained superficial damage, possibly from vandals, which had damaged and further exposed the hazardous materials. Some likely asbestos-containing fibre cement fragments were observed on the ground surface adjacent to the western elevation of the building.

Duck creek, a major stormwater channel, is located to the south east of the site and transects underneath the south eastern elevation of Granville Park. A culvert is located along the eastern boundary of Granville Park. Access is available on Claremont Street and Woodville Road to the stormwater channels

3.3 Proposed Site Development

The proposed development will comprise demolition of the existing clubhouse, spectator area and surrounding structures and the construction of a two level grandstand with internal canteen, kitchen, bar, function area and players shelter, illustrated in Figure 1 below. Resurfacing of the pavements for sections of the existing car park is also proposed.

The architectural plans indicate that the proposed grandstand building will be situated on a berm on the western side of the playing field. The players shelters/changing rooms will be located below the grandstand building, within the berm.

The approximate footprint of the proposed building is indicated on Drawing 1 in Appendix C.

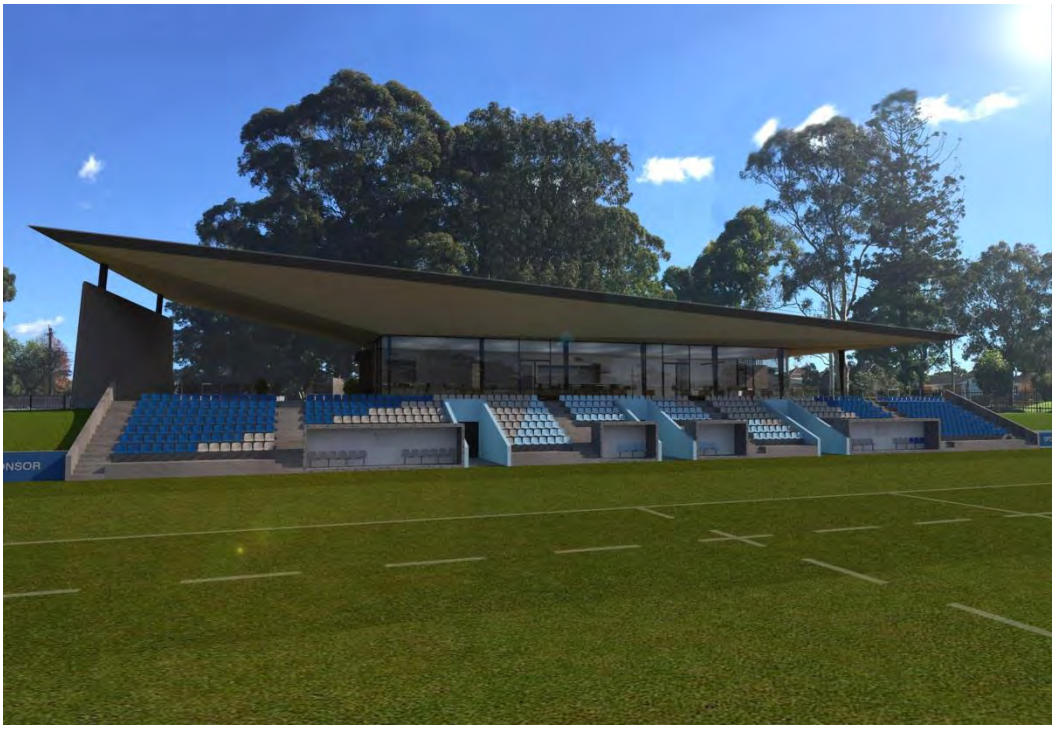


Figure 1: Elevation (looking west) of the Proposed Grandstand Building (Cumberland Council)

4. Topography, Geology, Soils and Hydrogeology

Reference to the Penrith 1:100 000 Series Geological Sheet excerpt included in the Lotsearch Report indicates that the majority of the site is underlain by the Ashfield Shale; dark-grey to black claystone-siltstone and fine sandstone – siltstone laminate of the Wianamatta group of Middle Triassic age. The north western corner of the site may be underlain by the Minchinbury Sandstone; fine to medium-grained quartz-lithic sandstone of the Wianamatta group of Middle Triassic age. It is noted that these typically weather to form residual clays. This mapping is consistent with the observations of this investigation and that undertaken by DP for the adjacent rugby field.

Reference to the Penrith 1:100 000 Geological Sheet excerpt included in the Lotsearch Report indicates the site is underlain by residual Blacktown soil.

The NSW Acid Sulphate Soil (ASS) Risk Map indicates that the eastern area of Granville Park, to the east of the playing field, has a low probability of ASS occurrence. The actual site is located in an area of Soil Class 5, and the probability of occurrence of acid sulfate soils is extremely low. Given that the

site is not within an ASS mapped area and the presence of residual clays encountered across the site (see Section 9), ASS were not considered to be of concern for this assessment.

A search of the NSW Department of Primary Industries Office of Water database was undertaken and is reported in the Lotsearch Report (pp. 66-68, Appendix D). No registered groundwater bores were identified within the site, with the closest bores recorded over 130 m from the site boundary. The vast majority of these bores were installed as monitoring bores, with a small number as domestic stock bores. Given their distance from the site these recorded bores were not considered further.

The site is located on ground gently sloping towards Duck Creek located to the south east of the site. Surface water and groundwater flow would be anticipated to be in this direction. Duck Creek, a significant stormwater channel, is located to the south east of the site, flowing south west to north east, approximately 160 m from the site. This creek serves as the major stormwater channel for the area, and flows underneath the wider Granville Oval area.

Two groundwater wells were installed for the subsequent measurement of the water level on the site. The wells were installed on BH1 and BH3 to depths of 1.0 m and 5.5 m. BH1 was installed on 13 September and BH3 was installed on 14 September. Water levels of 4.3 m bgl in BH1 and 3.6 m bgl in BH3 were recorded a month after the wells were installed and developed.

5. Site History

5.1 Historical Aerial Photographs

Historical aerial photographs were included as part of the Lotsearch Report for the years 1943, 1955, 1961, 1965, 1970, 1982, 1991, 2003, 2009, 2016 and 2017. Extracts of the photographs are provided in the Lotsearch Report (pages 6 and 44 – 53), Appendix D. Historic maps for the years 1917-1929, 1936-1942, 1975 and 2015 included in the Lotsearch Report were also reviewed.

The 1943 photograph shows the site being much the same use as it is in its' current form; as a clubhouse/grandstand area for the adjacent rugby field. A single larger building is present, in the same position as the current clubhouse, with vegetation to the north and sparsely surrounding the field. Vegetation is also present to the west of the building, between it and Montrose Avenue. A small cleared area with a single building is present to the immediate south of the clubhouse/grandstand area, giving access to the site from the road to the west. Military barracks style buildings are present to the east of the playing field area and cover most of Granville Park to the north of the site. The local area is primarily occupied by low density residential housing. A possible service station is located approximately 300 m to the east of the site on the corner of Woodville Road and Louis Street. A culverted water course is present in the current location of Duck Creek, to the south, south east and east of the site.

The 1955 photograph shows the construction of a fence around the grandstand building area which also encompasses the field. Another building and paved area, to the south west of the clubhouse/grandstand building has been constructed, possibly serving as a storage shed and carpark area. The number of low density residential housing surrounding the site has increased.

The painting of lines on the field is evident on the 1961 photograph and appears to be the only notable change from the 1955 photography.

Little change to the specific site is apparent in the 1965 photograph. The area continues to be used for clubhouse and recreational sporting purposes. The military camp to the east and north appears to have been recently demolished, as evident by the rubble outlining the past building footprints.

The 1970 photograph shows the construction of a small, detached structure to the north of the grandstand/clubhouse building. From the small size, it may possibly be a toilet block or storage shed. Four large individual light appear to have been installed surrounding the field area.

The installation of a gatehouse style structure to the south of the grandstand/clubhouse building, adjacent to the carpark area is apparent in the 1982 photograph. Another small, detached structure to the north of the grandstand/clubhouse building has been constructed, adjacent to the one noted in the 1970 photograph. Spectator seating is visible to the east of the grandstand/clubhouse building between the building and the playing field.

The two structures to the north of the grandstand/clubhouse building present in the 1970 and 1982 aerials are no longer evident in the 1991 photograph. An area directly to the west of the grandstand/clubhouse has been cleared of vegetation. One structure to the south west of the grandstand/clubhouse, adjacent to the carpark has been removed.

A covering/shelter has been installed over the spectator area between the grandstand and the playing field as indicated in the 2003 photograph. A small building has been constructed to the north east of the grandstand/clubhouse, adjacent to the playing field. A slight increase in the vegetation covering adjacent to the playing field is evident since the 1991 photograph.

The 2009 photograph shows slight modifications have been conducted on the covering/shelter to the spectator area. A slight reduction in vegetation is present to the north of the playing field. One of the structures to the south west of the grandstand/clubhouse has been removed.

The 2016 photograph depicts further modifications to the covering/shelter of the spectator area has been undertaken. Clearing of vegetation to the south of the grandstand/clubhouse has occurred.
The 2017 photograph depicts a slight increase to temporary structures to the north and south of the grandstand area.

It is noted that all aerials indicate the general land-use in the surrounding areas to have been low density residential whilst the site appears to have been used as a playing field and recreational purposes since 1943. Prior to 1943 imagery, the site may have been used by the adjacent military accommodation present on the adjacent Granville Oval. The 1919-1929 and 1936-1942 historical maps depict a number of roads in the eastern part of the site with some buildings present in this area. The wider Granville Park is represented in these maps as a cleared area, without any sign of development. No difference is noted between the 1919-1929 and 1936-1942 maps.

The 1975 historical map depicts the main oval area of Granville Park and shows no representation of the previous roads along the eastern elevation of the site. One building is depicted, potentially the grandstand/clubhouse building, in the north western corner of the site.

The 2015 historical map depict the grandstand/clubhouse at the site in the north western corner of the site. The building is labelled 'club' and other uses are labelled across the wider Granville Park site. Duck Creek is depicted to the south west of the site.

5.2 Regulatory Notice Search

The results of a search of the public databases is included in the Lotsearch Report dated 18 September 2018 (pp. 7-17), which indicated that:

- There are five properties[2] within 900 m of the site that were notified to the NSW EPA under the duty to report contamination. These included two Caltex Service Stations in Merrylands, located 209 m north east and 245 m south, the former Stocklead Manufacturing Site located 548 m north, Stockland Merrylands Court located 733 m north west and the Old Granville Depot located 882 m east.
- There is a single property that has Record of Notices within 700 m of the site. Merrylands Substation PCB Storage, located 636m to the north, with three former notices;
- There no properties of former gasworks within 1,000 m of the site;
- There are no properties on the national waste management site database within 1,000 m of the site;
- There are no properties currently subject to the EPA PFAS (Perfluorooctanesulfonic acid, commonly used in firefighting products) Investigation Programme within 1,000 m of the site;
- There is one site identified as a former James Hardie asbestos manufacturing and/or waste disposal site within 500 m of the site. This site is Merrylands Road, 179 m north west of the site;
- There is one property within 1,000 m of the site listed to undertake licenced activities. The Sydney Trains is licensed for railway systems activities, located 372 m north west of the site;
- There is one property within 1,000 m of the site listed as having a delicensed activity. R.E. Batger Pty Ltd is delicensed for Hazardous, Industrial or Group A Waste Generation or Storage, located 634m south west of the site;
- There is one surrendered license listed for a property within 1,000 m of the site. Robert Orchard has a surrendered license for Hazardous, Industrial or Group A Waste Generation or Storage, 634m south west of the site.

Given the distance of the above listed properties from the site and that the geology of the areas (residual clays overlying Ashfield Shale), the potential impact from these properties (and associated activities) on the site is considered to be low and hence have not been considered further.

5.3 Historical Business Activity

A review of historical business activities was undertaken by reviewing the UBDs Business to Business Directory for 1950, 1961, 1965, 1970, 1975, 1978, 1982, 1986 and 1991 (Lotsearch Report, pp. 19-43). A review of the historical business directory for the site indicates that there are no records of business activity taking place within the site boundary since 1950.

[2] Distances were measured from the boundary of the search area, that is Lot 1, Deposited Plan 1170952, not the site boundary.

In broad terms, the site appears to have been utilised exclusively for the use of a grandstand/clubhouse associated with the adjacent sporting field, whilst Granville Park more generally was also possibly used as a military camp located to the north and east.

A motor garage and service station business was identified by the lotsearch as having been located 71 m to the east of the wider Granville Park area dating to as early as 1950. Although this business has been listed as recently as the 1991 records, the business is located down gradient of the site and therefore not considered as a possible source of contamination for the site.

A child care centre is located approximately 60 m to the south east of the wider Granville Park. Due to the business being located down gradient of the site it is therefore not considered as a possible receptor for contamination for the site.

5.4 Historical Title Deeds

A historic title deed search was conducted for the site by InfoTrack Pty Ltd and was used to obtain ownership and occupancy information including company names and the occupations of individuals. Title Deeds are presented in Appendix E. The title information can assist in the identification of previous land uses by the company names or the site owners and can therefore assist in establishing whether there were potentially contaminating activities occurring at the site. Notwithstanding, it should be noted that whilst titles can assist they are not conclusive of land use and need to be used in conjunction with other site information (e.g. aerial photographs) to gain a better understanding of the likely land use.

The title search for Lot 1 Deposited Plan 1170952 (formerly known as Portion 17C DP752058) recovered documentation that indicated Granville Park was proclaimed on 30 November 1886. The NSW Land Registry Services list the land as a reserve within the meaning of Part 5 of the Crown Lands Act 1989. As such, the land has been dedicated for public use and no private title deeds have been acquired for the land.

5.5 Council Planning 10.7 Certificate

The Planning Certificates under Section 10.7 of the *Environmental Planning and Assessment Act, 1979*, and were obtained for the site and are provided in Appendix F. The site is zoned as 'R2 – Low Density Residential' with the sub category 'RE1 – Public Recreation'.

The certificate states (under Section 10.7(2)) that, as prescribed by section 59 (2) of the *Contaminated Land Management Act*, 1997, Council has not identified that site audit statements have been received in respect of the site and the land to which the certificates relate are not:

- Declared to be significantly contaminated land;
- Subject to a management order;
- Subject of an approved voluntary management proposal; or
- Subject of an ongoing maintenance order.

6. Site Walkover

A site walkover was undertaken on 13 September 2018 by an Environmental Scientist from DP.

The site is located within the south western area of the wider Granville Park, a large open space with multiple playing fields, car park, canteen, cricket nets and play equipment area (refer Photographs 1 – 3, Appendix B). The site is on the western side of the playing field known as Merrylands RSL Rugby Park.

At present, the site is occupied by a clubhouse/grandstand associated with rugby field, with canteen, attached BBQ area, covered spectator seating area, changing room facilities and amenities (refer Photograph 3, Appendix B). A number of temporary and permanent structures surround the clubhouse/grandstand building (refer Photographs 4 – 6). Some possible vandal damage is present to the west and east of the grandstand/clubhouse building (refer Photographs 9 and 10).

A concrete paved area is located to the south of the clubhouse building (Photograph 2). A carpark is located to the west and north of the clubhouse building.

Some potential fly tipping was observed to the south and south west of the clubhouse/grandstand area (refer Photographs 7 and 8). Much of the material appeared to have been sourced from the clubhouse building, however, it may contain hazardous materials which were observed in the building materials of the clubhouse.

A stormwater channel was observed to the east and south east of the site (Photographs 11 and 12).

Land uses adjacent comprise:

- North, East and South: Granville Park; and
- West: Residential housing.

7. Preliminary Conceptual Site Model

A CSM is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM provides the framework for identifying how the site became contaminated and how potential receptors may be exposed to contamination in the either in the present or the future i.e. it enables an assessment of the potential source – pathway – receptor linkages (complete pathways).

7.1 Potential Contamination Sources

Potential sources of contamination based on the review of site history information and the site walkover are considered to be as follows:

- (S1) Filling of unknown origin to form or level the site: Fill was encountered in all eight sample locations across the site to varying depths. Various potential contaminants can be associated

with filling from unknown origins. Demolition of former and deterioration of existing structures on the site may have resulted in some contamination of the filling / surficial soil as well. Commonly these contaminants include metals, TRH, BTEX, PAH, OCP, OPP, PCB, phenols and asbestos;

- (S2) Hazardous building materials: Building materials used in the construction of the properties may potentially contain hazardous building materials. Suspected asbestos-containing building materials were visually identified during the site walkover. Potential contaminants include asbestos-containing materials (ACM), lead (lead based paint), synthetic mineral fibres (SMF) and polychlorinated biphenyls (PCB).

7.2 Potential Pathways

The potential pathways by which contamination could reach potential receptors are as follows:

- (P1) Dermal contact and ingestion;
- (P2) Inhalation of dust;
- (P3) Inhalation of vapours;
- (P4) Leaching of contaminants and vertical migration into groundwater;
- (P5) Lateral migration of groundwater; and
- (P6) Contact with terrestrial ecology.

7.3 Potential Receptors

The potential receptors of contamination for the proposed development include:

- (R1) - Site users (current and post-development recreational public use);
- (R2) - Construction workers (for the proposed development);
- (R3) - Maintenance workers (for intrusive works at present and after the proposed development construction);
- (R4) – Adjacent site users;
- (R5) – Groundwater;
- (R6) – Surface water body (stormwater culvert flowing into Duck Creek); and
- (R7) – Terrestrial ecology.

7.4 Preliminary Conceptual Site Model

A ‘source – pathway – receptor’ approach has been used to assess the potential risks of harm being caused to human or environmental receptors from contamination sources on or in the vicinity of the site, via exposure pathways (potential complete pathways). The possible pathways between above-listed sources and receptors are provided in Table 1 as the preliminary conceptual site model.

Table 1: Preliminary conceptual site model

Potential Source	Transport Pathway	Receptor
(S1) Filling of Unknown Origin	(P1) Dermal contact and ingestion (P2) Inhalation of dust (P3) Inhalation of vapours	(R1) Site users (R2) Construction workers (R3) Maintenance workers
	(P2) Inhalation of dust (P3) Inhalation of vapours	(R4) Adjacent site users
	(P4) Leaching of contaminants	(R5) Groundwater
	(P5) Lateral migration	(R6) Surface water body
	(P6) Contact with terrestrial ecology	(R7) Terrestrial ecology
(S2) Hazardous building materials	(P1) Dermal contact and ingestion (P2) Inhalation of dust (P3) Inhalation of vapours	(R1) Site users (R2) Construction workers (R3) Maintenance workers
	(P2) Inhalation of dust	(R4) Adjacent site users

8. Fieldwork and Analysis

8.1 Data Quality Objectives and Project Quality Procedures

This preliminary site (contamination) investigation has been devised in general accordance with the seven step data quality objective (DQO) process which is provided in Appendix B, Schedule B2 of NEPC (2013). The DQO process is outlined as follows:

- State the problem;
- Identify the decision;
- Identify inputs into the decision;
- Define the boundary of the assessment;
- Develop a decision rule;
- Specify acceptable limits on decision errors; and
- Optimise the design for obtaining data.

Referenced sections for the respective DQOs listed above are provided in Appendix G.

8.2 Data Quality Indicators

The performance of the assessment in achieving the DQO was assessed through the application of data quality indicators (DQI) as defined by:

- Completeness – a measure of the amount of usable data from a data collection activity;

- Comparability – the confidence (qualitative) that data may be considered to be equivalent for each sampling and analytical event;
- Representativeness – the confidence (qualitative) of data representativeness of media present on-site;
- Precision – a measure of variability or reproducibility of data; and
- Accuracy – a measure of closeness of the data to the 'true' value.

8.3 Fieldwork Methods

Prior to drilling, the available Dial before You Dig (DBYD) drawings were reviewed and each borehole location checked for underground services using an electro-magnetic scanner.

Intrusive works were carried out on 13 and 14 September 2018 at the locations shown in Drawing 1, Appendix C which provided general site coverage. The eight boreholes (BH1 to BH8) were drilled using a bobcat-mounted drilling rig and were initially drilled through surface pavements and into the underlying soils to refusal using continuous solid flight auger and rotary washbore drilling techniques. On auger refusal, the cored boreholes (BH1 to BH3) were extended into the underlying bedrock using NMLC size (50 mm diameter) diamond core drilling equipment to the termination depths of between 5.07 m and 5.49 m bgl. Groundwater wells were installed in BH1 and BH3 to allow spot checking of groundwater levels as part of the geotechnical investigation. Their construction details are summarised on the borehole logs in Appendix H.

8.4 Soil Sampling Locations and Rationale

Table A of NSW EPA *Sampling Design Guidelines* (1995) recommends a minimum of 13 sampling points for a 5,000m^2 site for site characterisation based on the detection of circular hot spots using a systemic grid sampling pattern. Sampling for preliminary assessments generally comprises 30-50% of the recommended density. Given this, that the drilling was undertaken primarily for geotechnical purposes supplemented with opportunistic sampling for contamination purposes, and the boreholes provided general site coverage, the eight test locations were considered suitable for this preliminary assessment.

8.5 Soil Sampling Procedures

Environmental sampling was performed in general accordance with standard operating procedures outlined in the DP *Field Procedures Manual*. All sampling data was recorded on borehole logs presented in Appendix H and selected samples for laboratory analysis were recorded on DP chain-of-custody (COC) sheets provided in Appendix J. The general soil sampling procedure comprised:

- Collection of soil samples directly from the augers, with augers decontaminated between sample locations and disposable gloves replaced between samples to minimise the potential for cross contamination;
- Transfer of samples into laboratory prepared glass jars and bottles (with appropriate preservatives for analytes) and capping immediately with Teflon lined lids;

- Labelling of sampling containers with individual and unique identification, including project number, sample identification and sample depth;
- Placement of sample containers and bags into a cooled, insulated and sealed container for transport to the laboratory; and
- COC was maintained at all times and countersigned by the receiving laboratory on transfer of the samples.

8.6 Analytical Rationale

The analytical scheme was designed to obtain an indication of the potential presence and possible distribution of identified contaminants of concern (COC) based on the CSM. The primary contaminants of concern, as identified in Section 6, are asbestos, metals, TRH, BTEX, PAH, OCP, OPP, PCB and phenols.

Soil samples were selected for analysis based on site observations (i.e. odour, staining etc.), and their location within the subsoil strata (i.e. surface, filling, natural), with an emphasis on filling and near surface samples where it would be expected that the bulk of identified COC would be present.

8.7 Field Quality Assurance and Quality Control

The field QC procedures for sampling were in general accordance with Douglas Partners' *Field Procedure Manual*, and are outlined in Section 7.5.

Field replicates were recovered and analysed for a limited suite of contaminants by means of intra-laboratory analysis. Trip spikes and trip blanks were also taken into the field. This is consistent with standard industry practice and guidelines.

8.8 Laboratory QA / QC

The analytical laboratory, Envirolab Services Pty Ltd (ELS), accredited by NATA, is required to conduct in-house QA/QC procedures. These are normally incorporated into every analytical run and include reagent blanks, spike recovery, surrogate recovery and duplicate samples. These results are included in the laboratory certificates in Appendix J.

The results of the DP assessment of laboratory QA/QC are shown in Appendix G, with the full laboratory certificates of analysis included in Appendix J.

8.9 Hazardous Building Materials

Suspected hazardous building materials were observed in the external walls of the grandstand/clubhouse building. External damage and associated debris was observed to the exterior eastern and western panelling of the grandstand/clubhouse building. Samples were collected from:

the external, eastern elevation, blue painted wall throughout – fibre cement sheeting (BMS04); and the internal, internal liner, throughout – fibre cement sheeting (BMS05).

9. Site Assessment Criteria

Given the proposed development and the potential receptors identified in the CSM, the adopted SAC were for a public open space land use with fully accessible areas to the public.

Soil analytical results were assessed (as a Tier 1 assessment) against the SAC comprising the investigation and screening levels of Schedule B1, *National Environment Protection (Assessment of Site Contamination) Measure* 1999, as amended 2013 (NEPC, 2013). NEPC (2013) is endorsed by the NSW EPA under the CLM Act 1997. Petroleum based health screening levels for direct contact have been adopted from the *Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) Technical Report no.10 Health screening levels for petroleum hydrocarbons in soil and groundwater* (2011) as referenced by NEPC (2013).

The investigation and screening levels are applicable to generic land use settings and include consideration of, where relevant, the soil type and the depth of contamination. The investigation and screening levels are not intended to be used as clean up levels. Rather, they establish concentrations above which further appropriate investigation (e.g. Tier 2 assessment) should be undertaken. They are intentionally conservative and are based on a reasonable worst-case scenario.

9.1 Health Investigation Levels

The Health Investigation Levels (HIL) are scientifically-based, generic assessment criteria designed to be used in the first stage (Tier 1) of an assessment of potential human health risk from chronic exposure to contaminants.

HILs are applicable to assessing health risk arising via all relevant pathways of exposure for a range of metals and organic substances. The HIL are generic to all soil types and apply generally to a depth of 3 m below the surface for recreational use. Site-specific conditions may determine the depth to which HIL apply for other land uses.

Based on the proposed development (space associated with recreational playing fields), the adopted HIL is HIL-C Recreational with full accessibility to soil. Table 2 shows the HIL that have been adopted by NEPC (2013) Schedule B1, Table 1A (1) for assessing the human health risk from a contaminant via relevant pathways of exposure, as detailed in the CSM. Table 2 only includes contaminants analysed during this investigation, not the full list provided in NEPC (2013).

Table 2: Health Investigation Levels (Non-petroleum Chemical Contaminants)

Contaminant	HIL C (mg/kg)
Metals and Inorganics	
Arsenic	300
Cadmium	90
Chromium (IV)	300
Copper	17000
Lead	600
Mercury (inorganic)	80
Nickel	1200
Zinc	30000
PAH	
Carcinogenic PAH (as benzo(a)pyrene TEQ)	3
Total PAH	300
OCP / OPP	
DDT + DDD + DDE	400
Aldrin + Dieldrin	10
Chlordane	70
Endosulfan (total)	340
Endrin	20
Hepatchlor	10
HCB	10
Methoxychlor	400
Chlororpyrifos	250
Other Organics	
PCB	1
Total Phenolics (using pentachlorophenol as an initial screen)	120

9.2 Health Screening Levels and Management Limits

Vapour Inhalation Health Screening Levels

HSL are applicable to selected petroleum compounds and fractions to assess the risk to human health via inhalation and direct contact pathways. HSLs have been developed for different land uses, soil types and depths to contamination.

Table 3 shows petroleum hydrocarbon compounds adopted from NEPC (2013) Schedule B1, Table 1A (3) and are based on the exposure to petroleum hydrocarbons through the dominant vapour inhalation exposure pathway. The screening levels are adopted given the exposure risk identified during the CSM.

Based on the proposed development, the adopted HSL is HSL-C recreational / open space. The HSLs are based on overlying soil type and depth. HSLs for sand have been used as a conservative approach noting that the vast majority of soils encountered were a clay soil matrix. The most conservative depth range of 0 m to <1 m has been used which also reflects the presence of fill in the top 1 m of the subsurface profile.

Table 3: Soil Health Screening Levels for Vapour Intrusion

Contaminant	Soil Type	HSL C (mg/kg)
		Depth 0 m to <1m
Toluene	Sand	NL
Ethylbenzene		NL
Xylenes		NL
Naphthalene		NL
Benzene		NL
TRH C_6-C_{10} less BTEX [F1]		NL
TRH >C_{10}-C_{16} less naphthalene [F2]		NL

Note: NL – Not Limiting

Direct Contact Health Screening Levels

Direct contact HSLs provided in CRC CARE (2011) have also been considered for the future land use, considering that the majority of the site will not be occupied by buildings and be available for direct contact such as grassed areas or in garden beds. These are provided in Table 4.

Table 4: Direct Contact Health Screening Levels (mg/kg)

Contaminant	HSL C
Toluene	18,000
Ethylbenzene	5,300
Xylenes	15,000
Naphthalene	1,900
Benzene	120
C_6-C_{10}	5,100
>C_{10}-C_{16}	3,800
>C_{16}-C_{34}	5,300
>C_{34}-C_{40}	7,400

Management Limits

In addition to appropriate consideration and application of the HSL and ESL, there are additional considerations which reflect the nature and properties of petroleum hydrocarbons, including:

- Formation of observable light non-aqueous phase liquids (LNAPL);
- Fire and explosion hazards; and
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services.

Management Limits to avoid or minimise these potential effects have been adopted in NEPC (2013) as interim Tier 1 guidance. Management Limits have been derived in NEPC (2013) for the same four petroleum fractions as the HSL (F1 to F4). The adopted Management Limits, from Table 1B(7), Schedule B1 of NEPC (2013) are shown in the following Table 5. The following site specific data and assumptions have been used to determine the Management Limits:

- The Management Limits will apply to any depth within the soil profile;
- The Management Limits for residential, parkland and public open space land use setting apply; and
- Site soils include sand both in natural soils and filling. A "coarse" soil texture has been adopted and is the most conservative texture for soil Management Limits.

Table 5: Management Limits for TPH Fractions in Soil

TRH Fraction	Soil Texture	Management Limit: (mg/kg)
C_6-C_9 [F1] #	Coarse	700
>C_{10}-C_{16} [F2] #	Coarse	1,000
>C_{16}-C_{34} [F3]	Coarse	2,500
>C_{34}-C_{40} [F4]	Coarse	10,000

Separate management limits for BTEX and naphthalene are not available hence these have not been subtracted from the relevant fractions to obtain F1 and F2

9.3 Ecological Investigation and Screening Levels

Ecological Investigation Levels (EIL) have been derived for selected metals and organic compounds and are applicable for assessing risk to terrestrial ecosystems (NEPC, 2013). EIL depend on specific soil physiochemical properties and land use scenarios and generally apply to the top 2 m of soil, which corresponds to the root zone and habitation zone of many species. The EIL is determined for a contaminant based on the sum of the ambient background concentration (ABC) and an added contaminant limit (ACL). The ABC of a contaminant is the soil concentration in a specific locality that is the sum of naturally occurring background levels and the contaminants levels that have been introduced from diffuse or non-point sources (e.g. motor vehicle emissions). The ACL is the added concentration (above the ABC) of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required.

The EIL is calculated using the following formula:

EIL = ABC + ACL

The adopted EIL were derived using the *Interactive (Excel) Calculation Spreadsheet* for an urban residential land use scenario for aged (>2 years old) soils with low traffic. The EIL are shown in Table 6. The adopted clay content of 10% has been adopted as it is the most conservative approach and the fill material encountered is predominantly a clay soil matrix.

Table 6: Ecological Investigation Levels (EIL)

Analyte		EIL (Urban residential and public open space) (mg/kg)	Note
Metals	Arsenic	100	
	Copper	220	CEC = 4.0 $cmol_c/kg$, pH = 7.45
	Nickel	200	CEC = 4.0 $cmol_c/kg$
	Chromium III	190	%Clay = 10
	Lead	1100	
	Zinc	570	CEC = 4.0 $cmol_c/kg$, pH = 7.45
PAH	Naphthalene	170	
OCP	DDT	180	

Note: Quoted CEC and pH values are an average of the results.

Ecological Screening Levels (ESL) are used to assess the risk of selected petroleum hydrocarbon compounds, BTEX and benzo(a)pyrene to terrestrial ecosystems. ESL apply to the top 2 m of the soil profile as for EIL.

ESL have been derived in NEPC (2013) for petroleum hydrocarbon fractions as well as BTEX and benzo(a)pyrene. The adopted ESL, from Schedule B1 of NEPC (2013) are shown in Table 7. ESL for an urban residential and public open space land use scenario have been adopted. ESL for coarse grained soils have been adopted as the more conservative approach even though the majority of material was of a clay soil matrix in the fill layer and is the most conservative parameter.

Table 7: Ecological Screening Levels (ESL)

Analyte		ESL (Urban Residential Land Use) (mg/kg)
TRH	C6 – C10 (less BTEX)	180*
	>C10-C16	120*
	>C16-C34	300
	>C34-C40	2800
BTEX	Benzene	50
	Toluene	85
	Ethylbenzene	70
	Xylenes	105
PAH	Benzo(a)pyrene	0.7

Note: All ESLs are low reliability apart from those marked with * which are moderate reliability

9.4 Asbestos in Soil

Bonded asbestos-containing material (ACM) is the most common form of asbestos contamination across Australia, generally arising from:

- Inadequate removal and disposal practices during demolition of buildings containing asbestos products;
- Widespread dumping of asbestos products and asbestos containing fill on vacant land and development sites; and
- Commonly occurring in historical fill containing unsorted demolition materials.

Mining, manufacturing or distribution of asbestos products may result in sites being contaminated by friable asbestos including free fibres. Severe weathering or damage to bonded ACM may also result in the formation of friable asbestos comprising fibrous asbestos (FA) and/or asbestos fines (AF).

Asbestos only poses a risk to human health when asbestos fibres are made airborne and inhaled. If asbestos is bound in a matrix such as cement or resin, it is not readily made airborne except through substantial physical damage. Bonded ACM in sound condition represents a low human health risk, whilst both FA and AF materials have the potential to generate, or be associated with, free asbestos fibres. Consequently, FA and AF must be carefully managed to prevent the release of asbestos fibres into the air.

A detailed asbestos assessment in accordance with NEPC (2013) was not undertaken as part of this investigation, rather, the presence or absence of asbestos, at a limit of reporting of 0.1 g/kg, has been adopted for this assessment as an initial screen. This was considered suitable given the preliminary nature of the assessment.

9.5 Waste Classification

To preliminary assess the waste classification of the material for off-site disposal purposes a preliminary waste classification assessment was undertaken in accordance with the six step process outlined in the NSW EPA *Waste Classification Guidelines 2014*. The soil results are assessed against the general solid waste (GSW) criteria outlined in Tables 1 and 2 of the guidelines.

The POEO Act defines virgin excavated natural material (VENM) as:

'*natural material (such as clay, gravel, sand, soil or rock fines):*

(a) that has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities and

(b) that does not contain any sulfidic ores or soils or any other waste

and includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved for the time being pursuant to an EPA Gazettal notice.'

For the purpose of providing a screening criteria to compare laboratory results against for assessing VENM, DP have compared the results of the natural soils to published background concentrations in ANZECC/NHMRC (1992) *Australian and New Zealand Guidelines for the Assessment and*

Management of Contaminated Sites, Environmental Soil Quality Guidelines Background A [ANZECC A]. In the case of organics, namely TRH, where no reference values exist the Laboratory Reporting Limit (LRL) has been adopted as the screening level.

10. Fieldwork and Laboratory Results

10.1 Field Observations

Details of the subsurface conditions encountered in the investigation are given in the borehole logs in Appendix H, together with notes defining classification methods and descriptive terms. The sequence of subsurface materials encountered within the boreholes, in increasing depth order, may be summarised as follows

PAVEMENT /ASPHALT – BH1, BH3, BH5 and BH8, comprising between 0.015 m and 0.05 m thick asphaltic concrete layer. BH7 encountered a subsurface asphaltic concrete at 0.15 m bgl of 20 mm thickness. BH8 encountered a concrete slab below the asphaltic concrete between 0.03 m and 0.12 m bgl;

FILLING – Brown-grey silty sandy filling with some fine to medium grained igneous gravel, with trace glass fragments, to depths of between 0.015 m and 0.7 m in all boreholes.

Roadbase was encountered in BH3 between 0.05 m and 0.1 m bgl.

Orange and red mottled yellow silty clay filling with traces of ironstone gravel and silt was encountered in BH1 between 0.4 m and 0.7 m bgl.

Dark brown clayey sand filling was encountered in BH3 and BH5 to depths of 0.1 m and 0.5 m bgl respectively.

Brown silty clay filling with some gravel was encountered in BH3 between 0.1 m and 0.4 m;

CLAY – Pale grey mottled orange-brown silty clay with trace ironstone gravel was encountered in all bore holes to depths of between 1.3 m and 2.8 m bgl; and

BEDROCK - Pale brown shale was encountered in BH1 to BH3 to depths of between 2.25 m and 2.47 m bgl.

Weathered grey-brown siltstone with iron and pale grey, yellow and orange sandstone was encountered in BH1 to BH3 to depths of between 3.24 m and 5.49 m bgl.

Grey and light grey laminate was encountered in BH2 to a depth 5.25 m bgl.

No signs of gross contamination were encountered in the form of staining, odours or foreign materials in any of the boreholes.

No free groundwater was encountered during the auger drilling of the boreholes and the use of water during core drilling prevented groundwater observations below the depth of auger drilling. Groundwater was measured in the groundwater monitoring wells at 4.3 m bgl in BH1 and 3.6 m bgl in BH3 a month after the wells were installed and developed.

10.2 Laboratory Results

The results of the laboratory analysis undertaken are summarised and presented in Table I1: Soil Laboratory Results Summary in Appendix I.

The laboratory certificates together with the chain of custody and sample receipt information are also presented in Appendix J.

10.2.1 Soil Contamination Results

The recorded concentrations of TRH, BTEX, OCP, OPP, PCB, phenols and asbestos were below the LRL and the SAC in all samples. With respect to PAH, total PAH and benzo(a)pyrene concentrations were within the SAC. The recorded concentrations of metals were generally above the laboratory LOR but below the SAC in all samples with the exception of copper and zinc in BH 1 0.05-0.1 m and nickel in BH6 0.1-0.2.

10.2.2 Waste Classification

As shown in Table I1, Appendix I, all contaminant concentrations for the samples analysed for waste classification purposes were within the chemical contaminant thresholds (CT1s) for general solid waste with the exception of lead in BH1/0.05-0.1 and nickel BH6/0.1-0.2. TCLP analysis was conducted for these analytes on these samples. The recorded SCC and TCLP concentrations were within the contaminant thresholds SCC1 and TCLP1, for general solid waste, respectively.

Based on the observations at the time of sampling and the reported analytical results, filling described in this report has a preliminary *in situ* waste classification as General Solid Waste (non-putrescible) defined in EPA (2014). It is, however, noted the classification is only *preliminary* in nature and that further inspections, sampling and laboratory analysis would be required to confirm the classification of the soils prior to offsite disposal.

Testing on seven samples from the natural clay recorded all concentrations within background screening levels. Concentrations for cadmium, mercury, TRH, BTEX, PAH, OCP OPP and PCB were below the LOR. The results are consistent with the visual observation of the natural soils which did not observe signs of contamination during the fieldwork.

10.2.3 Hazardous Building Materials

Given the age and materials used for construction, it was considered likely that a number of buildings on the site contained hazardous building. Sample BMS04 (from the western external wall of the grandstand building) returned a positive result for chrysotile asbestos and sample BMS05 (from the western wall lining of the grandstand building) returned a positive result for chrysotile and amosite asbestos.

The results confirmed the presence of asbestos in the existing grandstand/clubhouse building. It is considered likely that further hazardous building materials exist within the building.

11. Conclusions and Recommendations

Based on information from historical directories, historical title deeds, historical aerial photographs and a site walkover, it would appear that the site has been used as a public reserve/recreational public space and residential area since 1886, if not earlier. Given this and based on the information presented herein, it is considered that the site has a low potential for significant contamination from historical site usage.

As only limited earthworks are anticipated to be required for the grandstand/clubhouse redevelopment and associated car park works (as outlined in the architectural plans) and given the generally shallow fill profile recorded in the majority of the test bores (i.e. < 2 m) it is currently unclear whether any fill will be retained on-site. If fill is to be retained, additional testing of these soils is required to confirm the suitability (or otherwise) of soils for re-use on-site. In this regard, the low contaminant concentrations recorded in this assessment suggests that the majority of soils would be suitable to be retained.

With respect to waste classification and off-site disposal of soils, the filling described herein is preliminary classified as General Solid Waste (non-putrescible) and the natural soils and bedrock described herein is preliminary classified as VENM. Prior to off-site disposal the soils are to be inspected and analysed to confirm (or otherwise) the preliminary classification.

It is also recommended that an unexpected finds protocol is prepared and implemented during site works to address any potentially impacted fill impacted by contamination during excavation (e.g. asbestos impacted fill).

Hazardous building materials were encountered and observed on the exterior of the grandstand/clubhouse building. Asbestos was detected in two samples of material collected from the grandstand/clubhouse building. Given the age of the building and surrounding structures, it is likely that further hazardous materials will be encountered. It is therefore recommended that a pre-demolition hazardous building materials survey is conducted at the site to assess the location, extent and condition of hazardous building materials and subsequent appropriate removal of the identified materials is undertaken prior to demolition. Moreover, following removal of site structures the soils in the footprint of these structures (and adjacent areas) are to be inspected, validated (including sampling) and cleared for the presence of hazardous building materials.

Whilst not anticipated, if de-watering is required during the redevelopment it is recommended obtaining confirmation from the relevant authority (e.g. council, Sydney Water, etc.) of the groundwater quality criteria for disposal off-site. Sampling of groundwater from the two wells installed in the geotechnical boreholes prior to commencing construction is also recommended to inform disposal options.

Based on the findings of this preliminary contamination investigation, it is considered that the site can be made suitable for the proposed development, from a contamination perspective, subject to implementation of the aforementioned stated recommendations.

12. Limitations

DP has prepared this report for this project at Granville Park, 2 Montrose Avenue, Merrylands, in accordance with DP's proposal SYD180861 dated 5 September 2018 and was carried out under the agreed contract between DP and Cumberland Council dated 12 September 2018. This report is provided for the exclusive use of Cumberland Council and their agents for this project only and for the purposes as described in the report. It should not be used by or be relied upon for other projects or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations.

This report must be read in conjunction with all of the attachments and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

Asbestos has not been detected by observation or by laboratory analysis, either on the surface of the site, or in filling materials at the test locations sampled and analysed. Building demolition materials, such as glass, were, however, located in previous below-ground filling, and these are considered as indicative of the possible presence of hazardous building materials (HBM), including asbestos.

Although the sampling plan adopted for this investigation is considered appropriate to achieve the stated project objectives, there are necessarily parts of the site that have not been sampled and analysed. This is either due to undetected variations in ground conditions or to budget constraints (as discussed above), or to parts of the site being inaccessible and not available for inspection/sampling, or to vegetation preventing visual inspection and reasonable access. It is therefore considered possible that HBM, including asbestos, may be present in unobserved or untested parts of the site, between and beyond sampling locations, and hence no warranty can be given that asbestos is not present.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires a risk assessment to be undertaken, with such assessment being dependent

upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the (geotechnical / environmental / groundwater) components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

About This Report

About this Report

Douglas Partners

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

Appendix B

Photographs

Photograph 1: Proposed recreation facility - looking south

Photograph 2: Grandstand/clubhouse building - looking north

Douglas Partners Geotechnics | Environment | Groundwater	**Site Photographs** **Granville Park Upgrade** **2 Montrose Avenue, Merrylands**	PROJECT: 86543.01 PLATE No: 1 REV: A
	CLIENT: Cumberland Council	DATE: Oct-18

Photograph 3: Proposed recreation facility - looking south east

Photograph 4: Water tank to north of grandstand/clubhouse

Douglas Partners Geotechnics | Environment | Groundwater	**Site Photographs** **Granville Park Upgrade** **2 Montrose Avenue, Merrylands**	PROJECT: 86543.01 PLATE No: 2 REV: A
	CLIENT: Cumberland Council	DATE: Oct-18

Photograph 5: Detached garage to south west of grandstand/clubhouse - looking north west

Photograph 6: Shipping containers to south of grandstand/clubhouse - looking south east

Douglas Partners Geotechnics | Environment | Groundwater	**Site Photographs** **Granville Park Upgrade** **2 Montrose Avenue, Merrylands**	PROJECT: 86543.01 PLATE No: 3 REV: A
	CLIENT: Cumberland Council	DATE: Oct-18

Photograph 7: Possible fly tipped rubbish to south of grandstand/clubhouse - looking east

Photograph 8: Stored furnishing and associated rubbish to south west of grandstand/clubhouse - looking east

Douglas Partners Geotechnics | Environment | Groundwater	**Site Photographs** **Granville Park Upgrade** **2 Montrose Avenue, Merrylands**	PROJECT: 86543.01 PLATE No: 4 REV: A
	CLIENT: Cumberland Council	DATE: Oct-18

Photograph 9: Possible vandal damage to east of grandstand/clubhouse - sample BMS04 taken

Photograph 10: Possible vandal damage to west of grandstand/clubhouse - sample BMS05 taken

Douglas Partners Geotechnics | Environment | Groundwater	**Site Photographs** **Granville Park Upgrade** **2 Montrose Avenue, Merrylands**	PROJECT: 86543.01 PLATE No: 5 REV: A
	CLIENT: Cumberland Council	DATE: Oct-18

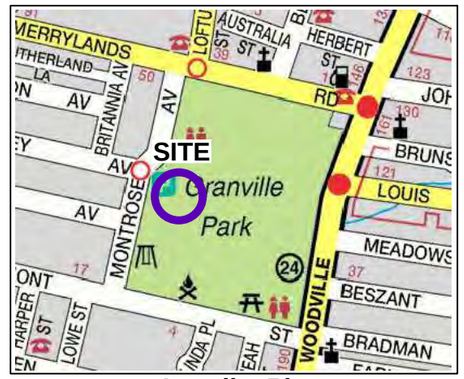
Photograph 11: Stormwater drain and channel, Claremont Street - looking south

Photograph 12: Stormwater drain and channel, Woodville Road - looking east

Douglas Partners Geotechnics | Environment | Groundwater	**Site Photographs** **Granville Park Upgrade** **2 Montrose Avenue, Merrylands**	PROJECT: 86543.01 PLATE No: 6 REV: A
	CLIENT: Cumberland Council	DATE: Oct-18

Appendix C

Drawings



Locality Plan

NOTE:
1: Base drawing from Nearmap.com (Dated 9.9.2018)
2: Test locations are approximate only and are shown with reference to existing features.

0 5 10 15 20 30 40 50m

1:500 @ A3

LEGEND

- Rock cored borehole
- Augered borehole
- Site boundary

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Cumberland Council		TITLE: **Site Location Plan** **Granville Park Upgrade** **2 Montrose Avenue, MERRYLANDS**
OFFICE: Sydney	DRAWN BY: PSCH	
SCALE: 1:500 @ A3	DATE: 27.9.2018	

N

PROJECT No:	86543.01
DRAWING No:	1
REVISION:	0

Appendix D

Lotsearch Report

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 18 Sep 2018 17:57:34

Reference: LS004175

Address: 2 Montrose Avenue, Merrylands, NSW 2160

Table of Contents

Location Confidences

Where Lotsearch has had to georeference features from supplied addresses, a location confidence has been assigned to the data record. This indicates a confidence to the positional accuracy of the feature. Where applicable, a confidence is given under the field heading “LocConf” or “Location Confidence”.

Location Confidence	Description
Premise Match	Georeferenced to the site location / premise or part of site
Area 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
Buffered Point	Feature is a buffered point
Network of Features	Georeferenced to a network of features

Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	Dept. Finance, Services & Innovation	18/09/2018	18/09/2018	Daily	-	-	-	-
Topographic Data	Dept. Finance, Services & Innovation	17/07/2018	17/07/2018	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	12/09/2018	05/09/2018	Monthly	1000	0	0	5
Contaminated Land Records of Notice	Environment Protection Authority	04/09/2018	04/09/2018	Monthly	1000	0	0	1
Former Gasworks	Environment Protection Authority	30/08/2018	11/10/2017	Monthly	1000	0	0	0
National Waste Management Site Database	Geoscience Australia	07/08/2018	07/03/2017	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	27/08/2018	27/08/2018	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	11/01/2018	11/01/2018	As required	1000	0	0	1
Licensed Activities under the POEO Act 1997	Environment Protection Authority	31/08/2018	31/08/2018	Monthly	1000	0	0	1
Delicensed POEO Activities still Regulated by the EPA	Environment Protection Authority	31/08/2018	31/08/2018	Monthly	1000	0	0	1
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	31/08/2018	31/08/2018	Monthly	1000	3	3	4
UPSS Environmentally Sensitive Zones	Environment Protection Authority	14/04/2015	12/01/2010	As required	1000	0	0	0
UBD Business to Business Directory 1991 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	1	1
UBD Business to Business Directory 1991 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	1
UBD Business to Business Directory 1986 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	11	12
UBD Business to Business Directory 1986 (Road & Area Matches)	Hardie Grant			Not required	150	-	3	3
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	6	7
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1978 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	7	8
UBD Business Directory 1978 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1975 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	8	9
UBD Business Directory 1975 (Road & Area Matches)	Hardie Grant			Not required	150	-	3	3
UBD Business Directory 1970 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	12	14
UBD Business Directory 1970 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1965 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	18	20
UBD Business Directory 1965 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1961 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	19	23
UBD Business Directory 1961 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	22	25
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	2

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	19	38
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	9	46
Points of Interest	Dept. Finance, Services & Innovation	17/07/2018	17/07/2018	Quarterly	1000	7	10	61
Tanks (Areas)	Dept. Finance, Services & Innovation	17/07/2018	17/07/2018	Quarterly	1000	0	0	0
Tanks (Points)	Dept. Finance, Services & Innovation	17/07/2018	17/07/2018	Quarterly	1000	0	0	0
Major Easements	Dept. Finance, Services & Innovation	17/07/2018	17/07/2018	As required	1000	0	0	14
State Forest	Dept. Finance, Services & Innovation	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	18/01/2018	30/09/2017	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Botany Groundwater Management Zones	NSW Department of Primary Industries	15/03/2018	01/10/2005	As required	1000	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	0	47
Geological Units 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	3	-	6
Geological Structures 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	0	-	1
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	2	-	4
Atlas of Australian Soils	CSIRO	19/05/2017	17/02/2011	As required	1000	1	1	1
Standard Local Environmental Plan Acid Sulfate Soils	NSW Planning and Environment	07/10/2016	07/10/2016	As required	500	2	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	2	2	2
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	0
Dryland Salinity Potential of Western Sydney	NSW Office of Environment & Heritage	12/05/2017	01/01/2002	None planned	1000	1	1	2
Mining Subsidence Districts	Dept. Finance, Services & Innovation	13/07/2017	01/07/2017	As required	1000	0	0	0
SEPP 14 - Coastal Wetlands	NSW Planning and Environment	17/12/2015	24/10/2008	Annually	1000	0	0	0
SEPP 26 - Littoral Rainforest	NSW Planning and Environment	17/12/2015	05/02/1988	Annually	1000	0	0	0
SEPP 71 - Coastal Protection	NSW Planning and Environment	17/12/2015	01/08/2003	Annually	1000	0	0	0
SEPP Major Developments 2005	NSW Planning and Environment	09/03/2013	25/05/2005	Under Review	1000	0	0	0
SEPP Strategic Land Use Areas	NSW Planning and Environment	01/08/2017	28/01/2014	Annually	1000	0	0	0
LEP - Land Zoning	NSW Planning and Environment	23/07/2018	29/06/2018	Quarterly	1000	1	5	78
LEP - Minimum Subdivision Lot Size	NSW Planning and Environment	23/07/2018	13/07/2018	Quarterly	0	0	-	-
LEP - Height of Building	NSW Planning and Environment	09/08/2018	22/06/2018	Quarterly	0	0	-	-
LEP - Floor Space Ratio	NSW Planning and Environment	23/07/2018	06/07/2018	Quarterly	0	0	-	-
LEP - Land Application	NSW Planning and Environment	23/07/2018	29/06/2018	Quarterly	0	1	-	-
LEP - Land Reservation Acquisition	NSW Planning and Environment	23/07/2018	13/07/2018	Quarterly	0	0	-	-
State Heritage Items	NSW Office of Environment & Heritage	04/04/2018	30/09/2016	Quarterly	1000	0	0	0

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Local Heritage Items	NSW Planning and Environment	04/04/2018	23/03/2018	Quarterly	1000	0	1	66
Bush Fire Prone Land	NSW Rural Fire Service	08/08/2018	31/07/2018	Quarterly	1000	0	0	0
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment & Heritage	01/03/2017	16/12/2016	As required	1000	1	1	1
RAMSAR Wetlands	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	0
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	0
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	17/09/2018	17/09/2018	Daily	10000	-	-	-

Aerial Imagery 2017

2 Montrose Avenue, Merrylands, NSW 2160

Scale:
0 50 100 200
Meters

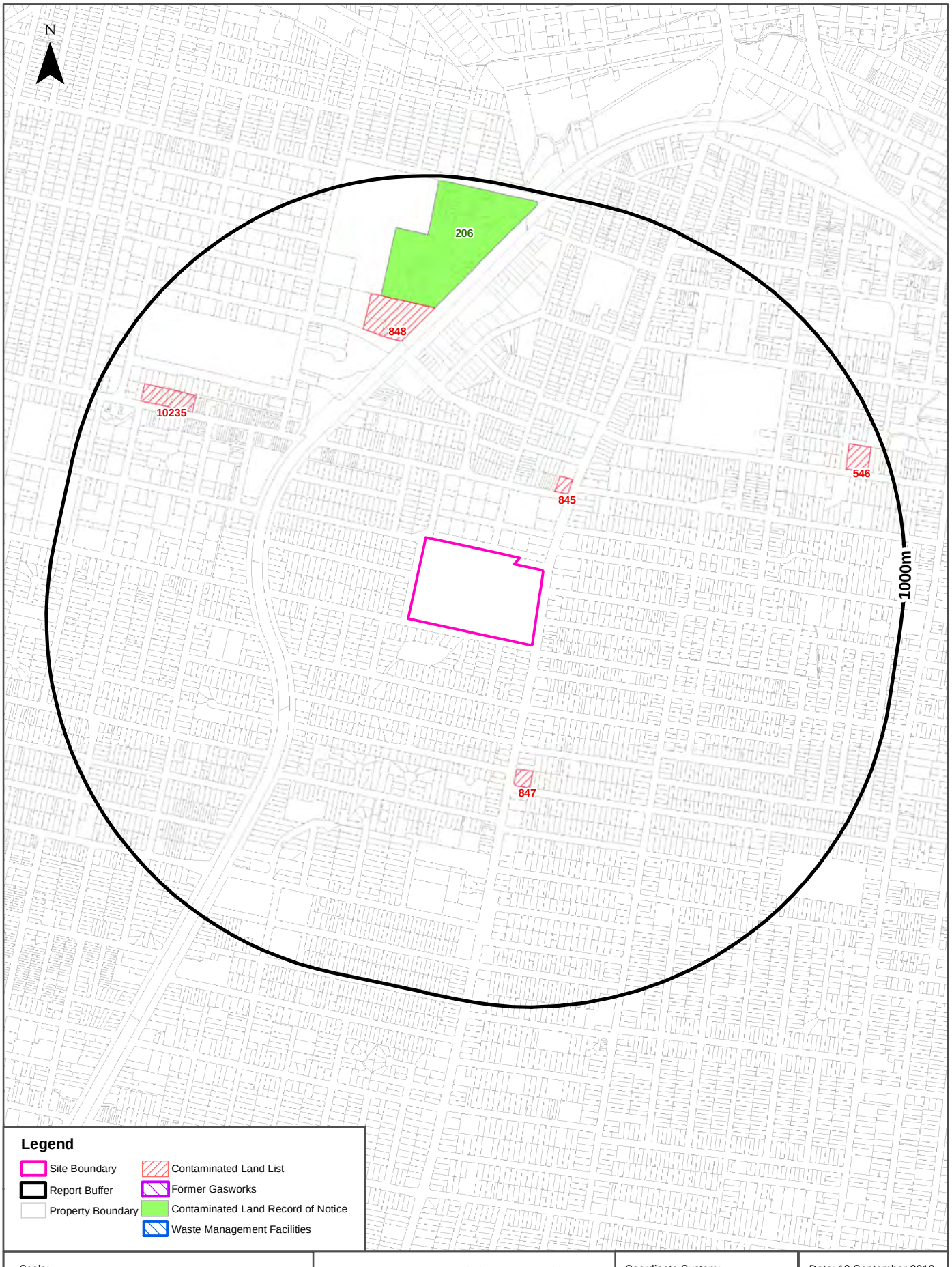
Data Source Aerial Imagery: © 2018 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 17 September 2018

Contaminated Land & Waste Management Facilities

2 Montrose Avenue, Merrylands, NSW 2160



Contaminated Land & Waste Management Facilities

2 Montrose Avenue, Merrylands, NSW 2160

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
845	Caltex Service Station Merrylands	148 Woodville Road	Merrylands	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	209m	North East
847	Caltex Service Station	229 Woodville Road	Merrylands	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	345m	South
848	Former Stockfeed Manufacturing Site	1-7 & 9-Neil Street	Merrylands	Other Petroleum	Regulation under CLM Act not required	Current EPA List	Premise Match	548m	North
10235	Stockland Merrylands Court	249-Merrylands Road	Merrylands	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	733m	North West
546	Old Granville Depot	23 Elizabeth Street	Granville	Unclassified	Regulation under CLM Act not required	Current EPA List	Premise Match	882m	East

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

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

EPA site management class	Explanation
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

Contaminated Land & Waste Management Facilities

2 Montrose Avenue, Merrylands, NSW 2160

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
206	Merrylands Substation PCB Storage	Corner Walpole and Peel Street	Merrylands	3 former	3053	Premise Match	636m	North

Former Gasworks

Former Gasworks within the dataset buffer:

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

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											

EPA PFAS Investigation Program

2 Montrose Avenue, Merrylands, NSW 2160

EPA PFAS Investigation Program

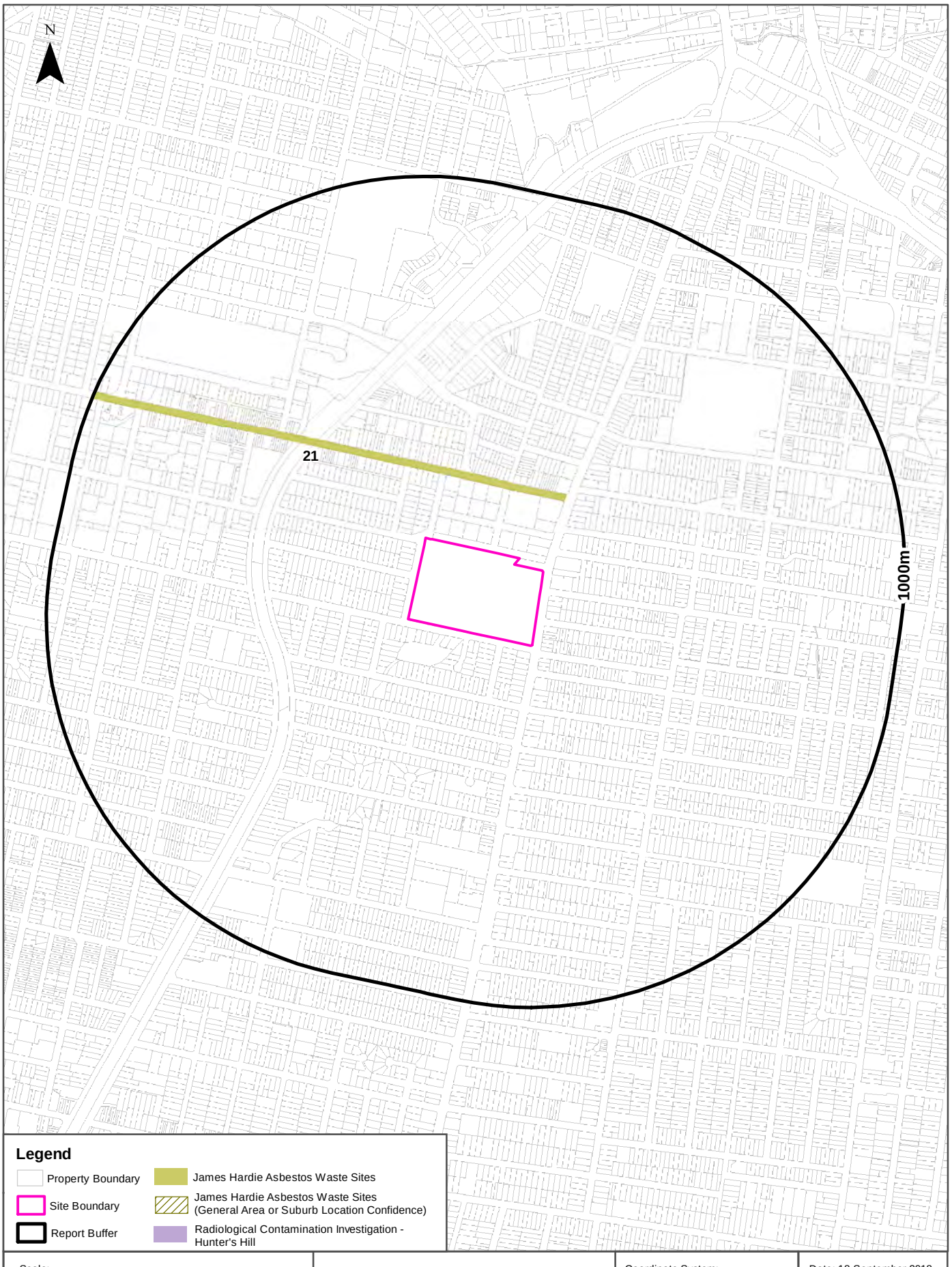
Sites that are part of the EPA PFAS investigation program, within the dataset buffer:

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

EPA PFAS Investigation Program: Environment Protection Authority

EPA Other Sites with Contamination Issues

2 Montrose Avenue, Merrylands, NSW 2160



EPA Other Sites with Contamination Issues

2 Montrose Avenue, Merrylands, NSW 2160

EPA Other Sites with Contamination Issues

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

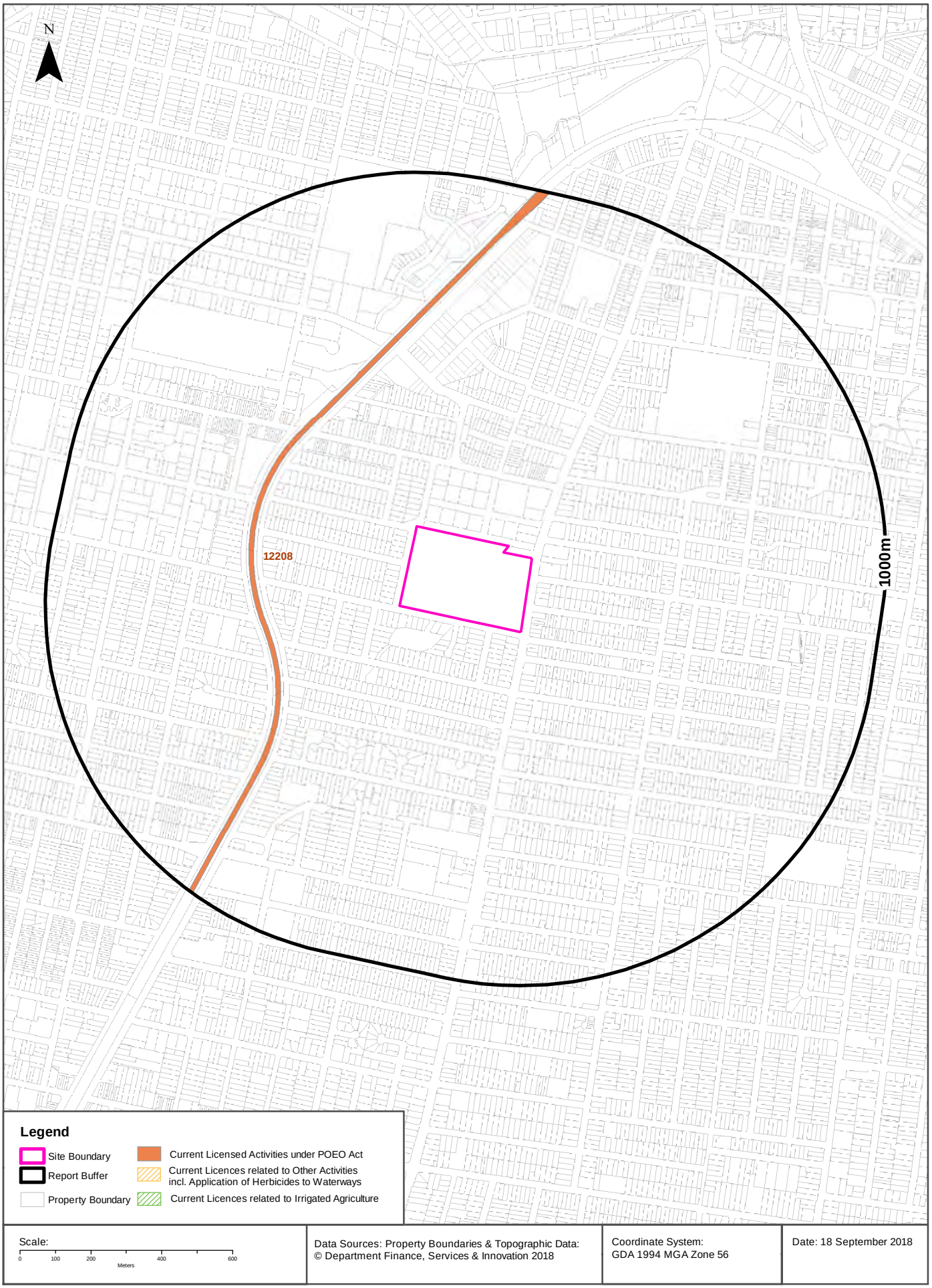
- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill

Sites within the dataset buffer:

Site Id	Site Name	Site Address	Dataset	Comments	Location Confidence	Distance	Direction
21	Pacific Transport	Merrylands Rd, Merrylands	James Hardie Asbestos Waste Sites		Road Match	179m	North West

Current EPA Licensed Activities

2 Montrose Avenue, Merrylands, NSW 2160



EPA Activities

2 Montrose Avenue, Merrylands, NSW 2160

Licensed Activities under the POEO Act 1997

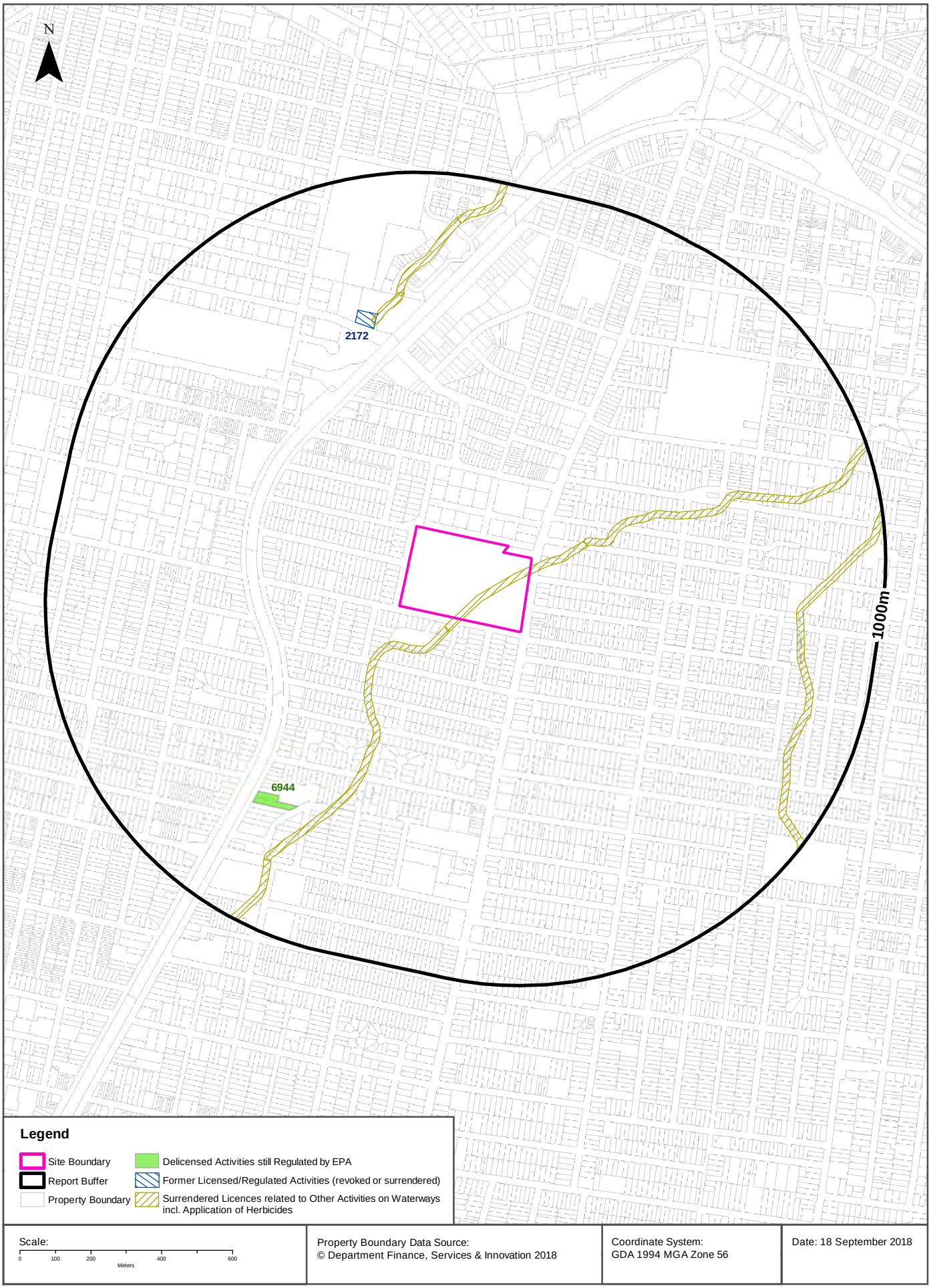
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
12208	SYDNEY TRAINS		PO BOX K349, HAYMARKET, NSW 1238		Railway systems activities	Road Match	372m	North West

POEO Licence Data Source: Environment Protection Authority

Delicensed & Former Licensed EPA Activities

2 Montrose Avenue, Merrylands, NSW 2160



EPA Activities

2 Montrose Avenue, Merrylands, NSW 2160

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
6944	R.E. BATGER PTY LTD	R.E. BATGER PTY LTD	200 RAILWAY TERRACE	GUILDFORD	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	634m	South West

Delicensed Activities Data Source: Environment Protection Authority

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

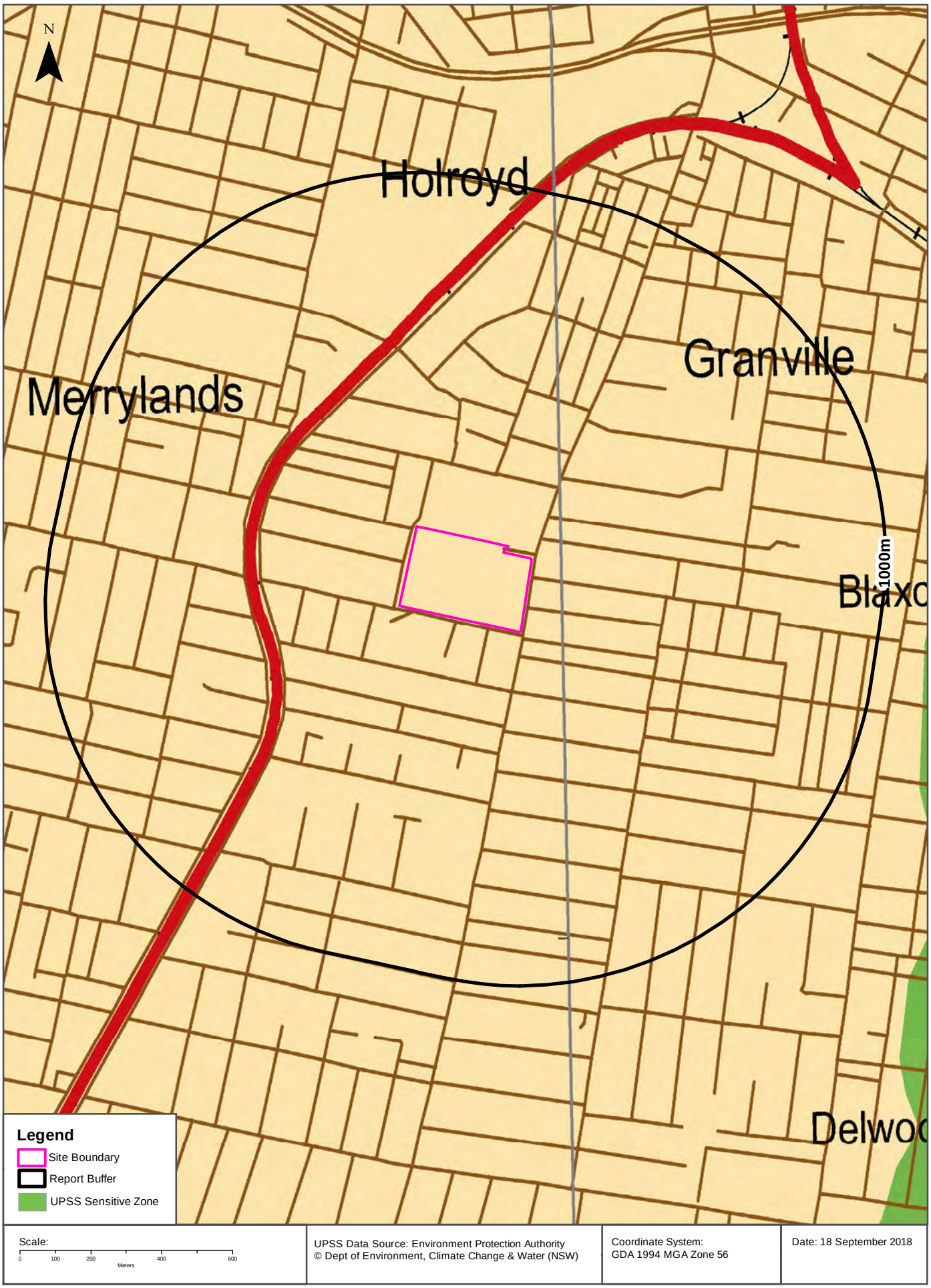
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	Onsite
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	Onsite
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	Onsite
2172	GEORGE WESTON FOODS LIMITED	1-7 NEIL STREET, MERRYLANDS, NSW 2160	Surrendered	03/04/2000	General agricultural processing	Premise Match	571m	North

Former Licensed Activities Data Source: Environment Protection Authority

UPSS Sensitive Zones

2 Montrose Avenue, Merrylands, NSW 2160



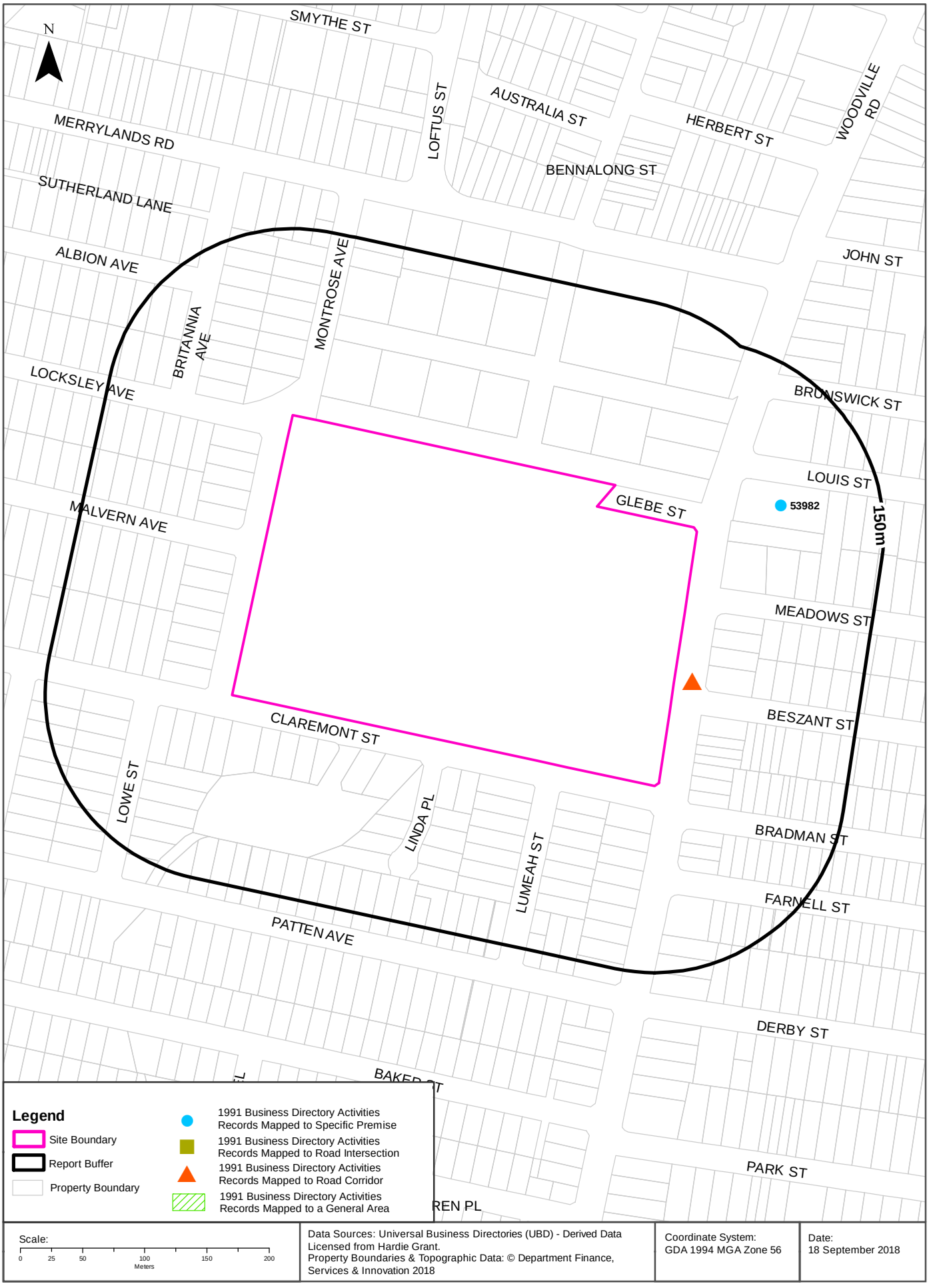
UPSS Data Source: Environment Protection Authority
© Dept of Environment, Climate Change & Water (NSW)

Coordinate System:
GDA 1994 MGA Zone 56

Date: 18 September 2018

1991 Historical Business Directory Records

2 Montrose Avenue, Merrylands, NSW 2160



Historical Business Directories

2 Montrose Avenue, Merrylands, NSW 2160

1991 Business to Business Directory Records Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
Motor Garages & Service Stations	Voss, LH Pty Ltd, 169 Woodville Rd., Merrylands	53982	Premise Match	71m	East

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

1991 Business to Business Directory Records Road or Area Matches

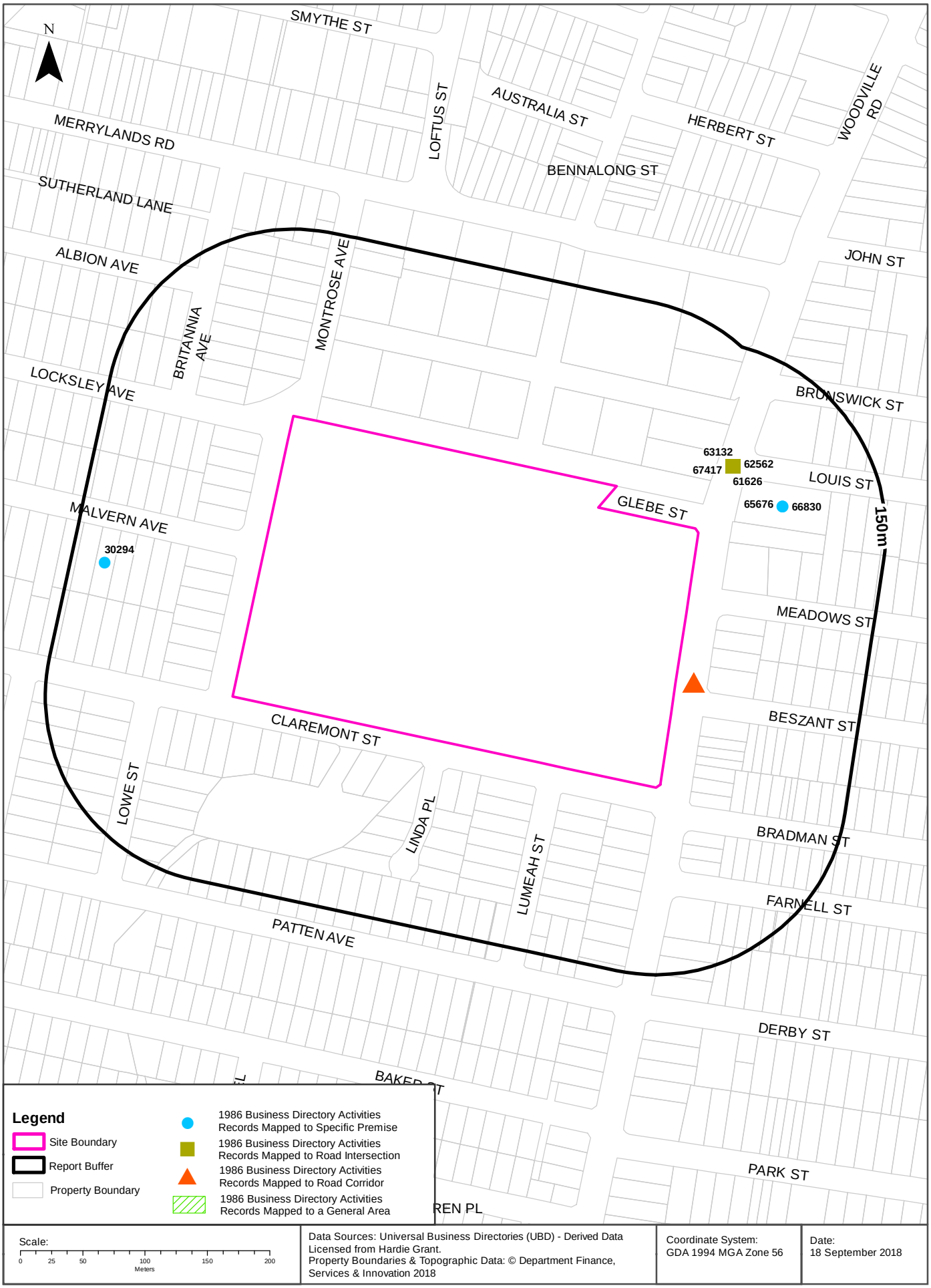
Records from the 1991 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
Motor Garages & Service Stations	Solo Merrylands, Woodville Rd., Merrylands	53899	Road Match	0m

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

1986 Historical Business Directory Records

2 Montrose Avenue, Merrylands, NSW 2160



Historical Business Directories

2 Montrose Avenue, Merrylands, NSW 2160

1986 Business to Business Directory Records Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
MOTOR GARAGES & SERVICE STATIONS.	Parramatta Tyre City Cnr. Woodville Road & Louis Street, Merrylands.	63835	Road Intersection	58m	North East
MOTOR GARAGES & SERVICE STATIONS.	Parramatta Tyre City, Woodville Rd., Merrylands.	65239	Road Intersection	58m	North East
MOTOR BRAKE SERVICES.	Parramatta Tyre City, Woodville Rd., Merrylands.	61626	Road Intersection	58m	North East
MOTOR CLUTCH SPECIALISTS.	Parramatta Tyre City, Woodville Rd., Merrylands.	62562	Road Intersection	58m	North East
MOTOR ENGINE RECONDITIONERS.	Parramatta Tyre City, Woodville Rd., Merrylands.	63132	Road Intersection	58m	North East
MOTOR ENGINEERS.	Parramatta Tyre City, Woodville Rd., Merrylands.	63499	Road Intersection	58m	North East
AUTOMATIC TRANSMISSION SERVICES.	Parramatta Tyre City, Woodville Rd., Merrylands.	4846	Road Intersection	58m	North East
MOTOR SPARE PARTS DEALERS RETAIL	Parramatta Tyre City, Woodville Rd., Merrylands.	67417	Road Intersection	58m	North East
MOTOR STEERING SPECIALISTS.	Parramatta Tyre City, Woodville Rd., Merrylands.	67799	Road Intersection	58m	North East
MOTOR PANEL BEATERS &/OR SPRAY PAINTERS.	Thistle Spray Smash Repairs, 169 Woodville Rd., Merrylands.	66830	Premise Match	71m	East
MOTOR GARAGES & SERVICE STATIONS.	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands.	65676	Premise Match	71m	East
ENGINEERS – GENERAL &/ OR MANUFACTURING &/ OR MECHANICAL.	Roger, A., 10 Malvern Ave., Merrylands.	30294	Premise Match	123m	West

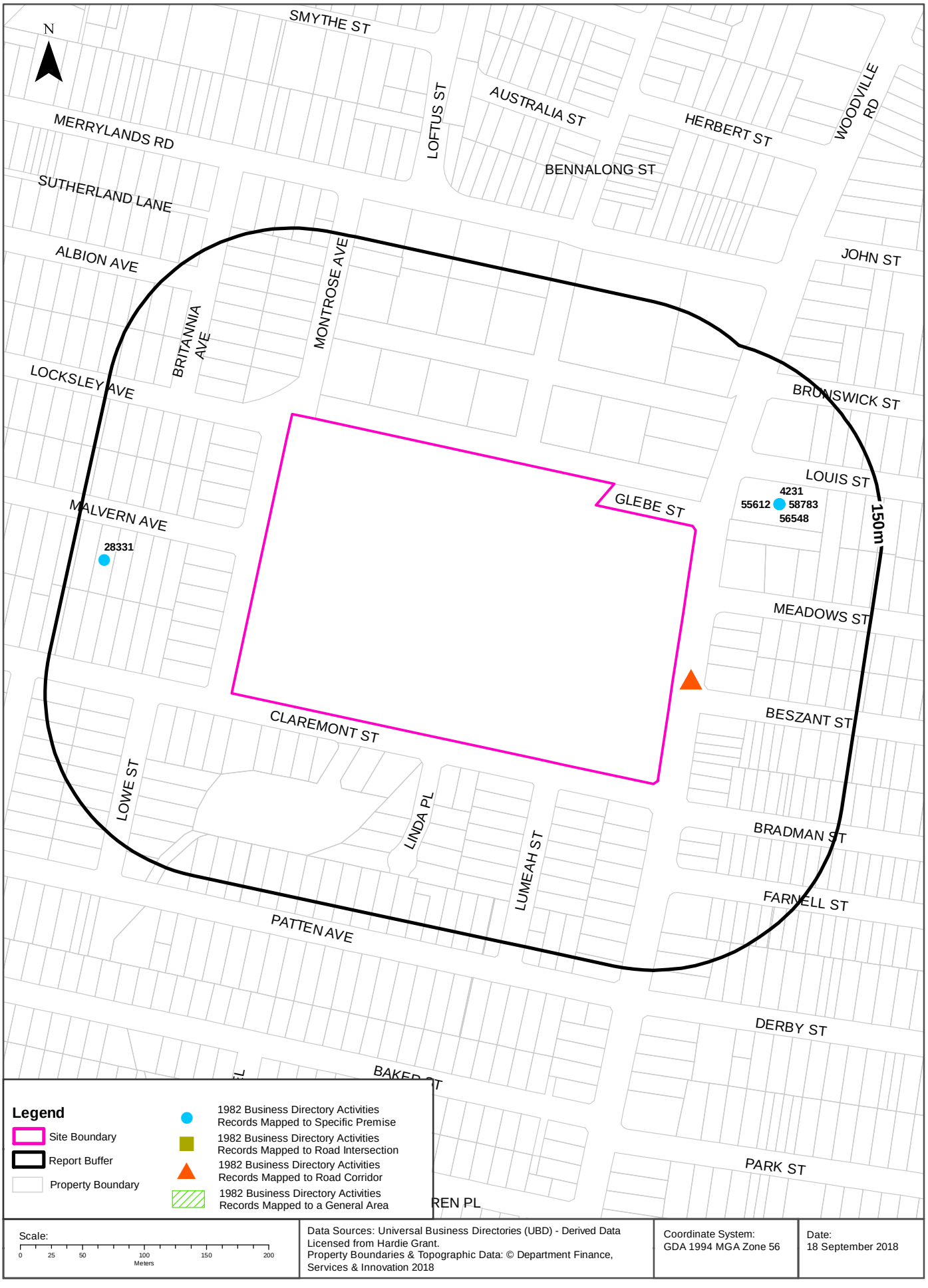
1986 Business to Business Directory Records Road or Area Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
HIRING SERVICES.	Thrifty Rent-A-Car, Woodville Rd., Merrylands.	45914	Road Match	0m
MOTOR HIRE SERVICES-DRIVE YOURSELF &/OR RENTAL.	Thrifty Rent-A-Car, Woodville Rd., Merrylands.	65905	Road Match	0m
MOTOR GARAGES & SERVICE STATIONS.	Woodville Road Service Station, Woodville Rd., Merrylands.	65723	Road Match	0m

1982 Historical Business Directory Records

2 Montrose Avenue, Merrylands, NSW 2160



Historical Business Directories

2 Montrose Avenue, Merrylands, NSW 2160

1982 Business Directory Records
Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Colliers Automotive Services Pty.Ltd., 169 Woodville Rd.,Merrylands. 2160.	56548	Premise Match	71m	East
AUTOMOTIVE ENGINEERS. (A8740)	COLLIERS AUTOMOTIVE SERVICES,169 Woodville Road, Merrylands.2160,	4231	Premise Match	71m	East
MOTOR PANEL BEATERS &/OR SPRAY PAINTERS. (M7360)	Thistle Spray Smash Repairs,. 169 Woodville Rd., Merrylands.2160.	58783	Premise Match	71m	East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Voss, L. H, Pty. Ltd., 169 Woodville Rd., Merrylands. 2160.	57801	Premise Match	71m	East
MOTOR PANEL BEATERS &/OR SPRAY PAINTERS. (M7360)	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands. 2160.	58813	Premise Match	71m	East
MOTOR ELECTRICIANS, (M6580)	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands. 2160.	55612	Premise Match	71m	East
ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL. (E7140)	Roger, A., 10 Malvern Ave., Merrylands 2160.	28331	Premise Match	123m	West

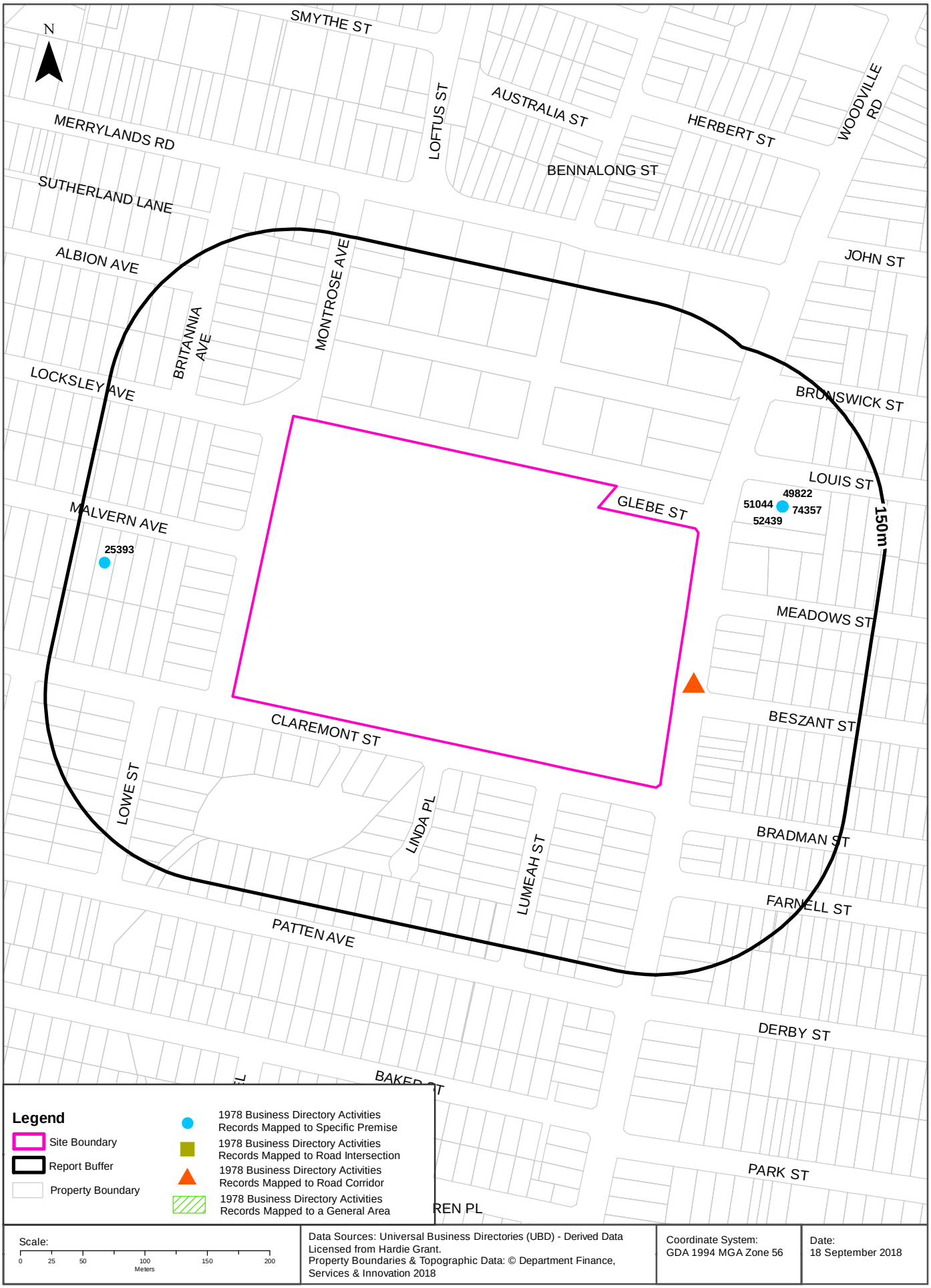
1982 Business Directory Records
Road or Area Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Esso Merrylands Service Station, Woodville Rd., Merrylands. 2160.	56713	Road Match	0m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Woodville Road Service Station, Woodville Rd., Merrylands. 2160.	57859	Road Match	0m

1978 Historical Business Directory Records

2 Montrose Avenue, Merrylands, NSW 2160



Historical Business Directories

2 Montrose Avenue, Merrylands, NSW 2160

1978 Business Directory Records
Premise or Road Intersection Matches

Records from the 1978 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Colliers Automotive Services Pty. Ltd., 169 Woodville Rd., Merrylands.	49822	Premise Match	71m	East
MOTOR PAINTERS.	Thistlespray Smash Repair, 169 Woodville Rd., Merrylands.	51721	Premise Match	71m	East
MOTOR PANEL BEATERS	TNstlespray Smash Repairs, 169 Woodville Rd, Merrylands.	52416	Premise Match	71m	East
MOTOR PANEL BEATERS	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands.	52439	Premise Match	71m	East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands.	51044	Premise Match	71m	East
MOTOR ELECTRICIANS	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands.	49084	Premise Match	71m	East
WELDERS-ELECTRIC &/OR OXY.	Thistlespray Smash Repairs, 169 Woodville Rd., Merrylands.	74357	Premise Match	71m	East
ENGINEERS- GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Roger, A., 10 Malvern Ave., Merrylands.	25393	Premise Match	123m	West

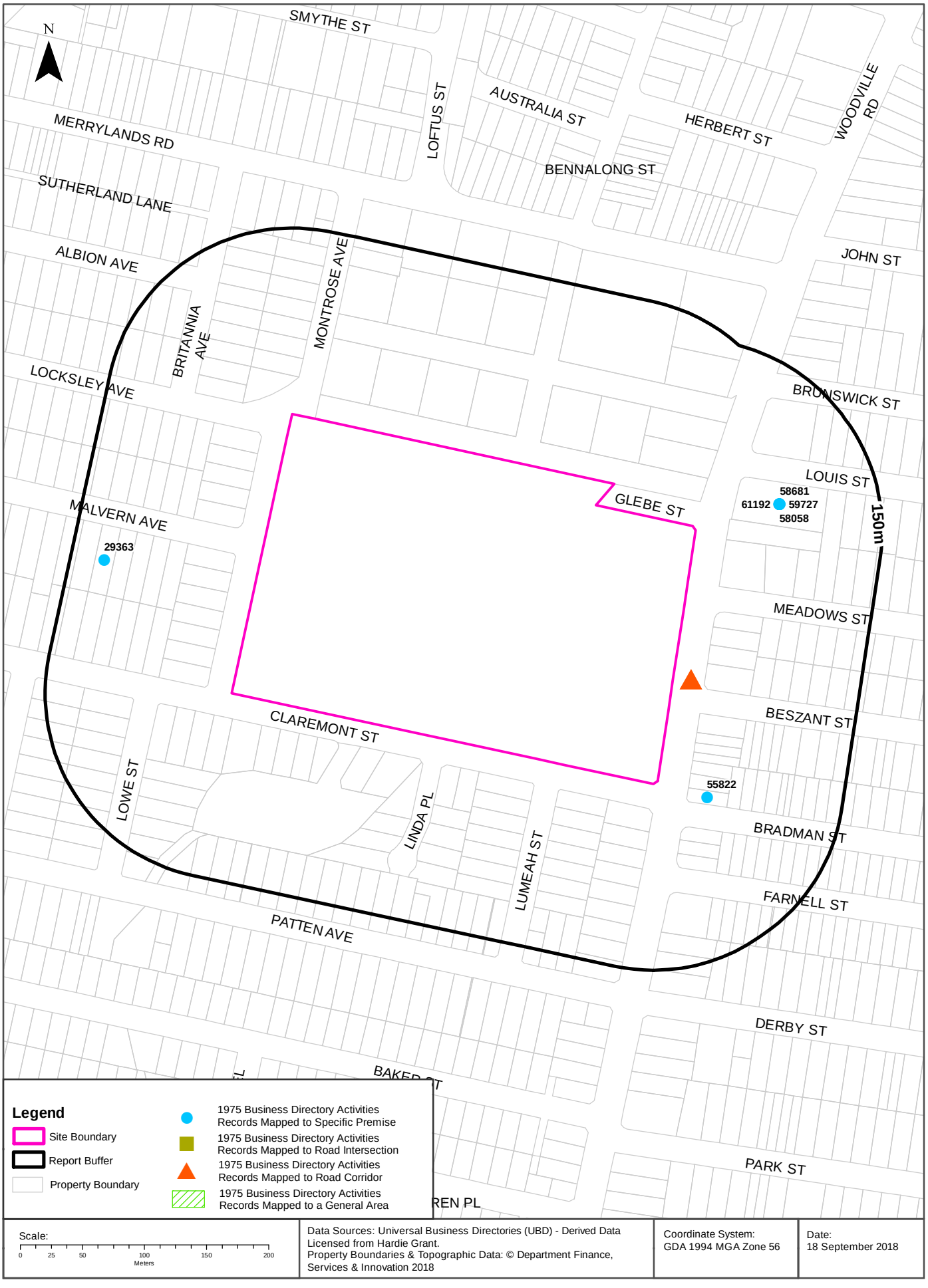
1978 Business Directory Records
Road or Area Matches

Records from the 1978 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Esso Servicentre, Woodville Rd., Merrylands.	50028	Road Match	0m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Woodville Road Service Station, Woodville Rd., Merrylands.	51129	Road Match	0m

1975 Historical Business Directory Records

2 Montrose Avenue, Merrylands, NSW 2160



Historical Business Directories

2 Montrose Avenue, Merrylands, NSW 2160

1975 Business Directory Records
Premise or Road Intersection Matches

Records from the 1975 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
MIXED BUSINESSES.	Wayside Store, 193 Woodville Rd., Merrylands.	55822	Premise Match	42m	South East
MOTOR GARAGES &/OR ENGINEERS.	Comers Automotive Services, 169 Woodville Rd., Merrylands.	58681	Premise Match	71m	East
MOTOR PAINTERS.	Thistlespray Smash Repairs, 169 Woodville Rd., Merrylands.	60474	Premise Match	71m	East
MOTOR PANEL BEATERS.	Thlitlespray Smash Repairs, 169 Woodville Rd., Merrylands.	61170	Premise Match	71m	East
MOTOR GARAGES &/OR ENGINEERS.	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands.	59727	Premise Match	71m	East
MOTOR ELECTRICIANS.	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands.	58058	Premise Match	71m	East
MOTOR PANEL BEATERS.	Voss. L. H. Pty. Ltd., 169 Woodvilfe Rd., Merrylands.	61192	Premise Match	71m	East
WELDERS., Electric &/OR OXY.	Thistlespray Smash Repairs, 169 Woodville Rd., Merrylende.	87110	Premise Match	71m	East
ENGINEERS - GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Roger, A., 10 Malvern Ave., Merrylands	29363	Premise Match	123m	West

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

1975 Business Directory Records
Road or Area Matches

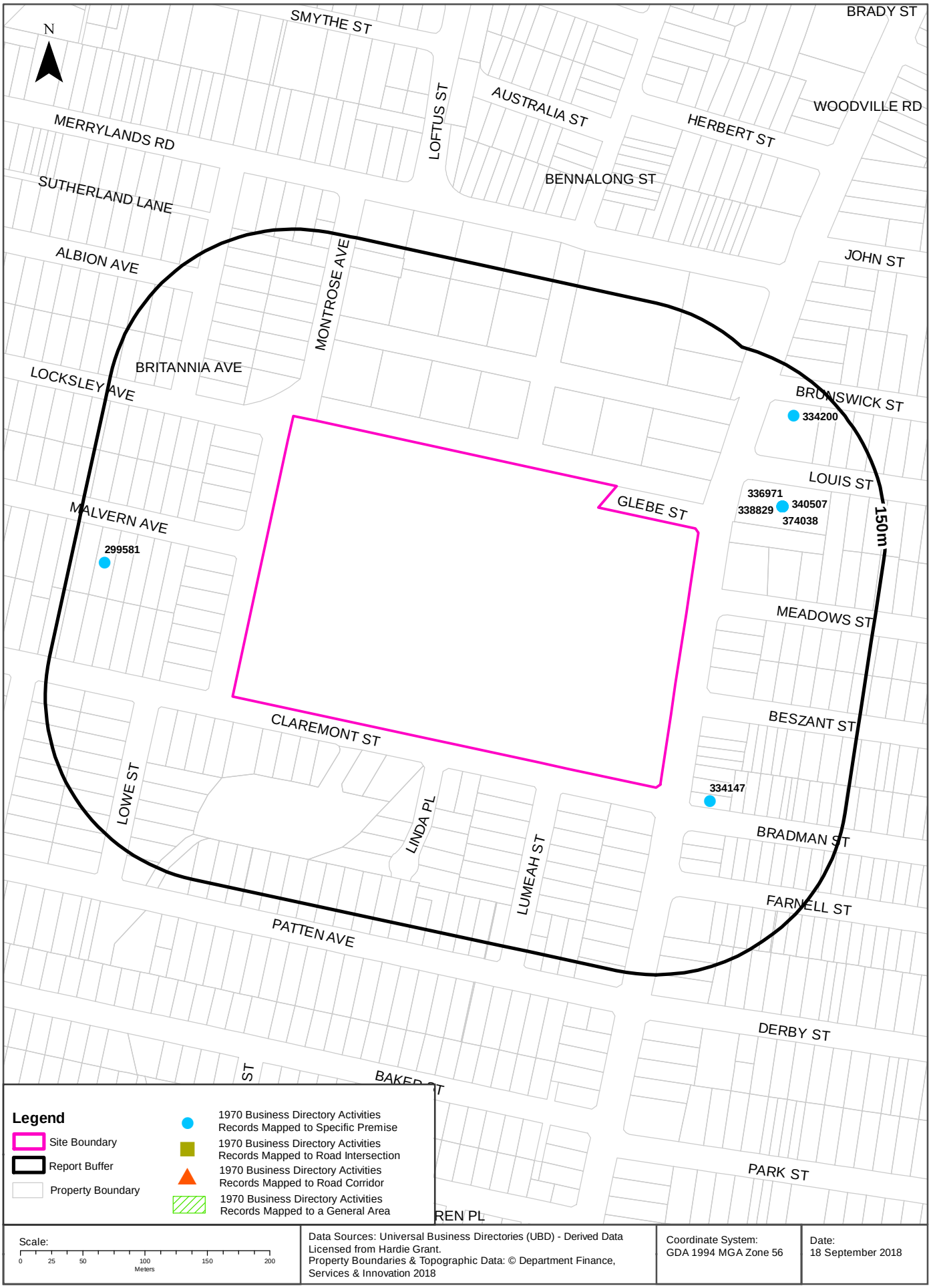
Records from the 1975 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
MOTOR SERVICE STATIONS - PETROL, OIL	Esso Service Station, Woodville Rd., Merrylands.	61698	Road Match	0m
MOTOR SERVICE STATIONS - PETROL, OIL	Esso Servicentre. Woodville Rd., Merrylands.	61738	Road Match	0m
MOTOR SERVICE STATIONS - PETROL, OIL	Woodville Road Service Station, Woodville Rd., Merrylands.	62053	Road Match	0m

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

1970 Historical Business Directory Records

2 Montrose Avenue, Merrylands, NSW 2160



Historical Business Directories

2 Montrose Avenue, Merrylands, NSW 2160

1970 Business Directory Records
Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
MIXED BUSINESSES (M408)	Wayside Store (The),Rear 193 Woodville Rd.,Merrylands	334147	Premise Match	42m	South East
MOTOR GARAGES & ENGINEERS(M6S6)	Automotive Services, 169 Woodville Rd. Merrylands	337227	Premise Match	71m	East
SPRAYERS-INDUSTRIAL (S461)	Thistlespray Smash Repairs, 169 Woodville Rd., Merrylands	363810	Premise Match	71m	East
MOTOR PAINTERS (M672)	Thistlespray Smash Repairs, 169 Woodville Rd., Merrylands	339686	Premise Match	71m	East
MOTOR BODY REPAIRS/CONVERTERS(M496)	Thistlespray Smash Repairs, 169 Woodville Rd., Merrylands	335421	Premise Match	71m	East
MOTOR PANEL BEATERS (M680)	Thistlespray Smash Repairs, 169 Woodville Rd., Merrylands	340480	Premise Match	71m	East
MOTOR PAINTERS (M672)	Voss,L. H. Pty. Ltd., 169 Woodvilie Rd., Merrylands	339718	Premise Match	71m	East
MOTOR ELECTRICIANS (M620)	Voss,L. H. Pty. Ltd., 169 Woodville Rd., Merrylands	336971	Premise Match	71m	East
MOTOR PANEL BEATERS (M680)	Voss,L. H. Pty. Ltd., 169 Woodvlle Rd., Merrylands	340507	Premise Match	71m	East
MOTOR GARAGES & ENGINEERS(M6S6)	Voss,L. H. Pty. Ud., 169 Woodville Rd.MERRYLANDS	338829	Premise Match	71m	East
WELDERS-ELECTRIC &/OR OXY (W145)	Thistlespray Smash Repairs, 169 Woodville Rd., Merrylands	374010	Premise Match	71m	East
WELDERS-ELECTRIC &/OR OXY (W145)	Voss,L. H.Pty. Ltd., 169 Woodville Rd., Merrylands	374038	Premise Match	71m	East
MIXED BUSINESSES (M408)	Williams,N., 163 Woodville Rd., Merrylands	334200	Premise Match	120m	North East
ENGINEERS-GENERAL &/OR MFRG.&/OR MECHANICAL (E615)	Roger,A., 10 Malvern Ave., Merrylands	299581	Premise Match	123m	West

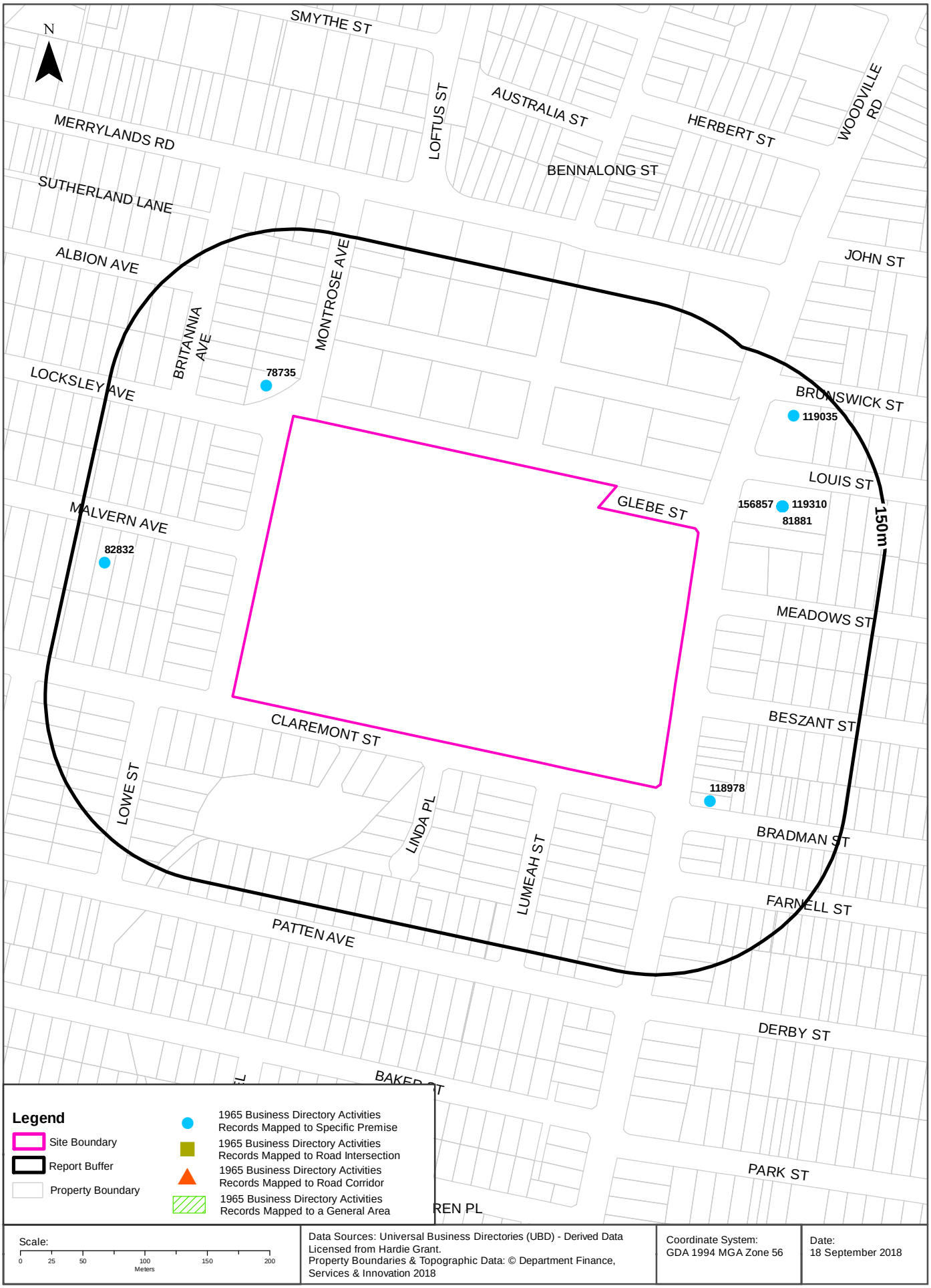
1970 Business Directory Records
Road or Area Matches

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

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

1965 Historical Business Directory Records

2 Montrose Avenue, Merrylands, NSW 2160



Historical Business Directories

2 Montrose Avenue, Merrylands, NSW 2160

1965 Business Directory Records
Premise or Road Intersection Matches

Records from the 1965 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
Electrical Contractors - Licensed	Silverstone, J. & Co. Pty. Ltd., 15 Montrose Ave. Merrylands	78735	Premise Match	33m	North West
Mixed Businesses	Wayside Store (The), Rear 193 Woodville Rd., Merrylands	118978	Premise Match	42m	South East
Motor Service Stations - Petrol, Oil, Etc.	Automotive Services, 169 Woodville Rd Merrylands	125915	Premise Match	71m	East
SPRAYERS ---INDUSTRIAL	Thistlespray, 169 Woodville Rd., Merrylands	146788	Premise Match	71m	East
Motor Body Repairs/Converters	Thistlespray, 169 Woodville Rd., Merrylands	120243	Premise Match	71m	East
Motor Painters	Thistlespray, 169 Woodville Rd., Merrylands	124299	Premise Match	71m	East
Motor Panel Beaters	Thistlespray, 169 Woodville Rd., Merrylands	125067	Premise Match	71m	East
Motor Garages & Engineers	Voss, L. H. Pty. Ltd., 169 Woodville Rd. Merrylands	123032	Premise Match	71m	East
Motor Painters	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands	124323	Premise Match	71m	East
Motor Panel Beaters	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands	125097	Premise Match	71m	East
Motor Accessories - Dealers	Automotive Services, 169 Woodville Rd., Merrylands	119310	Premise Match	71m	East
Welders - Electric &/or Oxy	Taylor, H. L. Eng. Co, Pty. Ltd. , 169 Woodville Rd., Merrylands	156857	Premise Match	71m	East
Engineers - Fabricating	Taylor, H. L. Eng. Co. Pty. Ltd. , 169 Woodville Rd., Merrylands	81881	Premise Match	71m	East
Engineers - Repitition	Taylor, H. L. Engineering Co. Pty. Ltd. , 169 Woodville Rd., Merrylands	84107	Premise Match	71m	East
Engineers General &/or Mfrg. &/or Mechanical	Taylor, H. L. Engineering Co. Pty. Ltd. , 169 Woodville Rd., Merrylands	82929	Premise Match	71m	East
Engineers -Precision	Taylor, H. L. Engineering Co. Pty. Ltd. , 169 Woodville Rd., Merrylands	83692	Premise Match	71m	East
Welders - Electric &/or Oxy	Thistlespray, 169 Woodville Rd., Merrylands	156858	Premise Match	71m	East
Welders - Electric &/or Oxy	Voss, L. H. Pty. Ltd. , 169 Woodville Rd., Merrylands	156892	Premise Match	71m	East
Mixed Businesses	Williams, N. , 163 Woodville Rd., Merrylands	119035	Premise Match	120m	North East
Engineers General &/or Mfrg. &/or Mechanical	Roger, A. , 10 Malvern Ave., Merrylands	82832	Premise Match	123m	West

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

1965 Business Directory Records
Road or Area Matches

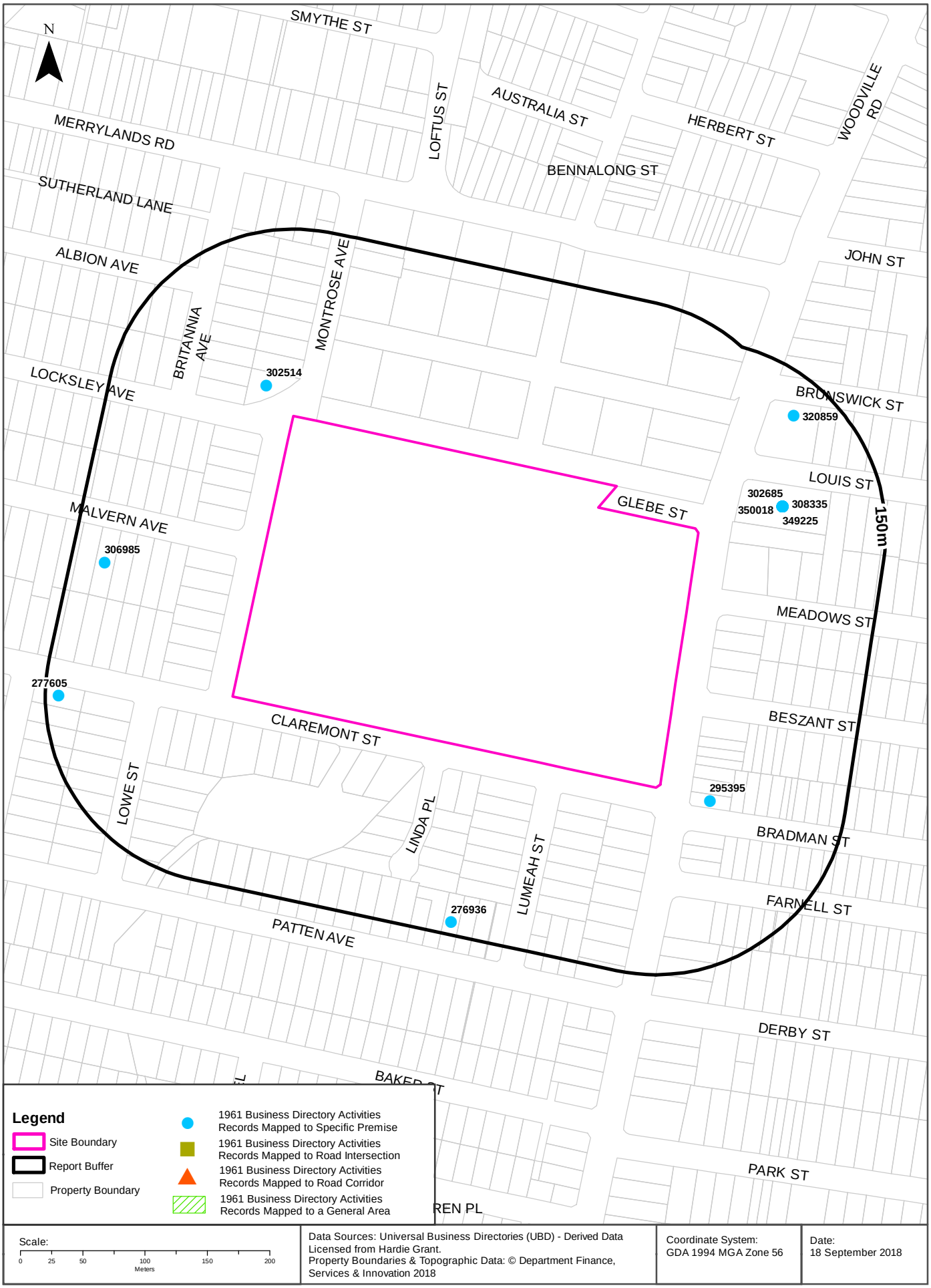
Records from the 1965 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

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

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

1961 Historical Business Directory Records

2 Montrose Avenue, Merrylands, NSW 2160



Historical Business Directories

2 Montrose Avenue, Merrylands, NSW 2160

1961 Business Directory Records
Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
ELECTRICAL CONTRACTORS-LICENSED	Silverstone, J. & Co., 15 Montrose Ave., Merrylands	302514	Premise Match	33m	North West
DELICATESSENS	Wayside Delicatessen, 193 Woodville Rd., Granville	295395	Premise Match	42m	South East
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Automotive Services, 169 Woodville Rd. MERRYLANDS	350333	Premise Match	71m	East
MOTOR GARAGES & ENGINEERS	Automotive Services, 169 Woodville Rd. MERRYLANDS	346570	Premise Match	71m	East
MOTOR PAINTERS	Thistlespray, 169 Woodville Rd., Merrylands	349225	Premise Match	71m	East
SPRAYERS-INDUSTRIAL	Thistlespray, 169 Woodville Rd., Merrylands	252407	Premise Match	71m	East
MOTOR PANEL BEATERS	Thistlespray, 169 Woodville Rd., Merrylands	350018	Premise Match	71m	East
MOTOR GARAGES & ENGINEERS	Voss, L. H. Pty. Ltd., 169 Woodville Rd. Merrylands	348373	Premise Match	71m	East
MOTOR PAINTERS	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands	349250	Premise Match	71m	East
MOTOR PANEL BEATERS	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands	350047	Premise Match	71m	East
MOTOR ACCESSORIES/DEALERS	Automotive Services 169 Woodville Rd. (Cnr. Louis St.), Merrylands	343385	Premise Match	71m	East
MOTOR ACCESSORIES/DEALERS	Automotive Services, 169 Woodville Rd., Merrylands	343386	Premise Match	71m	East
ENGINEERS-GENERAL/MFRG./ MECHANICAL	Taylor H L Engineering Co 169 Woodville Rd., Merrylands	307108	Premise Match	71m	East
ENGINEERS-PRECISION	Taylor, H. L. Eng. Co., 169 Woodville Rd., Merrylands	307887	Premise Match	71m	East
ENGINEERS-REPETITION	Taylor, H. L. Eng. Co., 169 Woodville Rd., Merrylands	308335	Premise Match	71m	East
ENGINEERS-GENERAL/MFRG./ MECHANICAL	Taylor, H. L. Engineering Co., 169 Woodville Rd., Merrylands	307109	Premise Match	71m	East
WELDERS-ELECTRIC &/OR OXY	Thistlespray, 169 Woodville Rd., Merrylands	262504	Premise Match	71m	East
ENGINEERS-REFRIGERATION	Wallwyn, H. L. and Co., 169 Woodville Rd., Merrylands	308099	Premise Match	71m	East
ELECTRICAL CONTRACTORS-LICENSED	Wallyn, H. L. & Co., 169 Woodville Rd., Merrylands	302685	Premise Match	71m	East
GROCERS-RETAIL	McClellan, N. & I., 163 Woodville Rd., Merrylands	320859	Premise Match	120m	North East
ENGINEERS-GENERAL/MFRG./ MECHANICAL	Roger, A., 10 Malvern Ave., Merrylands	306985	Premise Match	123m	West
BUILDERS & CONTRACTORS-(M.M.B.A.)	Charles, T. E 13 Patten Ave MERRYLANDS	276936	Premise Match	140m	South
BUILDERS & CONTRACTORS-(M.M.B.A.)	Sellg, R. F 2 Harper St. MERRYLANDS	277605	Premise Match	140m	West

1961 Business Directory Records
Road or Area Matches

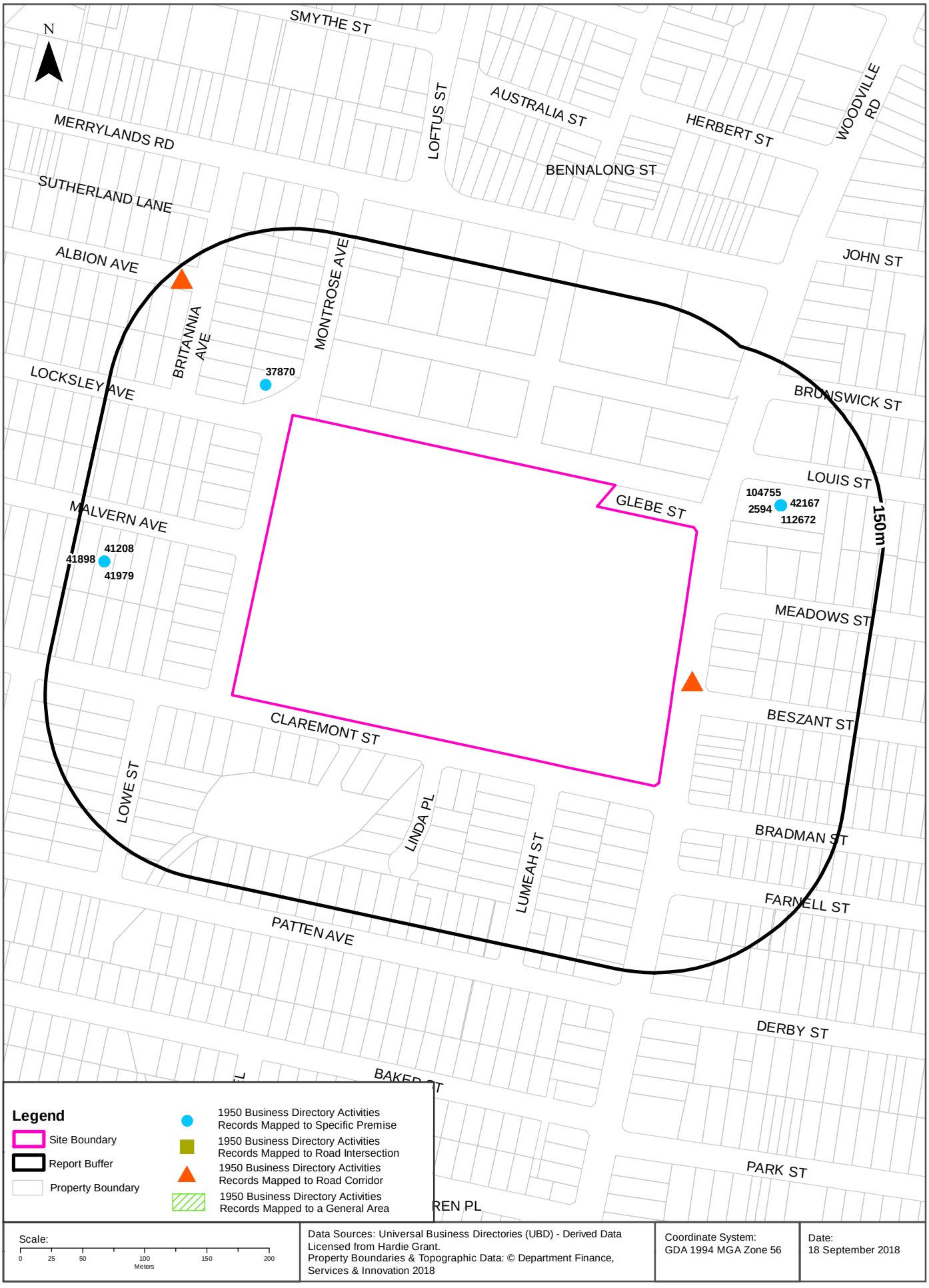
Records from the 1961 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

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

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

1950 Historical Business Directory Records

2 Montrose Avenue, Merrylands, NSW 2160



Historical Business Directories

2 Montrose Avenue, Merrylands, NSW 2160

1950 Business Directory Records
Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
ELECTRICAL CONTRACTORS &/OR ELECTRICIANS	Silverstone, J. and Co., 15 Montrose Ave., Merrylands	37870	Premise Match	33m	North West
MOTOR PANEL BEATERS	Bonham, L. G., 169 Woodville Rd., Merrylands	85182	Premise Match	71m	East
MOTOR PANEL BEATERS	Olfen Bros., 169 Woodville Rd., Merrylands	85427	Premise Match	71m	East
MOTOR GARAGES &/OR ENGINEERS	Olfen Bros., 169 Woodville Rd., Merrylands	84156	Premise Match	71m	East
MOTOR ELECTRICIANS	Olfen Bros., 169 Woodville Rd., Merrylands	83174	Premise Match	71m	East
MOTOR SERVICE STATIONS-PETROL, Etc.	Olfen Bros., 169 Woodville Rd., Merrylands	86248	Premise Match	71m	East
MOTOR PAINTERS	Olfen, Bros., 169 Woodville Rd., Merrylands	84956	Premise Match	71m	East
MOTOR PAINTERS	Thistlespray, 169 Woodville Rd., Merrylands	85065	Premise Match	71m	East
MOTOR PANEL BEATERS	Thistlespray, 169 Woodville Rd., Merrylands	85546	Premise Match	71m	East
SPRAYERS-INDUSTRIAL	Thistlespray, 169 Woodville Rd., Merrylands	104755	Premise Match	71m	East
MOTOR ELECTRICIANS	Wallyn, H. L. and Co., 169 Woodville Rd., Merrylands	83231	Premise Match	71m	East
WELDERS-ELECTRIC &/OR OXY	Bonham, L. G., 169 Woodville Rd., Merrylands.	112672	Premise Match	71m	East
MOTOR TOWING SERVICES	Olfen Bros., 169 Woodville Rd., Merrylands	86940	Premise Match	71m	East
MOTOR TRIMMERS	Olfen Bros., 169 Woodville Rd., Merrylands	87092	Premise Match	71m	East
MOTOR ACCESSORIES-DEALER	Olfen Bros., 169 Woodville Rd., Merrylands	81719	Premise Match	71m	East
ENGINEERS-PRECISION	Taylor, H. L, 169 Woodville Rd, Merrylands	41914	Premise Match	71m	East
ENGINEERS-REPETITION	Taylor, H. L., 169 Woodville Rd., Merrylands	42323	Premise Match	71m	East
ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Taylor, H. U, 169 Woodville Rd., Merrylands	41324	Premise Match	71m	East
WELDERS-ELECTRIC &/OR OXY	Thistlespray, 169 Woodville Rd., Merrylands	113117	Premise Match	71m	East
ENGINEERS-REFRIGERATION	Wallwyn, H. L. and Co., 169 Woodville Rd., Merrylands	42167	Premise Match	71m	East
ARMATURE WINDERS	Wallwyn, H. L. and Co., 169 Woodville Rd., Merrylands	2594	Premise Match	71m	East
ELECTRICAL ENGINEERS	Wallyn, H. L. and Co., 169 Woodville Rd., Merrylands	38267	Premise Match	71m	East
ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Roger, A, 10 Malvern Ave, Merrylands	41208	Premise Match	123m	West
ENGINEERS-PRECISION	Roger, A, 10 Malvern Ave, Merrylands	41898	Premise Match	123m	West
ENGINEERS-PRODUCTION	Roger, A., 10 Malvern Ave., Merry lands	41979	Premise Match	123m	West

1950 Business Directory Records
Road or Area Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
GROCERS-RETAIL	Hoskins, C. F., Woodville Rd., Merrylands	57809	Road Match	0m
SIGNWRITERS	Cremen, H., Albion St., Merrylands	102516	Road Match	128m

Historical Business Directories

2 Montrose Avenue, Merrylands, NSW 2160

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

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

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
MOTOR GARAGES & SERVICE STATIONS.	Parramatta Tyre City Cnr. Woodville Road & Louis Street, Merrylands.	63835	1986	Road Intersection	58m	North East
MOTOR GARAGES & SERVICE STATIONS.	Parramatta Tyre City, Woodville Rd., Merrylands.	65239	1986	Road Intersection	58m	North East
Motor Garages & Service Stations	Voss, LH Pty Ltd, 169 Woodville Rd., Merrylands	53982	1991	Premise Match	71m	East
MOTOR GARAGES & SERVICE STATIONS.	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands.	65676	1986	Premise Match	71m	East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Colliers Automotive Services Pty.Ltd., 169 Woodville Rd.,Merrylands. 2160.	56548	1982	Premise Match	71m	East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Voss, L. H, Pty. Ltd., 169 Woodville Rd., Merrylands. 2160.	57801	1982	Premise Match	71m	East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Colliers Automotive Services Pty. Ltd., 169 Woodville Rd., Merrylands.	49822	1978	Premise Match	71m	East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands.	51044	1978	Premise Match	71m	East
MOTOR GARAGES &/OR ENGINEERS.	Comers Automotive Services, 169 Woodville Rd., Merrylands.	58681	1975	Premise Match	71m	East
MOTOR GARAGES &/OR ENGINEERS.	Voss, L. H. Pty. Ltd., 169 Woodville Rd., Merrylands.	59727	1975	Premise Match	71m	East
MOTOR GARAGES & ENGINEERS(M6S6)	Automotive Services, 169 Woodville Rd.MERRYLANDS	337227	1970	Premise Match	71m	East
MOTOR GARAGES & ENGINEERS(M6S6)	Voss,L. H. Pty. Ud., 169 Woodville Rd.MERRYLANDS	338829	1970	Premise Match	71m	East
Motor Service Stations - Petrol, Oil, Etc.	Automotive Services, 169 Woodville Rd Merrylands	125915	1965	Premise Match	71m	East
Motor Garages & Engineers	Voss, L. H. Pty. Ltd., 169 Woodville Rd. Merrylands	123032	1965	Premise Match	71m	East
MOTOR GARAGES & ENGINEERS	Automotive Services, 169 Woodville Rd. MERRYLANDS	346570	1961	Premise Match	71m	East
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Automotive Services, 169 Woodville Rd. MERRYLANDS	350333	1961	Premise Match	71m	East
MOTOR GARAGES & ENGINEERS	Voss, L. H. Pty. Ltd., 169 Woodville Rd. MERRYLANDS	348373	1961	Premise Match	71m	East
MOTOR SERVICE STATIONS-PETROL, Etc.	Olfen Bros., 169 Woodville Rd., Merrylands	86248	1950	Premise Match	71m	East
MOTOR GARAGES &/OR ENGINEERS	Olfen Bros., 169 Woodville Rd., Merrylands	84156	1950	Premise Match	71m	East
DRY CLEANERS, PRESSERS / DYERS	Taylor & Son Pty. Ltd., 92 Farnell St., Merrylands	299297	1961	Premise Match	185m	South East
DRY CLEANERS & PRESSERS. (D8500)	Graham & Co., 90 Farnell St Merrylands. 2160.	23857	1982	Premise Match	193m	South East
DRY CLEANERS, PRESSERS &/OR DYERS	Graham & Co., 90 Farnell St., Merrylands.	20794	1978	Premise Match	193m	South East
DRY CLEANERS,PRESSERS/DYERS (D710)	Graham & Co., 90 Farnell St., Merrylands	292323	1970	Premise Match	193m	South East
Dry Cleaners, Pressers/Dyers	Graham & Co., 90-92 Farnel St., Merrylands	76177	1965	Premise Match	193m	South East

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Esso Service Station, cnr. Woodville & Merrylands Rds. MERRYLANDS	341050	**1970**	Premise Match	235m	North East
Motor Service Stations - Petrol, Oil, Etc.	Esso Service Station, Cnr. Woodville & Merrylands Rds. Merrylands	125916	1965	Premise Match	235m	North East
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Atlantic Service Station, 150 Woodville Rd. MERRYLANDS	350318	**1961**	Premise Match	235m	North East
Motor Garages & Engineers	Woodville Road Service Station, 225 Woodville Rd. Merrylands	123035	1965	Premise Match	369m	South
MOTOR GARAGES & ENGINEERS	Woodville Road Service Station, 225 Woodville Rd. MERRYLANDS	348492	**1961**	Premise Match	369m	South
Motor Garages & Service Stations	Ampol Merrylands Service Station, 225 Woodville Rd., Merryland	53482	**1991**	Premise Match	370m	South
Motor Garages & Engineers	Merrylands Motors Pty. Ltd., 91 Merrylands Rd. Merrylands	123029	1965	Premise Match	378m	North West
MOTOR GARAGES & ENGINEERS	Seary's Garage, 91 Merrylands Rd., Merrylands	348112	**1961**	Premise Match	378m	North West
MOTOR SERVICE STATIONS-PETROL, Etc.	Seary's Garage, 91 Merrylands Rd., Merrylands	86380	**1950**	Premise Match	378m	North West
MOTOR GARAGES &/OR ENGINEERS	Seary's Garage, 91 Merrylands Rd., Merrylands	84353	**1950**	Premise Match	378m	North West
DRY CLEANERS & PRESSERS.	Pattys Dry Cleaning, 135 Merrylands Rd , Merrylands.	25475	**1986**	Premise Match	469m	North West
DRY CLEANERS, PRESSERS & DYERS	Swift Dry Cleaning Service, 138 Merrylands Rd Merrylands	35728	**1950**	Premise Match	469m	North West
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Crawfords (Neptune) Service Station,172 Railway Ter.GUILDFORD	340988	**1970**	Premise Match	473m	South West
Motor Service Stations - Petrol, Oil, Etc.	Crawfords (Neptune) Service Station, 172 Railway Ter. Guildford	125750	1965	Premise Match	473m	South West

Historical Business Directories

2 Montrose Avenue, Merrylands, NSW 2160

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

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

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Esso Merrylands Service Station, Woodville Rd., Merrylands. 2160.	56713	1982	Road Match	0m
MOTOR SERVICE STATIONS - PETROL, OIL	Esso Service Station, Woodville Rd., Merrylands.	61698	1975	Road Match	0m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Esso Servicentre, Woodville Rd., Merrylands.	50028	1978	Road Match	0m
MOTOR SERVICE STATIONS - PETROL, OIL	Esso Servicentre. Woodville Rd., Merrylands.	61738	1975	Road Match	0m
Motor Garages & Service Stations	Solo Merrylands Woodville Rd., Merrylands	53899	1991	Road Match	0m
MOTOR GARAGES & SERVICE STATIONS.	Woodville Road Service Station, Woodville Rd., Merrylands.	65723	1986	Road Match	0m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Woodville Road Service Station, Woodville Rd., Merrylands.	51129	1978	Road Match	0m
MOTOR SERVICE STATIONS - PETROL, OIL	Woodville Road Service Station, Woodville Rd., Merrylands.	62053	1975	Road Match	0m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Woodville Road Service Station, Woodville Rd., Merrylands. 2160.	57859	1982	Road Match	0m
DRY CLEANERS, PRESSERS & DYERS	“Swans”, Merrylands Rd., Merrylands	35040	1950	Road Match	179m
MOTOR SERVICE STATIONS - PETROL, OIL	BP Greystanes, Merrylands Rd., Merrylands West.	61504	1975	Road Match	179m
MOTOR GARAGES & ENGINEERS	Civic Service Centre, Merrylands Rd. & Treves St. MERRYLANDS	346886	1961	Road Match	179m
Motor Garages & Service Stations	Esso Merrylands Service Station Merrylands Rd., Merrylands. 2160	53726	1991	Road Match	179m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Esso Merrylands Service Station, Merrylands Rd Merrylands. 2160	56714	1982	Road Match	179m
MOTOR GARAGES & SERVICE STATIONS.	Esso Merrylands Service Station, Merrylands Rd., Merrylands.	64643	1986	Road Match	179m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Holroyd Auto Port, Merrylands Rd., Merrylands. 2160.	56969	1982	Road Match	179m
MOTOR GARAGES &/OR ENGINEERS.	Holroyd Auto Port, Merrytands Rd., Merrylands.	59054	1975	Road Match	179m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Holroyd Auto Port. Merrylands Rd., Merrylands.	50257	1978	Road Match	179m
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Jarman's Service Station, Merrylands Rd., Merrylands	350728	1961	Road Match	179m
DRY CLEANERS, PRESSERS & DYERS	S. and R. Dry Cleaners, Merrylands Rd., Merrylands	35679	1950	Road Match	179m
MOTOR GARAGES &/OR ENGINEERS.	Sherwood Motors, Merrylands Rd., Merrylands.	59532	1975	Road Match	179m
MOTOR GARAGES & SERVICE STATIONS.	Sherwood Motors, Merrylands Rd., Merrylands.	65451	1986	Road Match	179m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Sherwood Motors, Merrylands Rd., Merrylands.	50830	1978	Road Match	179m

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Sherwood Motors, Merrylands Rd., Merrylands. 2160.	57568	1982	Road Match	179m
MOTOR GARAGES & ENGINEERS(M6S6)	Sherwood Motors,Merrylands Rd.MERRYLANDS	338599	1970	Road Match	179m
MOTOR GARAGES & ENGINEERS	West Merrylands Auto Centre, Merrylands Rd. MERRYLANDS	348427	1961	Road Match	179m
MOTOR SERVICE STATIONS-PETROL, Etc.	Halgh's Service Station (T. I. Haigh), Woodville Rd., Granville	86031	1950	Road Match	418m
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Halgh's Service Station, Woodville Rd., Granville	350665	1961	Road Match	418m
MOTOR GARAGES & SERVICE STATIONS.	E. & B. Service Centre, William St., Granville.	64574	1986	Road Match	428m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	E. & B. Service Centre, William St., Granville.	49922	1978	Road Match	428m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	E. & B. Service Centre, William St., Granville. 2142.	56648	1982	Road Match	428m
MOTOR GARAGES & ENGINEERS(M6S6)	E. & B. Service Centre,William St. GRANVILLE	337704	1970	Road Match	428m
MOTOR GARAGES &/OR ENGINEERS.	E. A B. Service Centre, William St., Granville.	58781	1975	Road Match	428m
MOTOR GARAGES &/OR ENGINEERS.	Granville Service Centre. William St., Granville.	58986	1975	Road Match	428m
MOTOR GARAGES & ENGINEERS	Jones, G. A., William St. GRANVILLE	347465	1961	Road Match	428m
MOTOR GARAGES &/OR ENGINEERS	Jones, G. A., William St., Granville	83933	1950	Road Match	428m
MOTOR GARAGES &/OR ENGINEERS	Voss, L., Grimwood St., Granville	84513	1950	Road Match	449m
MOTOR GARAGES & SERVICE STATIONS.	Bell & Fenton Automotive Mechanical Repairs, Pitt St., Merrylands.	64032	1986	Road Match	484m
MOTOR SERVICE STATIONS - PETROL, OIL	BP Waratah Service Station, Pitt St., Merrylands.	61579	1975	Road Match	484m
MOTOR GARAGES & ENGINEERS(M6S6)	BP Waratah Service Station,Pitt St. MERRYLANDS	337413	1970	Road Match	484m
DRY CLEANERS, PRESSERS&/OR DYERS.	Drycleaners, 263 Pitt St,. Merrylands.	24002	1975	Road Match	484m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Golden Fleece Merrylands Service Station, Pitt St, Merrylands2160.	56852	1982	Road Match	484m
Motor Service Stations - Petrol, Oil, Etc.	Golden Fleece Service Station, Pitt St. Merrylands	125917	1965	Road Match	484m
MOTOR SERVICE STATIONS - PETROL, OIL	Golden Fleece Service Station, Pitt St., Merrylands.	61778	1975	Road Match	484m
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Golden Fleece Service Station,Pitt St. MERRYLANDS	341176	1970	Road Match	484m
Motor Garages & Engineers	Waratah Service Station, Pitt St. Merrylands	123033	1965	Road Match	484m

Aerial Imagery 2016

2 Montrose Avenue, Merrylands, NSW 2160

Scale: 0 50 100 200 Meters	Data Sources: Aerial Imagery © Department Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 18 September 2018

Aerial Imagery 2009

2 Montrose Avenue, Merrylands, NSW 2160

Scale:
0 50 100 200
Meters

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Coordinate System:
GDA 1994 MGA Zone 56

Date: 17 September 2018

Aerial Imagery 2003

2 Montrose Avenue, Merrylands, NSW 2160

Scale:
0 50 100 200
Meters

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Coordinate System:
GDA 1994 MGA Zone 56

Date: 17 September 2018

Aerial Imagery 1991

2 Montrose Avenue, Merrylands, NSW 2160

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

Coordinate System: GDA 1994 MGA Zone 56

Date: 18 September 2018

Aerial Imagery 1982

2 Montrose Avenue, Merrylands, NSW 2160

Aerial Imagery 1970

2 Montrose Avenue, Merrylands, NSW 2160

Aerial Imagery 1965

2 Montrose Avenue, Merrylands, NSW 2160

Aerial Imagery 1961

2 Montrose Avenue, Merrylands, NSW 2160

Scale:
0 50 100 200
Meters

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

Coordinate System:
GDA 1994 MGA Zone 56

Date: 17 September 2018

Aerial Imagery 1955

2 Montrose Avenue, Merrylands, NSW 2160

Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 17 September 2018
0 50 100 200 Meters	© NSW Department of Finance, Services & Innovation	GDA 1994 MGA Zone 56	

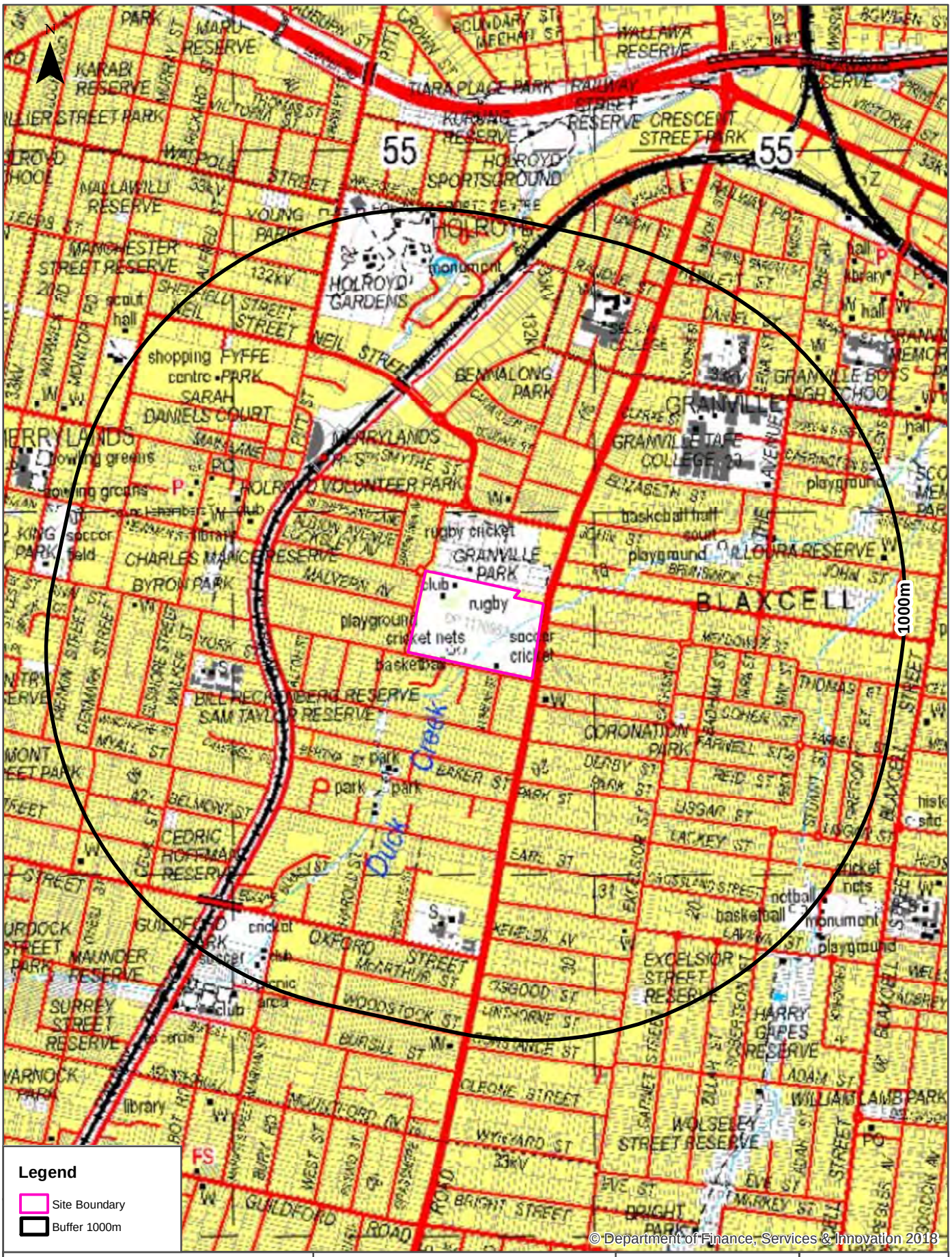
Aerial Imagery 1943

2 Montrose Avenue, Merrylands, NSW 2160

Scale: 0 25 50 100 150 200 Meters	Data Sources: Aerial Imagery © Department of Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 18 September 2018

Topographic Map 2015

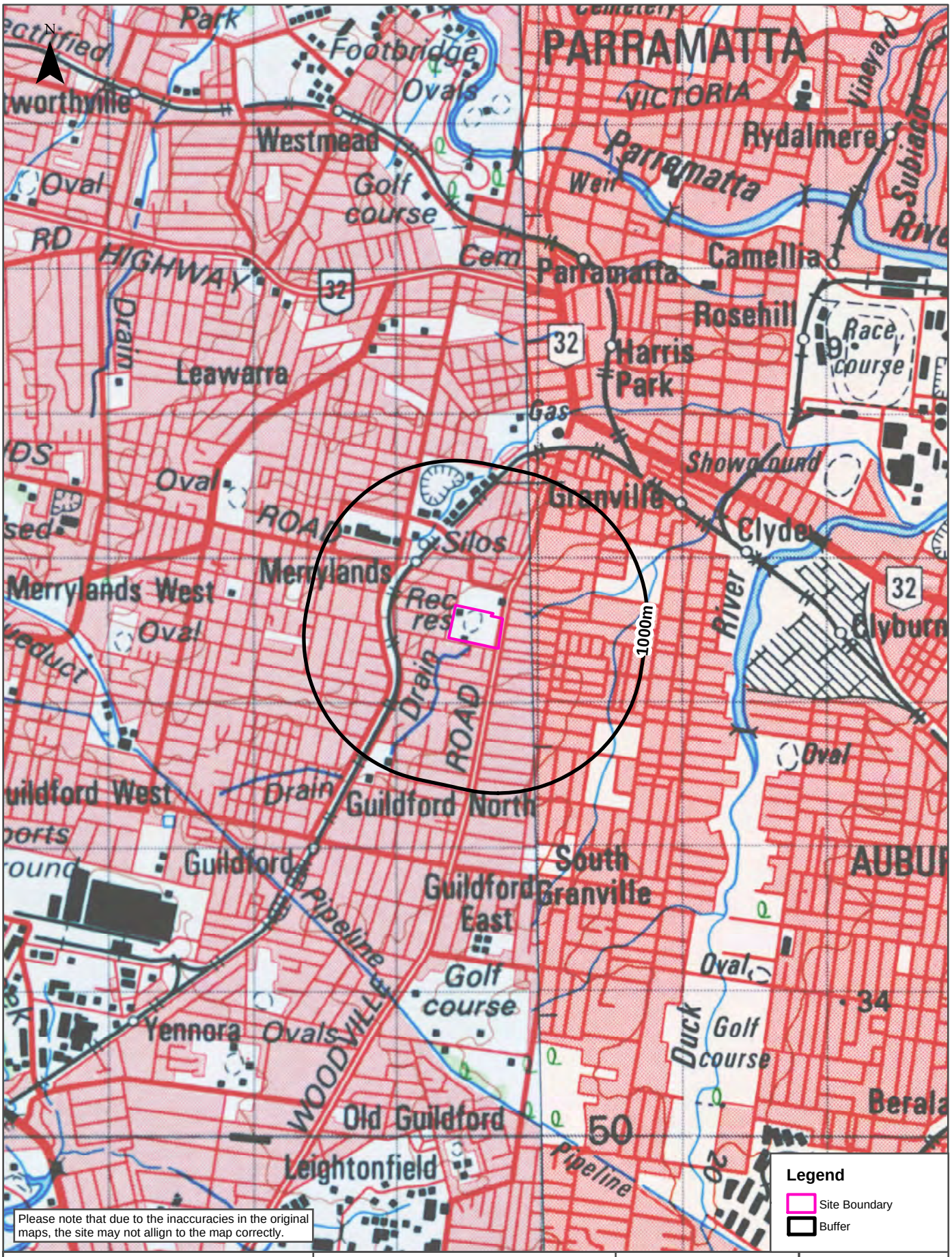
2 Montrose Avenue, Merrylands, NSW 2160



Scale: 0 100 200 400 600 Meters	Data Sources: Topographic Map Data © NSW Land and Property Information	Coordinate System: GDA 1994 MGA Zone 56	Date: 18 September 2018

Historical Map 1975

2 Montrose Avenue, Merrylands, NSW 2160

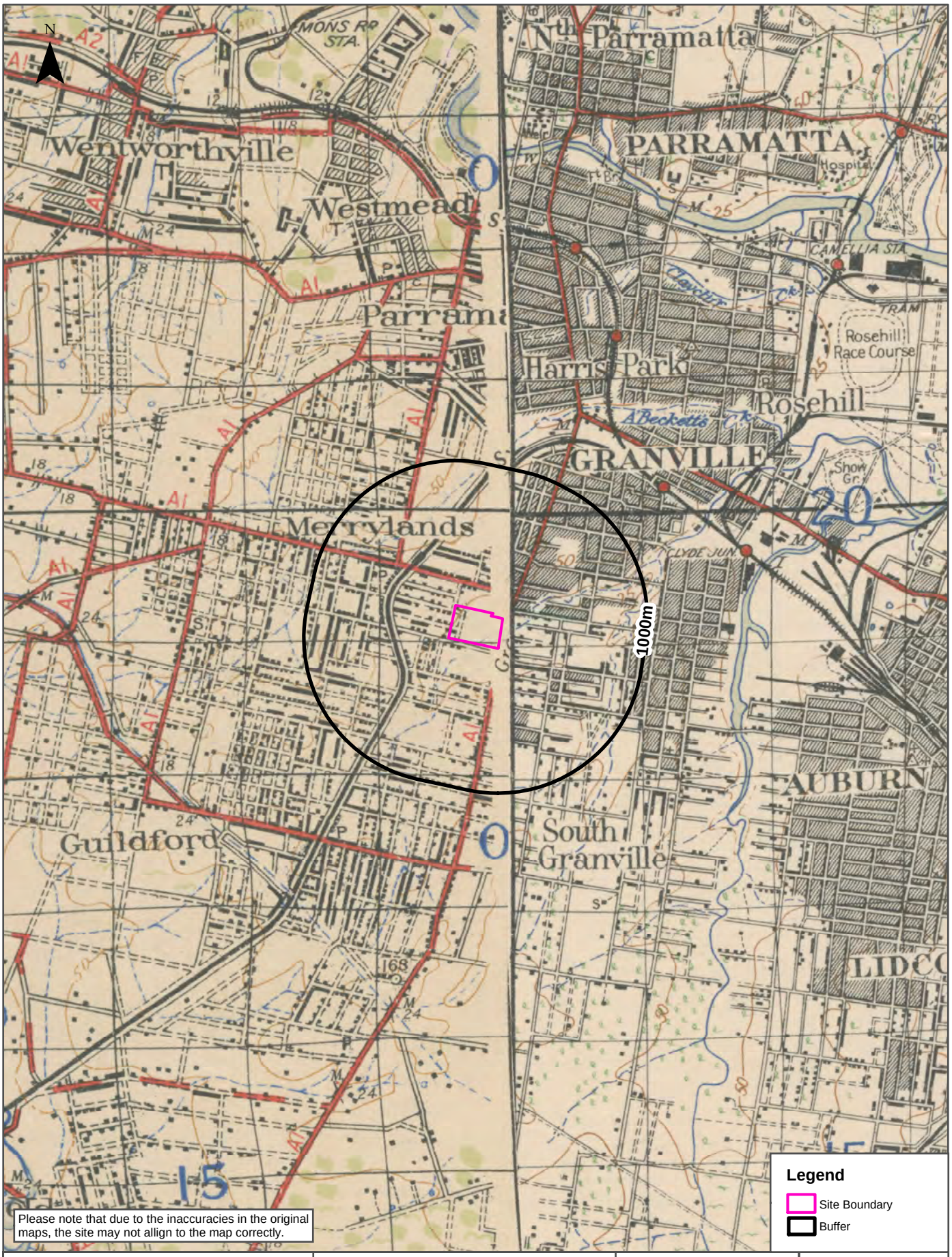


Scale:	Data Sources: NATMAP 1:100,000 Topographic Maps Geoscience Australia	Coordinate System: GDA 1994 MGA Zone 56	Date: 18 September 2018

0 175 350 700 1,050 1,400 1,750 Meters

Historical Map 1936 - 1942

2 Montrose Avenue, Merrylands, NSW 2160

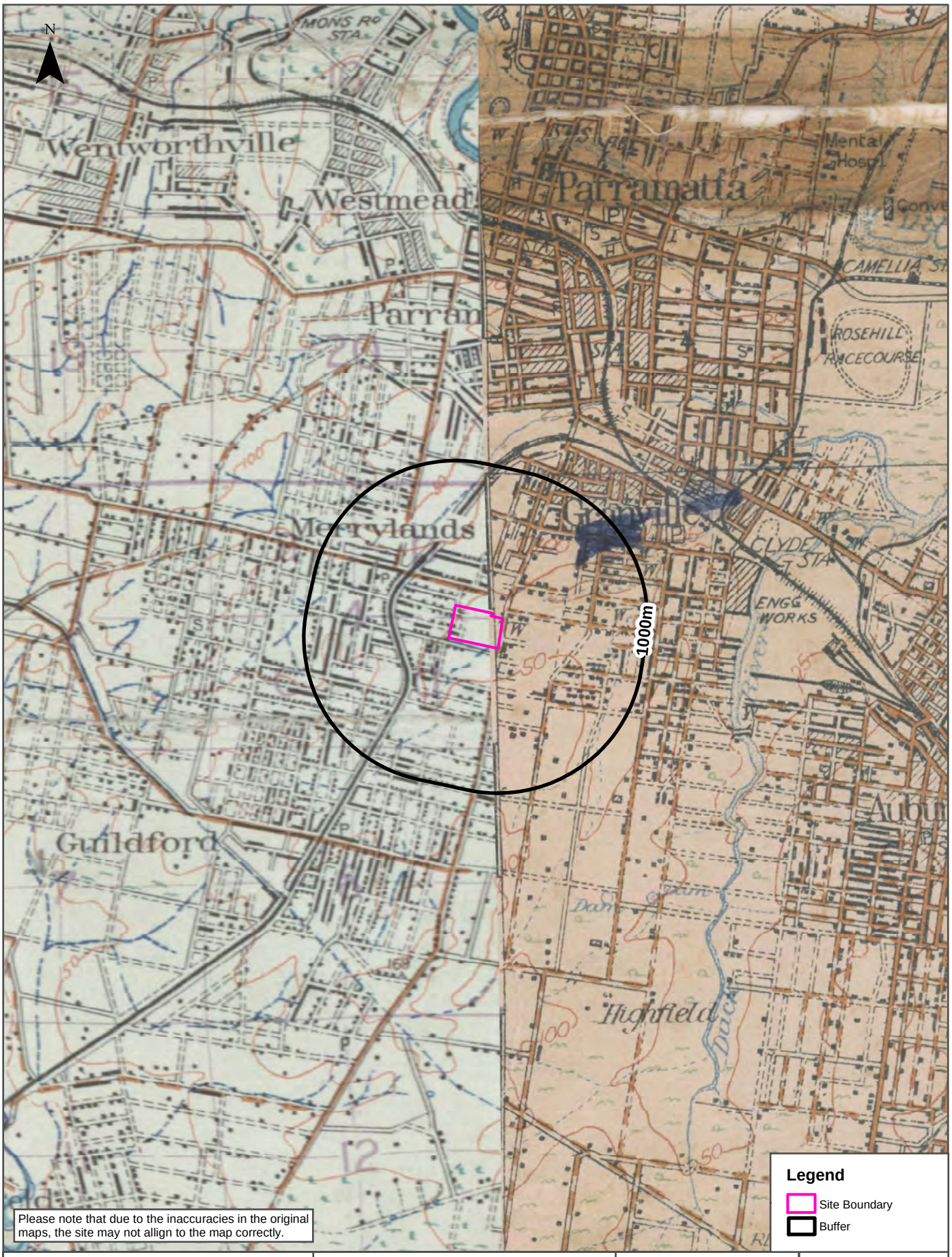


Scale:	Data Sources: Australia 1:63360, Produced by Australian Section Imperial General Staff	Coordinate System: GDA 1994 MGA Zone 56	Date: 18 September 2018

0 175 350 700 1,050 1,400 1,750 Meters

Historical Map 1917 - 1929

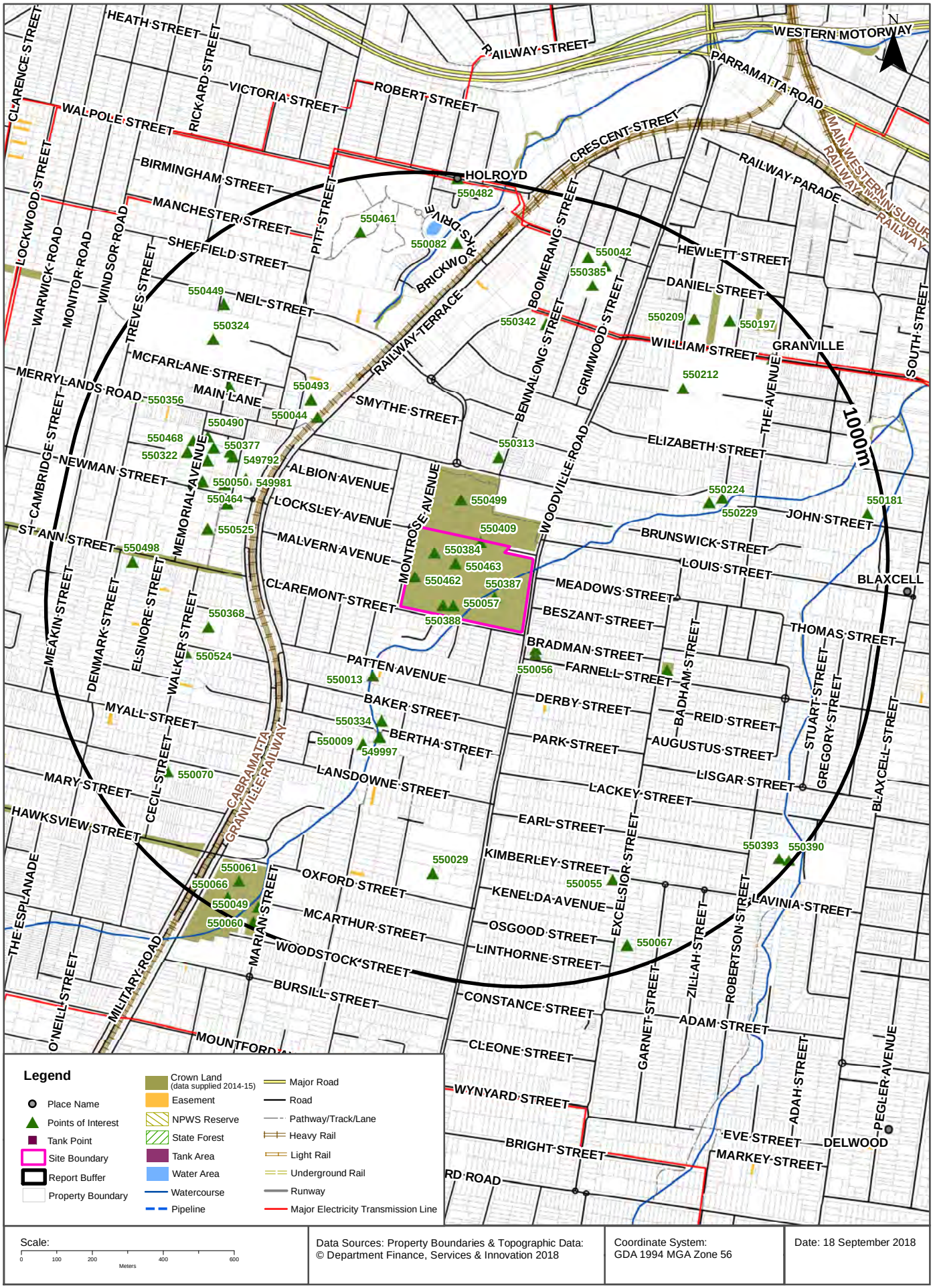
2 Montrose Avenue, Merrylands, NSW 2160



Scale: 0 175 350 700 1,050 1,400 1,750 Meters	Data Sources: Australia 1:63360, Produced by Australian Section Imperial General Staff	Coordinate System: GDA 1994 MGA Zone 56	Date: 18 September 2018

Topographic Features

2 Montrose Avenue, Merrylands, NSW 2160



Legend

- Place Name
- Points of Interest
- Tank Point
- Site Boundary
- Report Buffer
- Property Boundary
- Crown Land (data supplied 2014-15)
- Easement
- NPWS Reserve
- State Forest
- Tank Area
- Water Area
- Watercourse
- Pipeline
- Major Road
- Road
- Pathway/Track/Lane
- Heavy Rail
- Light Rail
- Underground Rail
- Runway
- Major Electricity Transmission Line

Scale: 0 100 200 400 600 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2018

Coordinate System: GDA 1994 MGA Zone 56

Date: 18 September 2018

Topographic Features

2 Montrose Avenue, Merrylands, NSW 2160

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
550057	Sports Court	CRICKET NETS	0m	Onsite
550384	Club	MERRYLANDS RSL CLUB RUGBY PARK	0m	Onsite
550409	Sports Field	GRANVILLE PARK	0m	Onsite
550462	Park	PLAYGROUND	0m	Onsite
550463	Sports Field	RUGBY	0m	Onsite
550387	Sports Field	SOCCER CRICKET	0m	Onsite
550388	Sports Court	BASKETBALL	0m	Onsite
550386	Child Care Centre	ST THOMAS PRESCHOOL	62m	South East
550056	Place Of Worship	ST THOMAS CHURCH HALL	74m	South East
550499	Sports Field	RUGBY CRICKET	99m	North
550013	Park	SAM TAYLOR RESERVE	212m	South West
550313	Place Of Worship	CHURCH OF CHRIST	240m	North
550334	Park	Park	326m	South West
549997	Park	Park	373m	South West
550009	Park	Park	402m	South West
550044	Railway Station	MERRYLANDS RAILWAY STATION	418m	North West
550186	Park	CORONATION PARK	422m	South East
550493	Transport Interchange	MERRYLANDS BUS INTERCHANGE	468m	North West
549981	Club	MERRYLANDS RSL CLUB	502m	North West
550224	Sports Court	BASKEBALL HALF COURT	521m	East
550336	Park	CHARLES MANCE RESERVE	539m	West
550368	Primary School	MERRYLANDS EAST PUBLIC SCHOOL	544m	West
549792	Community Facility	MERRYLANDS COMMUNITY CENTRE	557m	North West
550464	Library	MERRYLANDS CENTRAL LIBRARY	557m	West
550229	Park	ILLOURA RESERVE	560m	East
550477	Park	HOLROYD VOLUNTEER PARK	569m	North West
550525	Park	BYRON PARK	577m	West
550377	Medical Centre	MERRYLANDS COMMUNITY HEALTH CENTRE	616m	North West
550524	Park	BILL HECKENBERG RESERVE	619m	West
550050	Place Of Worship	MERRYLANDS BAPTIST CHURCH	620m	West

Map Id	Feature Type	Label	Distance	Direction
550383	Local Government Chambers	HOLROYD CITY COUNCIL	621m	North West
550342	Park	BENNALONG PARK	634m	North
550212	TAFE College	GRANVILLE TAFE COLLEGE	641m	North East
550490	Post Office	MERRYLANDS POST OFFICE	644m	North West
550439	Park	SARAH DANIELS COURT	662m	North West
550468	Place Of Worship	UNITING CHURCH	678m	North West
550322	Police Station	MERRYLANDS POLICE STATION	682m	North West
550029	Primary School	GRANVILLE SOUTH PUBLIC SCHOOL	718m	South
550055	Place Of Worship	MERRYLANDS EAST PRESBYTERIAN	745m	South East
550498	Place Of Worship	MERRYLANDS ANGLICAN CHURCH	765m	West
550496	High School	DELANY COLLEGE	772m	North East
550324	Shopping Centre	STOCKLAND SHOPPING CENTRE	782m	North West
550070	Park	CEDRIC HOFFMAN RESERVE	804m	South West
550082	Monument	WORKPLACE TRAGEDY MEMORIAL	807m	North
550209	Preschool	GRANVILLE PUBLIC SCHOOL PRESCHOOL	815m	North East
550449	Park	FYFFE PARK	832m	North West
550042	Primary School	HOLY TRINITY PRIMARY SCHOOL	836m	North East
550385	Place Of Worship	HOLY TRINITY CATHOLIC CHURCH	845m	North
550461	Park	HOLROYD GARDENS	847m	North
550197	Primary School	GRANVILLE PUBLIC SCHOOL	871m	North East
550356	Suburb	MERRYLANDS	871m	North West
550194	Suburb	GRANVILLE	882m	North East
550061	Sports Field	CRICKET	900m	South West
550067	Park	EXCELSIOR STREET RESERVE	931m	South East
550049	Club	GUILDFORD COUNTY SOCCER CLUB	939m	South West
550181	Place Of Worship	CHURCH OF CHRIST	950m	East
550066	Sports Field	GUILDFORD PARK	956m	South West
550393	Sports Court	BASKETBALL	967m	South East
550060	Sports Court	ONE THRID BASKETBALL COURT	983m	South West
550482	Suburb	HOLROYD	990m	North
550390	Sports Court	NETBALL	991m	South East

Topographic Features

2 Montrose Avenue, Merrylands, NSW 2160

Tanks (Areas)

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

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

Tanks (Points)

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

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

Major Easements

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

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120122409	Primary	Undefined		183m	South West
120118051	Primary	Undefined		208m	South East
174680701	Primary	Right of way	3m	463m	North West
175286715	Primary	Right of way	Variable	504m	South West
120119559	Primary	Undefined		599m	North
145031123	Primary	Right of way	4	632m	West
120118520	Primary	Undefined		645m	West
120110211	Primary	Undefined		657m	West
120110186	Primary	Undefined		691m	North
120114080	Primary	Undefined		732m	West
120110014	Primary	Undefined		757m	South
120112094	Primary	Undefined		770m	North West
150529936	Primary	Right of way	3m and variable	862m	West

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
151628683	Primary	Right of way	3	865m	West

Topographic Features

2 Montrose Avenue, Merrylands, NSW 2160

State Forest

What State Forest exist within the dataset buffer?

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

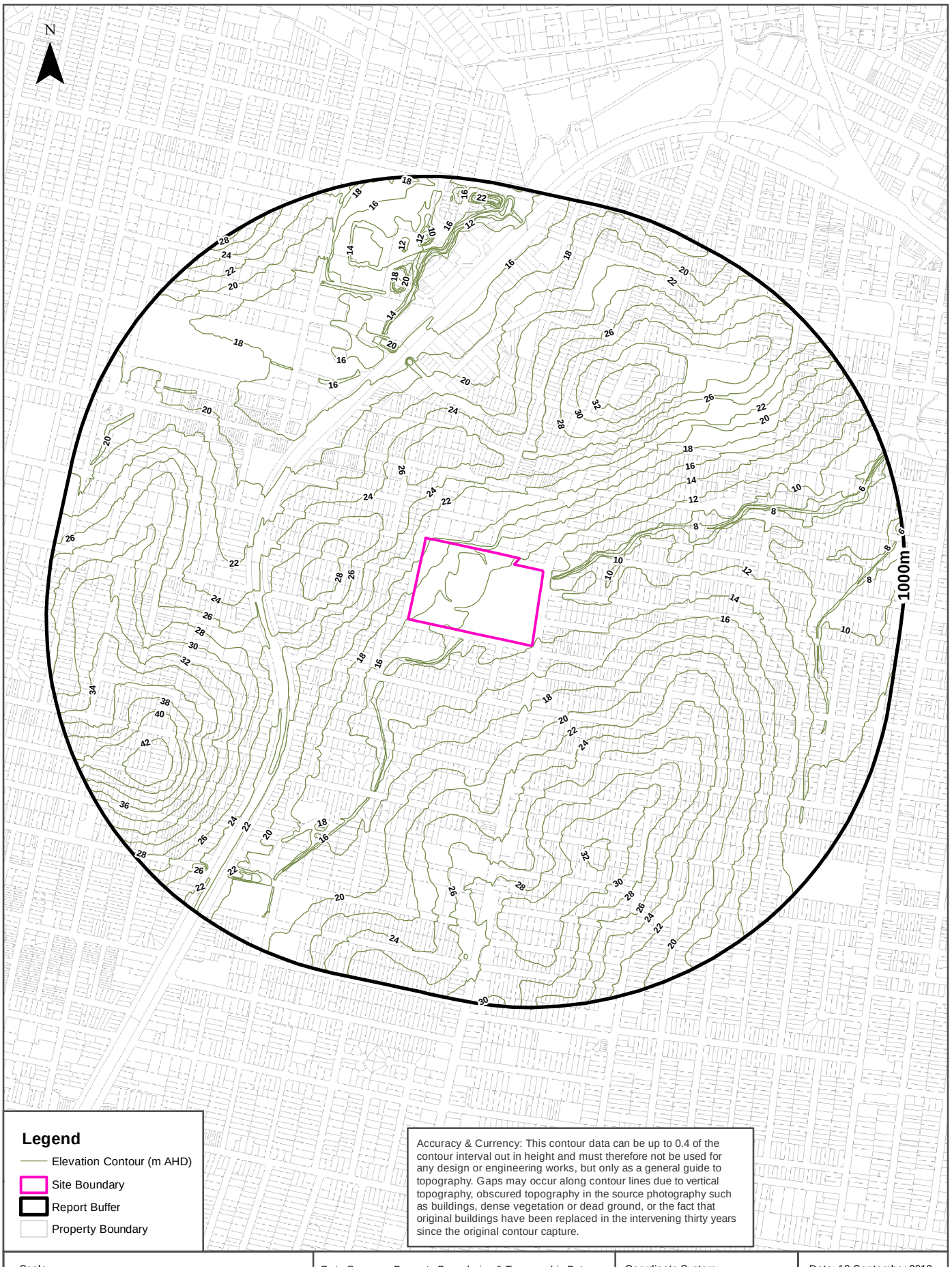
National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

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

Elevation Contours (m AHD)

2 Montrose Avenue, Merrylands, NSW 2160



Hydrogeology & Groundwater

2 Montrose Avenue, Merrylands, NSW 2160

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive aquifers of low to moderate productivity

Description of aquifers within the dataset buffer:

Description
Porous, extensive aquifers of low to moderate productivity

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

Botany Groundwater Management Zones

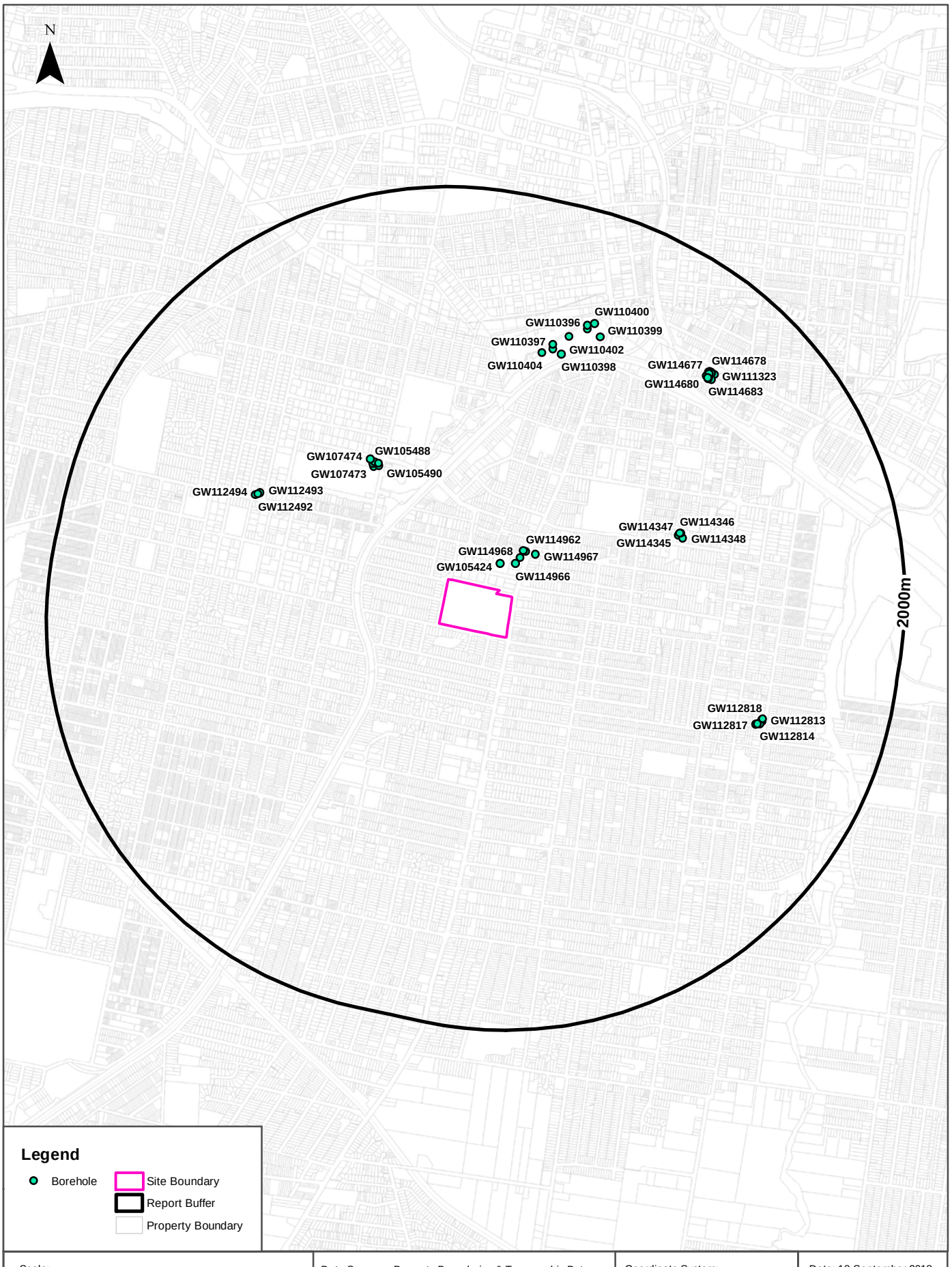
Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

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

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

Groundwater Boreholes

2 Montrose Avenue, Merrylands, NSW 2160



Hydrogeology & Groundwater

2 Montrose Avenue, Merrylands, NSW 2160

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
GW105424	10BL160035, 10WA108474	Bore		Domestic, Stock	Domestic, Stock		20/04/2001	25.60	25.60	350	3.60	0.410		134m	North East
GW114966	10BL605129			Monitoring Bore	Monitoring Bore		18/09/2012	8.80	8.80					159m	North East
GW114968	10BL605129			Monitoring Bore	Monitoring Bore		18/09/2012	5.80	5.80					196m	North East
GW114961	10BL605128	Bore	Private	Monitoring Bore	Monitoring Bore	CALTEX MERRYLANDS	21/01/2014	5.50	5.50					235m	North East
GW114962	10BL605128	Bore	Private	Monitoring Bore	Monitoring Bore	CALTEX MERRYLANDS	21/01/2014	6.00	6.00					239m	North East
GW114967	10BL605129			Monitoring Bore	Monitoring Bore		17/09/2012	5.30	5.30					249m	North East
GW105490	10BL162479	Bore		Monitoring Bore	Monitoring Bore		02/10/2003	6.50	6.50		2.45			678m	North West
GW107473	10BL165740	Bore		Monitoring Bore	Monitoring Bore		19/07/2005	6.50	6.50					687m	North West
GW105489	10BL162479	Bore		Monitoring Bore	Monitoring Bore		01/10/2003	6.50	6.50		2.45			688m	North West
GW105491	10BL162479	Bore		Monitoring Bore	Monitoring Bore		03/10/2003	6.50	6.50		2.30			701m	North West
GW105488	10BL162479	Bore		Monitoring Bore	Monitoring Bore		01/10/2003	6.90	6.90		2.10			703m	North West
GW107474	10BL165740	Bore		Monitoring Bore	Monitoring Bore		09/09/2005	5.70						730m	North West
GW114345	10BL605004	Bore	Private	Monitoring Bore	Monitoring Bore		19/10/2011	6.00	6.00		5.50			905m	East
GW114346	10BL605004	Bore	Private	Monitoring Bore	Monitoring Bore		19/10/2011	6.00	6.00		5.00			913m	East
GW114347	10BL605004	Bore	Private	Monitoring Bore	Monitoring Bore		19/10/2011	5.90	5.90		5.50			918m	East
GW114348	10BL605004	Bore	Private	Monitoring Bore	Monitoring Bore		19/10/2011	6.80	6.80		5.50			920m	East
GW112493	10BL604109	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2010	9.00	9.00					1055m	North West
GW112492	10BL604109	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2010	11.50	11.50					1063m	North West
GW112494	10BL604109	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2010	9.00	9.00					1073m	North West
GW110404	10BL160282	Well	Private	Monitoring Bore	Monitoring Bore		18/05/2001	9.00	9.00					1226m	North
GW110398	10BL160282	Well	Private	Monitoring Bore	Monitoring Bore		26/06/1996	6.00	6.00					1244m	North
GW110397	10BL160282	Well	Private	Monitoring Bore	Monitoring Bore		06/03/1996	5.00	5.00					1260m	North
GW110403	10BL160282	Well	Private	Monitoring Bore	Monitoring Bore		18/05/2001	9.00	9.00					1280m	North
GW110402	10BL160282	Well	Private	Monitoring Bore	Monitoring Bore		18/05/2001	8.00	8.00					1340m	North
GW112817	10BL605124	Bore	Private	Monitoring Bore	Monitoring Bore		06/06/2012	6.50	6.50					1346m	East
GW112815	10BL605124	Bore	Private	Monitoring Bore	Monitoring Bore		22/07/2011	13.00	13.00					1356m	East

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW112814	10BL605124	Bore	Private	Monitoring Bore	Monitoring Bore		21/07/2011	13.00	13.00					1365m	East
GW112816	10BL605124	Bore	Private	Monitoring Bore	Monitoring Bore		23/05/2012	6.00	6.00					1367m	East
GW112818	10BL605124	Bore	Private	Monitoring Bore	Monitoring Bore		06/06/2012	6.50	6.50					1369m	East
GW112812	10BL605124	Bore	Private	Monitoring Bore	Monitoring Bore		21/07/2011	10.50	10.50					1372m	East
GW112813	10BL605124	Bore	Private	Monitoring Bore	Monitoring Bore		21/07/2011	10.35	10.35					1374m	East
GW110399	10BL160282	Well	Private	Monitoring Bore	Monitoring Bore		26/06/1996	5.30	5.30					1387m	North East
GW110396	10BL160282	Well	Private	Monitoring Bore	Monitoring Bore		26/06/1996	7.00	7.00					1403m	North
GW110401	10BL160282	Well	Private	Monitoring Bore	Monitoring Bore		18/05/2001	7.00	7.00					1421m	North
GW110400	10BL160282	Well	Private	Monitoring Bore	Monitoring Bore		06/03/1996	5.40	5.40					1441m	North East
GW114683	10BL604491	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2011	3.00	3.00					1496m	North East
GW114682	10BL604491	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2011	8.00	8.00					1497m	North East
GW114681	10BL604491	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2011	7.50	7.50					1499m	North East
GW114680	10BL604491	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2011	7.50	7.50					1501m	North East
GW111322	10BL601807	Bore	Private	Monitoring Bore	Monitoring Bore		25/05/2007	3.60	3.60					1505m	North East
GW111324	10BL601807	Bore	Private	Monitoring Bore	Monitoring Bore		25/05/2007	8.10	8.10					1517m	North East
GW114675	10BL604491	Bore	Private	Monitoring Bore	Monitoring Bore		01/04/2011	7.50	7.50					1517m	North East
GW114676	10BL604491	Bore	Private	Monitoring Bore	Monitoring Bore		01/04/2011	7.50	7.50					1522m	North East
GW114677	10BL604491	Bore	Private	Monitoring Bore	Monitoring Bore		31/03/2011	7.50	7.50					1528m	North East
GW114679	10BL604491	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2011	7.50	7.50					1528m	North East
GW111323	10BL601807	Bore	Private	Monitoring Bore	Monitoring Bore		25/05/2007	4.10	4.10					1531m	North East
GW114678	10BL604491	Bore	Private	Monitoring Bore	Monitoring Bore		31/03/2011	8.50	8.50					1531m	North East

Hydrogeology & Groundwater

2 Montrose Avenue, Merrylands, NSW 2160

Driller's Logs

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

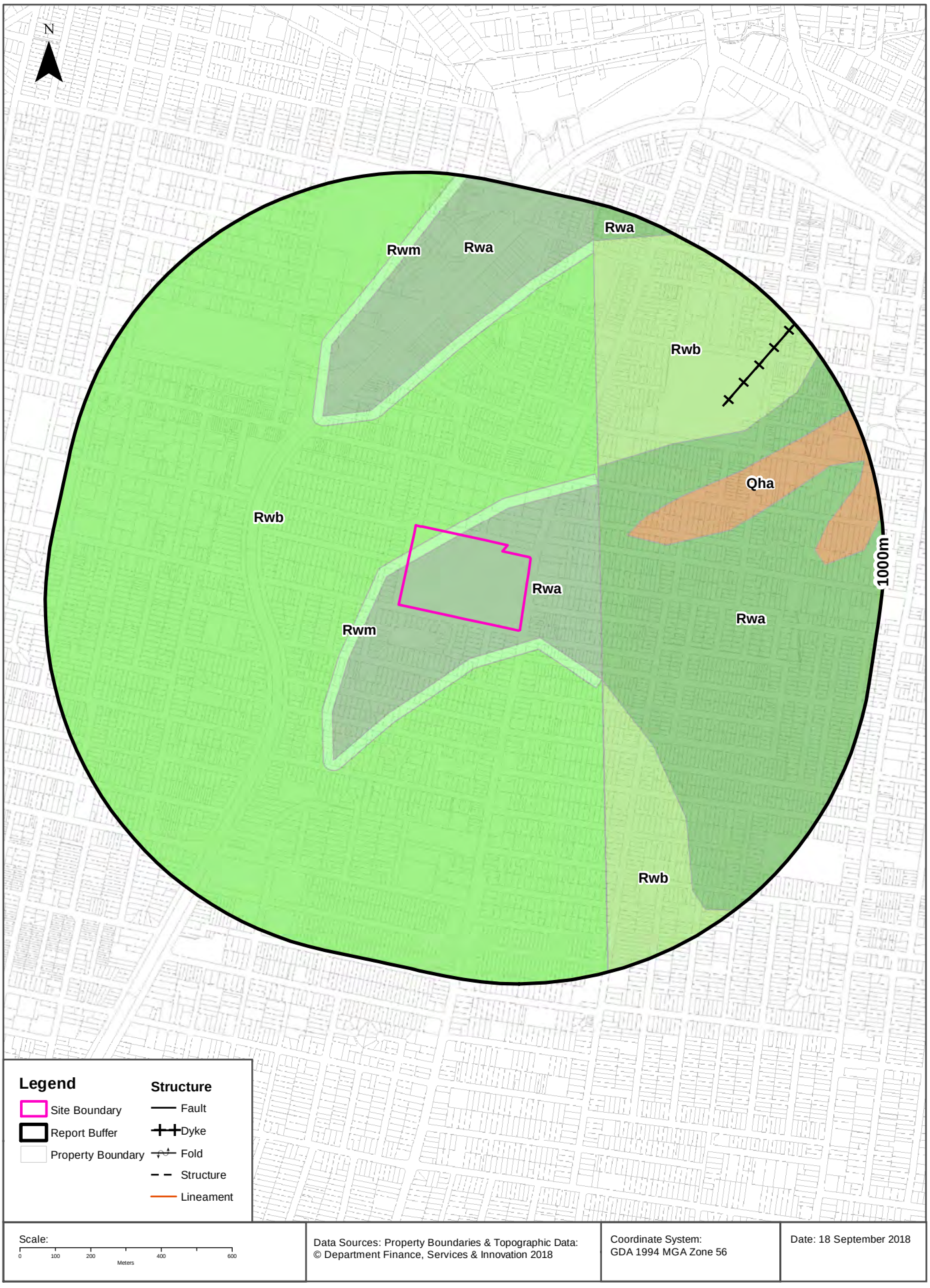
Groundwater No	Drillers Log	Distance	Direction
GW105424	0.00m-1.20m TOPSOIL,SANDY CLAY 1.20m-7.90m SOFT DECOMPOSED GRANITE 7.90m-21.60m HARDER DECOMPOSED GRANITE 21.60m-25.60m HARD BLUE GRANITE	134m	North East
GW114966	0.00m-0.30m TOPSOIL, SANDY CLAY, LOW PLASTICITY 0.30m-0.80m GRAVELLY SAND MED.GRAINED 0.80m-2.30m SANDY CLAY HIGH PLASTICITY RED/GREY 2.30m-6.60m SHALE DARK BROWN,GREY,SOME CLAY 6.60m-7.10m SHALE AS ABOVE BECOMING MOIST 7.10m-8.80m SHALE AS ABOVE DARK GREY,WET	159m	North East
GW114961	0.00m-0.40m CONCRETE 0.40m-0.70m FILL,SAND,M/GRAINED 0.70m-1.10m FILL,GRAVELLY SANDY CLAY,SAND,GRAVELS 1.10m-4.80m SHALE, WEATHERED BED ROCK GREY BROWN 4.80m-5.40m SHALE AS ABOVE BUT SOFT 5.40m-5.50m SHALE AS ABOVE BUT HARD	235m	North East
GW114962	0.00m-0.17m CONCRETE 0.17m-0.50m FILL,SAND AND BROWN/GREY ROADBASE 0.50m-1.10m SHALE, WEATHERED,GREY WITH LIGHT BROWN 1.10m-4.50m SHALE AS ABOVE BUT SOFT 4.50m-6.00m SHALE AS ABOVE BUT HARD.	239m	North East
GW114967	0.00m-0.30m BITUMEN 0.30m-0.50m ROAD BASE 0.50m-1.00m SANDY CLAY, HIGH PLASTICITY 1.00m-1.60m SHALE / BEDROCK 1.60m-2.10m SHALE AS ABOVE DARK BROWN/GREY 2.10m-4.00m SHALE AS ABOVE DARK GREY 4.00m-5.30m SHALE AS ABOVE,WET FRACTURED	249m	North East
GW105490	0.00m-0.70m FILL,GRAVEL COARSE,BVLACK WET 0.70m-4.40m CLAY,D/BROWN,DRY 4.40m-5.40m GRAVELLY CLAY,ORANGE/BROWN 5.40m-6.50m CLAY:L/BROWN/GREY,STIFF	678m	North West
GW107473	0.00m-1.50m FILL/SAND 1.50m-2.00m CLAY 2.00m-3.50m CLAY,HARD,LOW PLASTICITY 3.50m-5.10m CLAY,GREY/LIGHT BROWN 5.10m-6.50m GRAVELLY CLAY,ORANGE/BROWN	687m	North West
GW105489	0.00m-4.40m CLAY,GREY,BLACK,DRY,MOIST 4.40m-5.40m GRAVELLY CLAY,ORANGE/BROWN 5.40m-6.50m CLAY,L/BROWN,WET	688m	North West
GW105491	0.00m-3.40m CLAY,L/BROWN,DRY,MOIST 3.40m-4.40m GRAVELLY CLAY,ORANGE,BROWN 4.40m-6.50m CLAY,L/BROWN,SOFT,WET	701m	North West
GW105488	0.00m-4.40m CLAY,L/BROWN,DRY,MOIST 4.40m-5.40m GRAVELLY CLAY/RED/BROWN 5.40m-6.90m INTERBEDDED CLAY	703m	North West
GW114345	0.00m-0.50m SHALE GRAVELS 0.50m-1.50m FILL ,SILTY CLAY 1.50m-2.30m FILL, CLAY ORGANIC 2.30m-3.80m SILTY CLAY 3.80m-4.20m SILTY CLAY 4.20m-5.00m SILTY CLAY 5.00m-6.00m SILTY CLAY MEDIUM GREY,IRONSTONE	905m	East

Groundwater No	Drillers Log	Distance	Direction
GW114346	0.00m-0.50m FILL 0.50m-0.80m FILL SILTY SANDY CLAY 0.80m-1.20m SILTY CLAY 1.20m-2.00m SILTY CLAY DAMP 2.00m-2.80m SILTY CLAY 2.80m-3.00m SILTY CLAY 3.00m-3.40m SILTY CLAY 3.40m-3.90m SILTY CLAY 3.90m-4.00m SILTY CLAY 4.00m-6.00m SILTY CLAY	913m	East
GW114347	0.00m-0.60m FILL 0.60m-5.90m SILTY CLAY	918m	East
GW114348	0.00m-0.70m FILL 0.70m-1.20m FILL 1.20m-2.70m FILL, SILTY CLAY 2.70m-3.40m SILTY C LAY 3.40m-5.40m SILTY CLAY 5.40m-6.10m SILTY CLAY 6.8 6.10m-6.80m SILTY CLAY,ORANGE-BROWN	920m	East
GW110404	0.00m-0.90m FILL,CLAYEY SAND,GRAVEL 0.90m-1.50m FILL,GRAVELLY SILTY SAND 1.50m-6.50m FILL,CRUSHED SANDSTONE 6.50m-8.50m SILTY CLAY,W/MINOR SAND 8.50m-9.00m SHALE,GREY EXTREMELY WEATHERED	1226m	North
GW110398	0.00m-0.50m FILL, ROAD BASE 0.50m-1.50m CLAY,RED,GREY,PLASTIC,MOIST 1.50m-4.00m CLAY RED BROWN,STIFF, PLASTIC 4.00m-5.50m CLAY,ORANGE/BROWN.STIFF 5.50m-6.00m SHALE,GREY, WEATHERED	1244m	North
GW110397	0.00m-1.50m FILL, CLAY,SOFT BROWN,PLASTIC 1.50m-3.50m CLAY RED,PINK,PURPLE,HARD 3.50m-4.30m CLAY LT/BROWN, HARD 4.30m-4.50m CLAY LT BROWN,SOFT,PLASTIC 4.50m-5.00m CLAY,DARK YELLOW,SILTY	1260m	North
GW110403	0.00m-0.10m TOPSOIL 0.10m-0.20m BASALT GRAVEL FILL 0.20m-0.85m FILL,SILTY SAND 0.85m-1.50m FILL,STIFF,GREY/BROWN,SANDY CLAY 1.50m-4.00m FILL,CRUSHED SANDSTONE 4.00m-6.40m SILTY CLAY,V/SOFT,GREY 6.40m-8.50m CLAY,SOFT YELLOW 8.50m-9.00m SHALE EXTREMELY WEATHERED	1280m	North
GW110402	0.00m-0.85m FILL.LOOSE SAND,W/GRAVEL 0.85m-5.00m FILL,CRUSHED SANDSTONE 5.00m-8.00m FILL,SOFT,SANDY CLAY W/GRAVEL	1340m	North
GW110399	0.00m-1.50m FILL,CLAY BROWN PLASTIC 1.50m-2.00m CLAY,YELLOW,BRWON, HARD 2.00m-2.50m CLAY,LT BROWN ,SOFT SILTY PLASTIC 2.50m-3.40m CLAY,LT GREY,SILTY SOFT PLASTIC 3.40m-5.30m CLAY,ORANGE,GREY MOTTLE	1387m	North East
GW110396	0.00m-0.30m FILL,LOOSE,BROWN,SANDY 0.30m-6.00m CLAY, LT BROWN,SOFT,PLASTIC 6.00m-7.00m CLAY,RED BROWN,PLASTIC FILL.	1403m	North
GW110401	0.00m-0.85m FILL,LOOSE SAND/GRAVEL 0.85m-7.00m FILL,CRUSHED SANDSTONE	1421m	North
GW110400	0.00m-0.80m FILL,CLAY,GREY,SANDY,GRAVELLY 0.80m-4.30m FILL,CLAY,LT BROWN,SOFT , PLASTIC 4.30m-5.40m CLAY, LT BROWN,PINK,SOFT SILT	1441m	North East
GW111322	0.00m-0.30m TOPSOIL,GRAVELLY SILTY SAND 0.30m-2.20m FILL,SILTY CLAY,MEDIUM DENSITY 2.20m-3.50m SAND,MEDIUM GRAIN,GREY,SOFT 3.50m-3.60m CLAY,LOW TO MODERATE PLASTICITY,GREY,SHALE	1505m	North East
GW111324	0.00m-0.30m TOPSOIL,SILTY SAND,FINE GRAIN,BROWN 0.30m-5.50m FILL.GRAVELLY CLAY,MODERATE PLASTICITY,RED BROWN 5.50m-8.10m SHALE,DARK GREY,HARD,UNIFORM,WET	1517m	North East

Groundwater No	Drillers Log	Distance	Direction
GW114675	0.00m-0.20m CLAYAY SAND WITH MINOR GRAVEL 0.20m-0.50m SAND FINE GRAINED,MOIST,DAR BROWN 0.50m-1.00m CLAYEY SANDY GRAVEL,DARK BROWN 1.00m-2.80m SILTY CLAY STIFF,MOIA,LOW PLASTICITY 2.80m-4.00m SILTY CLAY STIFF,MOIST GREY BROWN 4.00m-7.50m SHALE WEATHERED,HARD SLIGHTLY MOIST	1517m	North East
GW114676	0.00m-0.20m CONCRETE 0.20m-0.50m GRAVELLY SANDY CLAY 0.50m-1.40m SILTY CLAY,MINOR IRONSTONE 1.40m-2.40m SILTY CLAY,WEATHERED SHALE 2.40m-3.00m SHALE WEATHERED,MINOR SILT AND CLAY 3.00m-4.50m SHALE WEATHERED MINOR SILT AND CLAY 4.50m-6.00m SHALE WEATHERED MINOR SILT AND CLAY FIRM 6.00m-7.50m SHALE VERY WEATHERED MINOR SILT AN CLAY SOFT	1522m	North East
GW114677	0.00m-0.20m CONCRETE 0.20m-0.50m SANDY GRAVEL FINE GRAINED SAND 0.50m-1.00m SILTY CLAY WITH MINOR GRAVEL, FINE GRAINED SAND 1.00m-1.20m SILTY CLAY WITH MINOR GRAVEL,RED BROWN 1.20m-2.00m SILTY CLAY,MINOR IRONSTONE,RED BROWN 2.00m-2.80m SHALE WEATHERED MINOR SILT HARD 2.80m-5.85m SHALE WEATHERED SHALE,MINOR SILT,DRY 5.85m-7.50m SHALE VERY WEATHERED,SOFT,MOIST,LOW PLASTICITY	1528m	North East
GW111323	0.00m-0.30m TOPSOIL,SILTY SAND,FINE GRAIN 0.30m-2.50m FILL,SANDY CLAY,RED BROWN,GREY MOTTLING 2.50m-4.10m SHALE,WEATHERED,STIFF TO HARD,SOME CLAY	1531m	North East
GW114678	0.00m-0.20m CONCRETE 0.20m-0.40m SANDY GRAVEL,FINE GRAINED 0.40m-0.80m SILTY CLAY , MINOR IRONSTONE 0.80m-1.00m SILTY CLAY , SHALE,FIRM,MOIST 1.00m-2.00m SHALE WEATHERED,MINOR IRONSTONE 2.00m-2.70m SHALE WEATHERED,DRY, LOW PLASTICITY 2.70m-7.00m SHALE WEATHERED,MINOR SILT LOW PLASTICITY 7.00m-8.50m SHALE WEATHERED,MINOR SILT,HARD,MOIST TI WET	1531m	North East

Geology 1:100,000

2 Montrose Avenue, Merrylands, NSW 2160



Geology

2 Montrose Avenue, Merrylands, NSW 2160

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Rwa	Dark-grey to black claystone-siltstone and fine sandstone -siltstone laminate	Ashfield Shale	Wianamatta Group (undifferentiated)		Middle Triassic		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
Rwm	Fine to medium-grained quartz-lithic sandstone	Minchinbury Sandstone	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
Qha	Silty to peaty quartz sand, silt, and clay. Ferruginous and humic cementation in places. Common shell layers				Quaternary		Sydney	1:100,000
Rwa	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	1:100,000
Rwa	Dark-grey to black claystone-siltstone and fine sandstone -siltstone laminate	Ashfield Shale	Wianamatta Group (undifferentiated)		Middle Triassic		Penrith	1:100,000
Rwb	Shale, carbonaceous claystone, laminate, fine to medium-grained lithic sandstone, rare coal	Bringelly Shale	Wianamatta Group		Triassic		Sydney	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
Rwm	Fine to medium-grained quartz-lithic sandstone	Minchinbury Sandstone	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
Dyke			Sydney	1:100,000

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

Naturally Occurring Asbestos Potential

2 Montrose Avenue, Merrylands, NSW 2160

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

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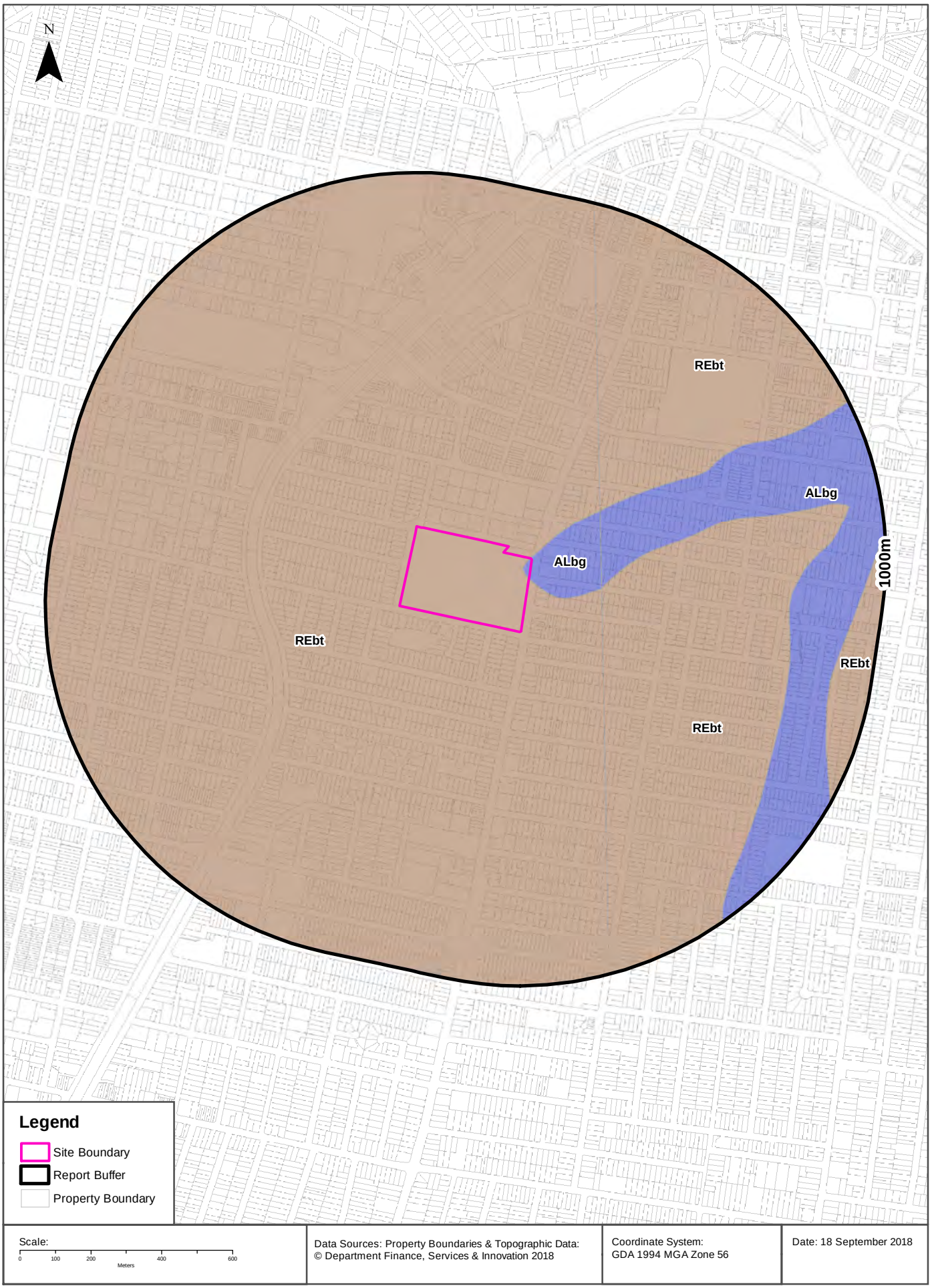

Soils

2 Montrose Avenue, Merrylands, NSW 2160

Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALbg	BIRRONG		ALLUVIAL	Penrith	1:100,000
REbt	BLACKTOWN		RESIDUAL	Penrith	1:100,000

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALbg	BIRRONG		ALLUVIAL	Penrith	1:100,000
ALbg	BIRRONG		ALLUVIAL	Sydney	1:100,000
REbt	BLACKTOWN		RESIDUAL	Penrith	1:100,000
REbt	BLACKTOWN		RESIDUAL	Sydney	1:100,000

Atlas of Australian Soils

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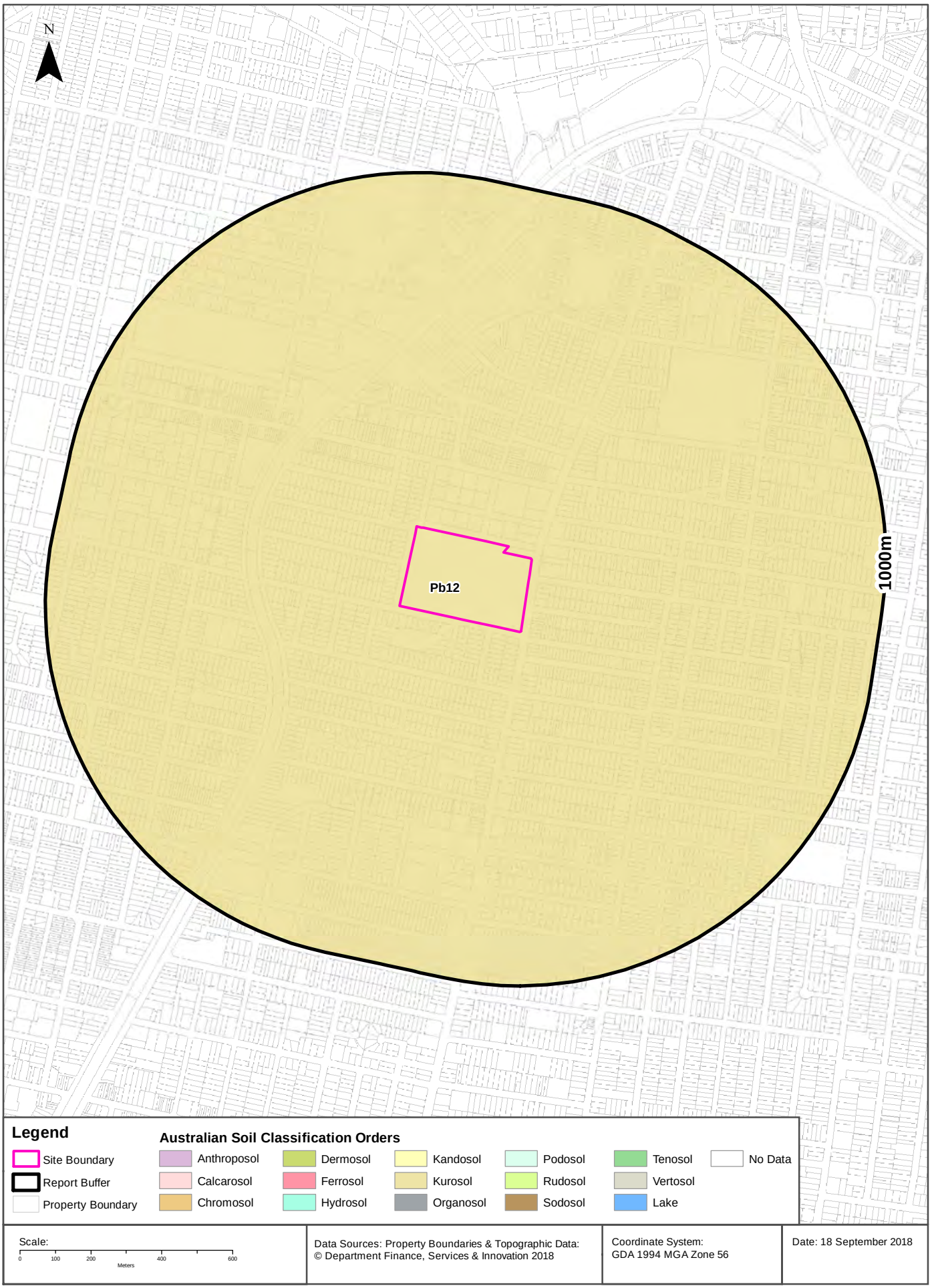

Soils

2 Montrose Avenue, Merrylands, NSW 2160

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

Acid Sulfate Soils

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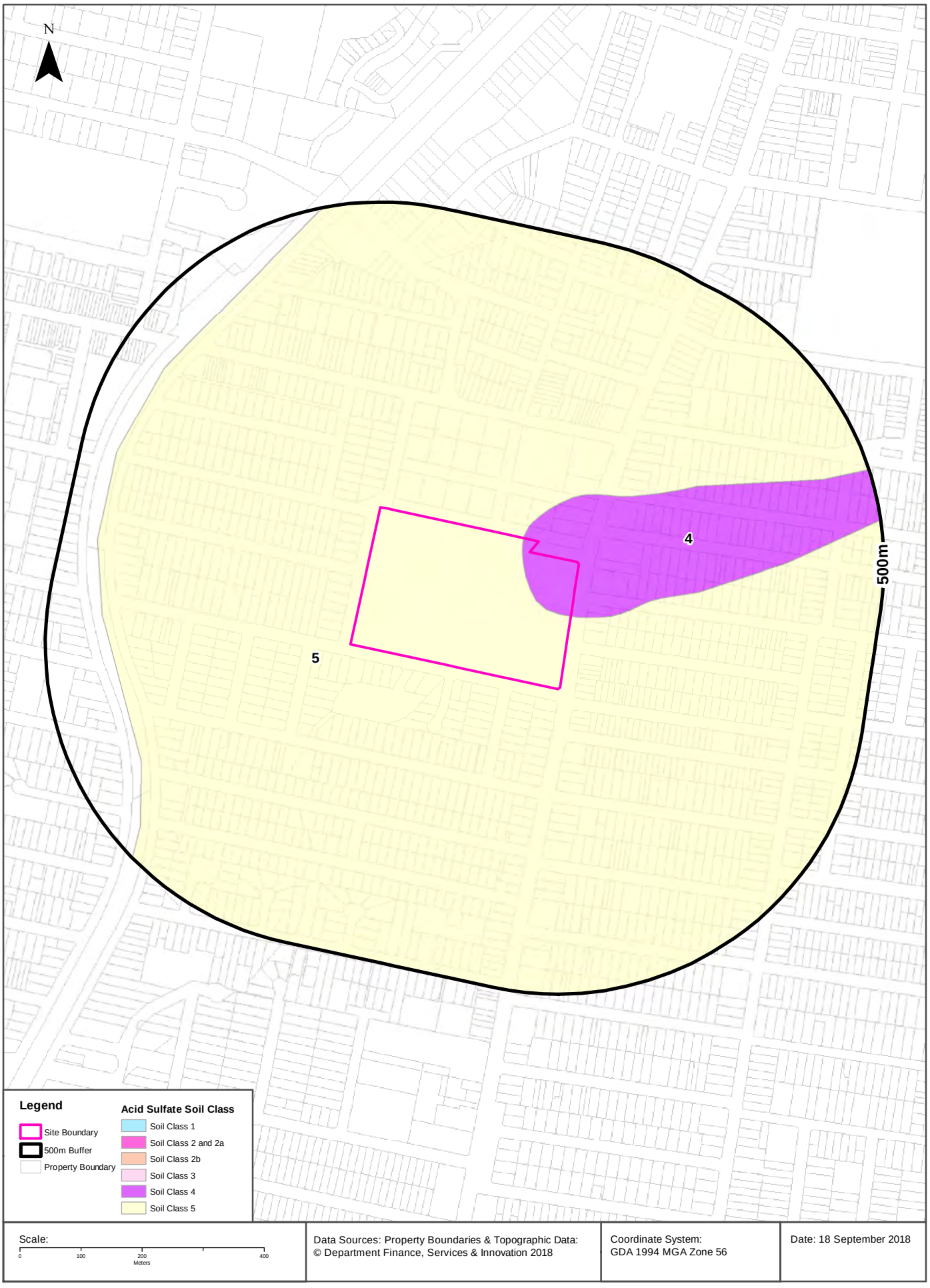

Acid Sulfate Soils

2 Montrose Avenue, Merrylands, NSW 2160

Standard Local Environmental Plan Acid Sulfate Soils

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

Soil Class	Description	LEP
4	Works more than 2 metres below natural ground surface present an environmental risk; Works by which the watertable is likely to be lowered more than 2 metres below natural ground surface, present an environmental risk	Parramatta Local Environmental Plan 2011

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

Soil Class	Description	LEP	Distance	Direction
N/A				

Atlas of Australian Acid Sulfate Soils

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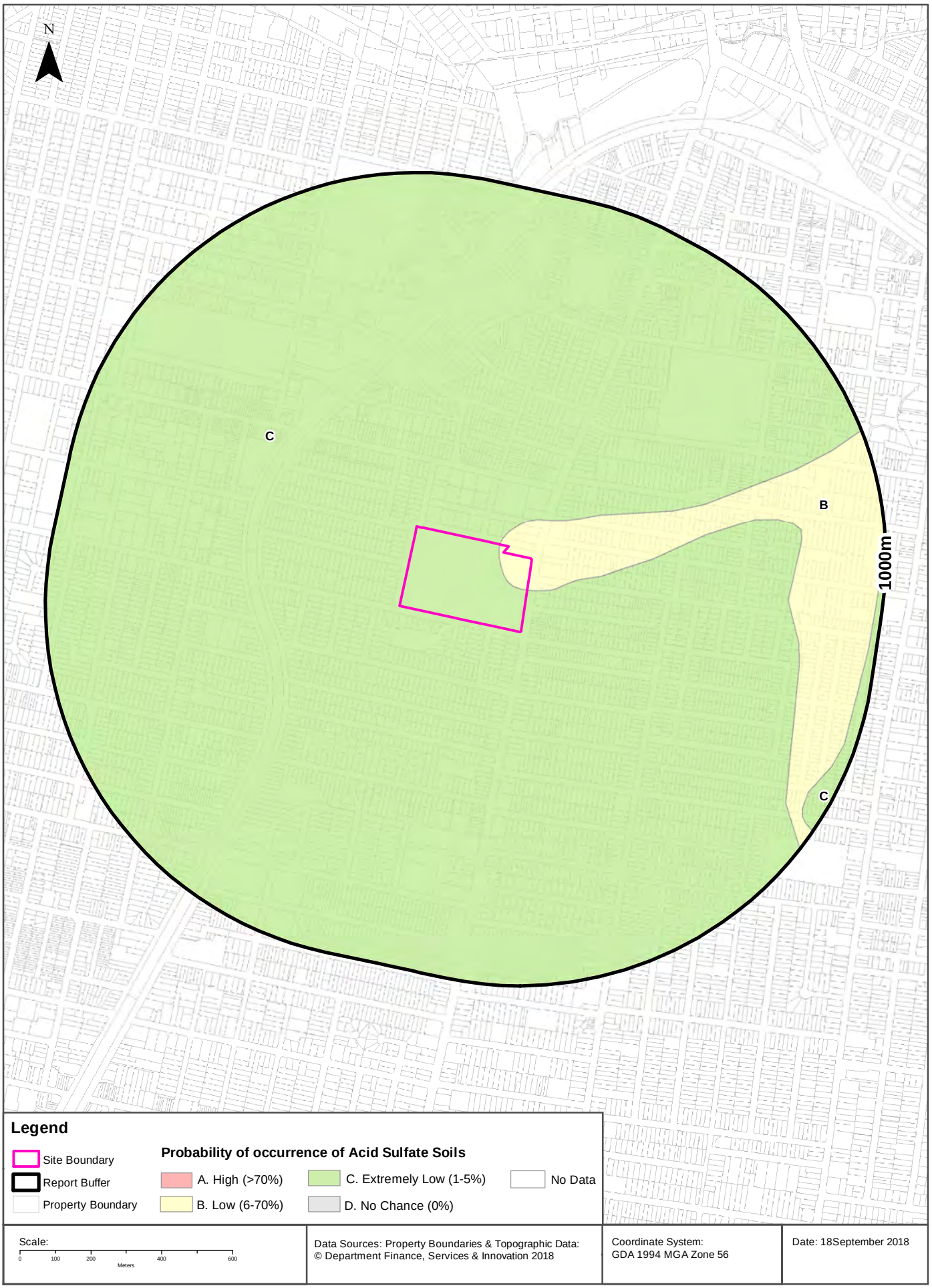

Acid Sulfate Soils

2 Montrose Avenue, Merrylands, NSW 2160

Atlas of Australian Acid Sulfate Soils

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

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

Dryland Salinity

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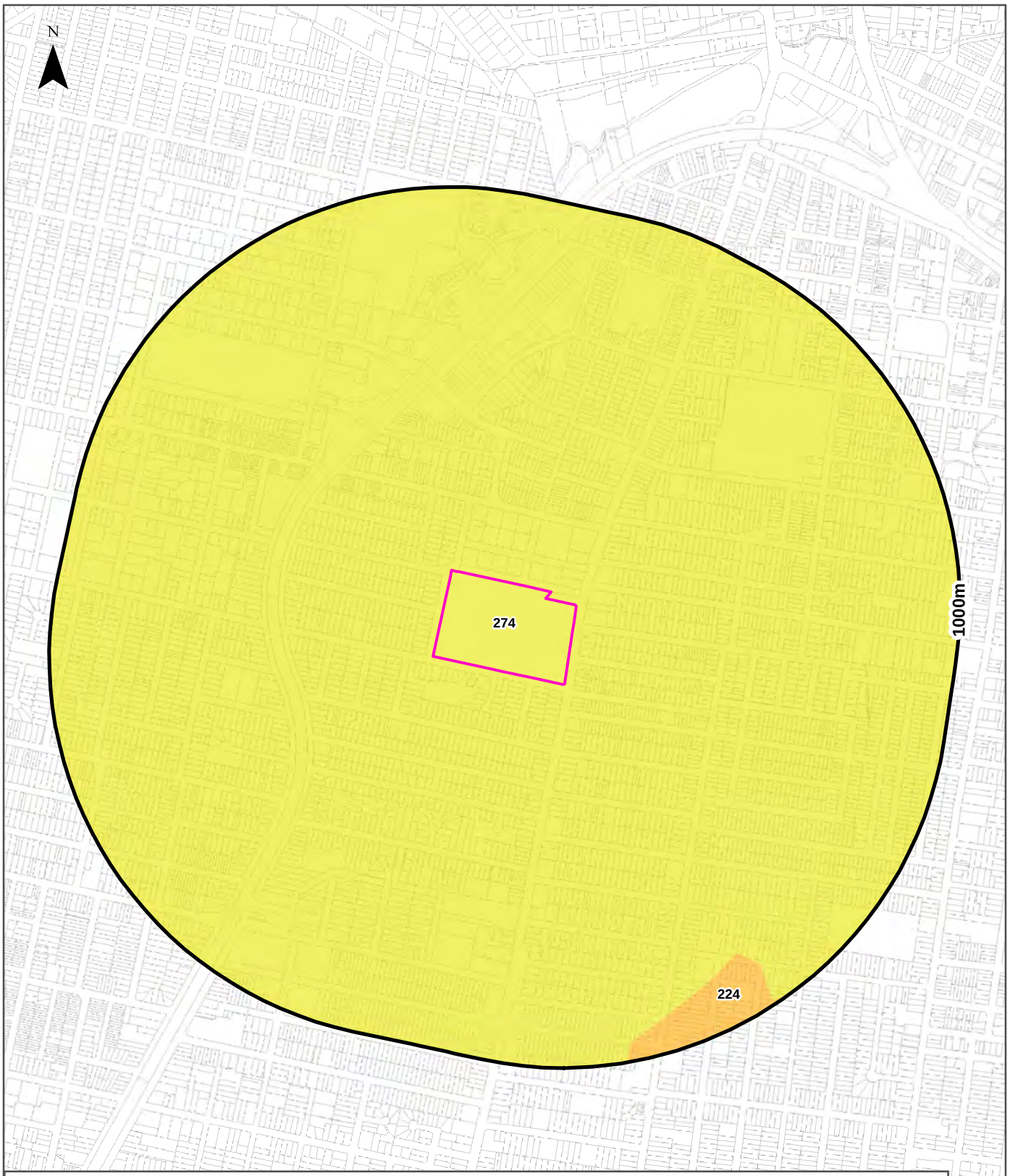

Legend

- Site Boundary
- Report Buffer
- Property Boundary

Dryland Salinity - National Assessment

- Delineated risk area but no high hazard or risk rating for either 2000, 2020, 2050
- High hazard or risk in 2050 only
- High hazard or risk defined for 2050, but no assessment made for 2000 or 2020
- High hazard or risk in 2020 and 2050
- High hazard or risk in 2000 and 2050. 2020 not defined as high hazard
- High hazard or risk defined for all years: 2000, 2020, 2050

Salinity Potential of Western Sydney

- Area of Known Salinity
- Area of High Salinity Potential
- Area of Moderate Salinity Potential
- Area of Very Low Salinity Potential
- Area of Water

Scale: 0 100 200 400 600 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2018

Coordinate System: GDA 1994 MGA Zone 56

Date: 18 September 2018

Dryland Salinity

2 Montrose Avenue, Merrylands, NSW 2160

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
224	HIGH	Area of High Salinity Potential	835m	South

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

Mining Subsidence Districts

2 Montrose Avenue, Merrylands, NSW 2160

Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

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

Environmental Zoning

2 Montrose Avenue, Merrylands, NSW 2160

State Environmental Planning Policy Protected Areas

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

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

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

State Environmental Planning Policy Major Developments (2005)

State Environmental Planning Policy Major Developments within the dataset buffer:

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

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

State Environmental Planning Policy Strategic Land Use Areas

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

Strategic Land Use	SEPPNo	Effective Date	Amendment	Amendment Year	Distance	Direction
No records within buffer						

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

LEP Planning Zones

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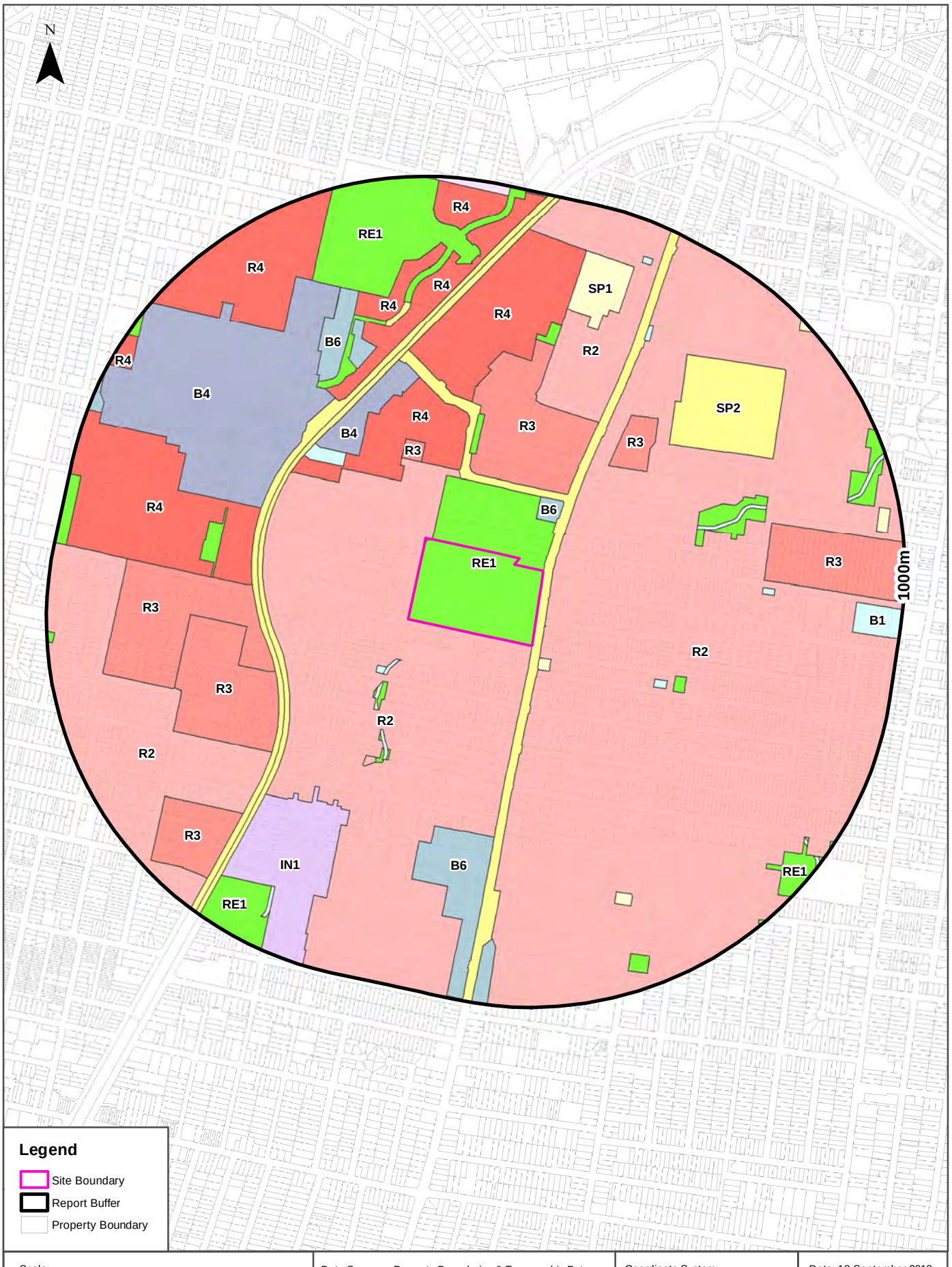


Legend

- Site Boundary
- Report Buffer
- Property Boundary

Scale: 0 100 200 400 600 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2018
Planning: NSW Crown Copyright - Planning & Environment

Coordinate System: GDA 1994 MGA Zone 56

Date: 18 September 2018

Local Environmental Plan

2 Montrose Avenue, Merrylands, NSW 2160

Land Zoning

What Local Environmental Plan Land Zones exist within the dataset buffer?

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		0m	Onsite
R2	Low Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		0m	South
SP2	Infrastructure	Classified Road	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		0m	South
R2	Low Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		25m	South East
SP1	Special Activities	Place of Public Worship	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		43m	South East
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		115m	South West
B6	Enterprise Corridor		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		120m	North East
B1	Neighbourhood Centre		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		146m	South West
R4	High Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		172m	North West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		183m	South West
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		188m	South West
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		200m	North
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		204m	South West
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		210m	North West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		255m	North
B4	Mixed Use		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		292m	North West
B1	Neighbourhood Centre		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		302m	North West
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		313m	South West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		320m	South West
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		342m	North East
B1	Neighbourhood Centre		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		352m	South East
SP2	Infrastructure	Railway Corridor	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		359m	North East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		363m	South West
SP2	Deferred Matter	Rail Infrastructure	Holroyd Local Environmental Plan 2013	08/12/2017	08/12/2017	22/06/2018	Amendment No 15	377m	South West
R3	Medium Density Residential		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		391m	West
R2	Low Density Residential		Parramatta Local Environmental Plan 2011	03/08/2012	03/08/2012	09/02/2018	Amendment No 1	393m	South West
R3	Medium Density Residential		Holroyd Local Environmental Plan 2013	16/01/2015	16/01/2015	22/06/2018	Amendment No 2	395m	West
R4	High Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		395m	North

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		406m	South East
R2	Low Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		425m	North East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		426m	East
B4	Mixed Use		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		434m	North West
R4	High Density Residential		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		442m	West
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		442m	East
R4	High Density Residential		Holroyd Local Environmental Plan 2013	08/12/2017	08/12/2017	22/06/2018	Amendment No 15	446m	North
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		446m	East
RE1	Public Recreation		Holroyd Local Environmental Plan 2013	08/12/2017	08/12/2017	22/06/2018	Amendment No 15	489m	North West
SP2	Infrastructure	Educational Establishment	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		495m	North East
B6	Enterprise Corridor		Holroyd Local Environmental Plan 2013	08/12/2017	08/12/2017	22/06/2018	Amendment No 15	504m	North West
B6	Enterprise Corridor		Holroyd Local Environmental Plan 2013	08/12/2017	08/12/2017	22/06/2018	Amendment No 15	511m	North West
IN1	General Industrial		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		525m	South West
R2	Low Density Residential		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		526m	North West
B6	Enterprise Corridor		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		538m	South
RE1	Public Recreation		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		553m	West
SP2	Infrastructure	Drainage	Holroyd Local Environmental Plan 2013	08/12/2017	08/12/2017	22/06/2018	Amendment No 15	592m	North
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		594m	North
B1	Neighbourhood Centre		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		609m	East
R4	High Density Residential		Holroyd Local Environmental Plan 2013	08/12/2017	08/12/2017	22/06/2018	Amendment No 15	610m	North
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		611m	East
RE1	Public Recreation		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		652m	North
SP1	Special Activities	Educational and POPW	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		666m	North
R4	High Density Residential		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		692m	North West
B1	Neighbourhood Centre		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		694m	North East
R3	Medium Density Residential		Holroyd Local Environmental Plan 2013	16/01/2015	16/01/2015	22/06/2018	Amendment No 2	705m	South West
SP1	Special Activities	Place of Public Worship	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		720m	South East
B6	Enterprise Corridor		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		817m	South
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		827m	South West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		829m	South West
R4	High Density Residential		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		855m	North
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		862m	East
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		863m	East
B1	Neighbourhood Centre		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		869m	East

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
B1	Neighbourhood Centre		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		885m	North East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		887m	South East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		894m	South East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		921m	South East
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		922m	South East
SP1	Special Activities	Place of Public Worship	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		927m	East
R4	High Density Residential		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		939m	North West
B6	Enterprise Corridor		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		961m	North West
RE1	Public Recreation		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		968m	West
RE1	Public Recreation		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		969m	North West
SP1	Special Activities	Place of Public Worship	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		972m	North East
IN2	Light Industrial		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		973m	North
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018		973m	South East
RE1	Public Recreation		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		978m	West
B5	Business Development		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		993m	North
RE2	Private Recreation		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		999m	North West

Local Environmental Plan

2 Montrose Avenue, Merrylands, NSW 2160

Minimum Subdivision Lot Size

What are the onsite Local Environmental Plan Minimum Subdivision Lot Sizes?

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

Maximum Height of Building

What are the onsite Local Environmental Plan Maximum Height of Buildings?

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

Floor Space Ratio

What are the onsite Local Environmental Plan Floor Space Ratios?

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

Land Application

What are the onsite Local Environmental Plan Land Applications?

Application Type	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
Included	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	18/12/2015	Amendment No 10	100

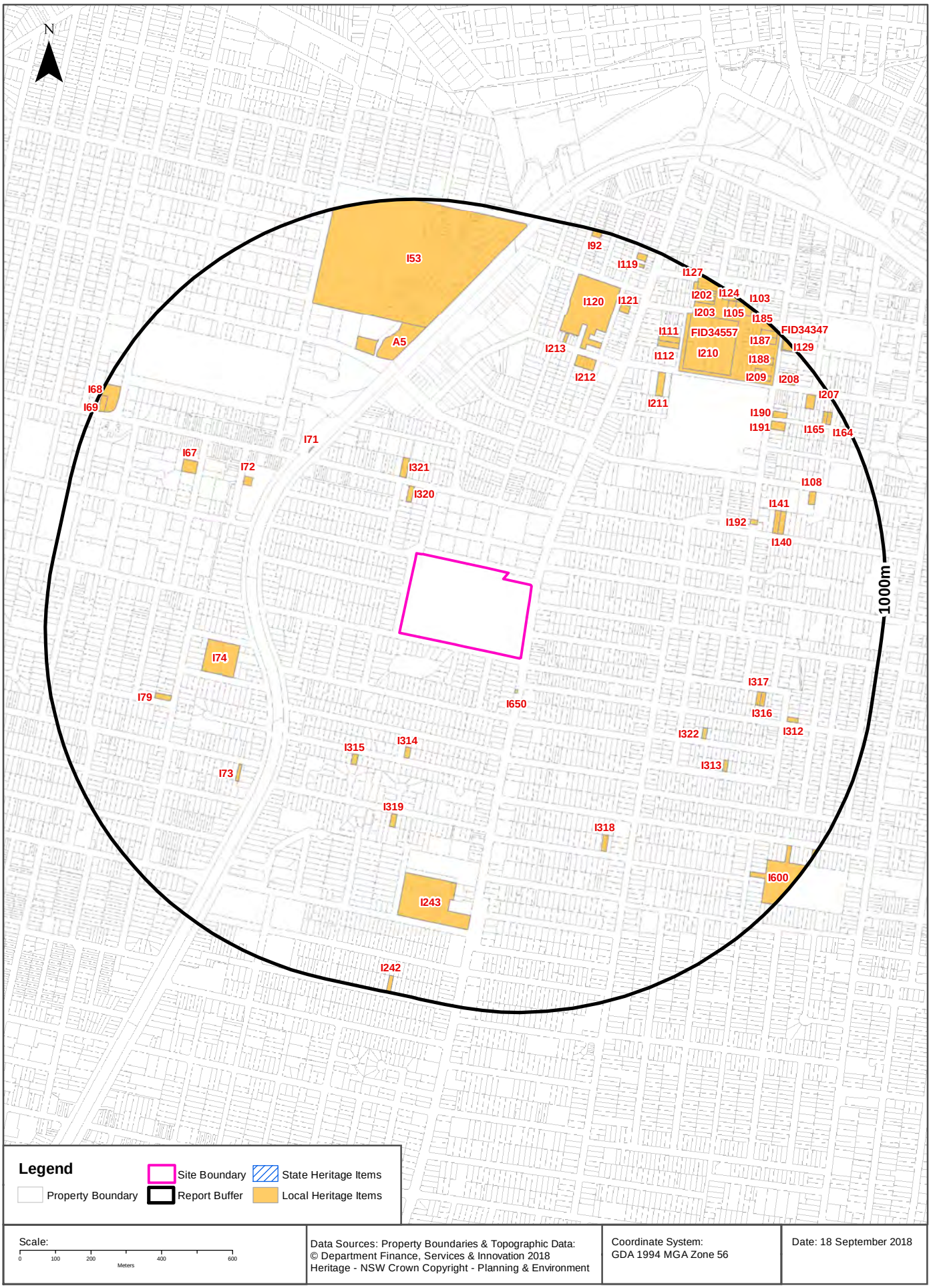
Land Reservation Acquisition

What are the onsite Local Environmental Plan Land Reservation Acquisitions?

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

Heritage Items

2 Montrose Avenue, Merrylands, NSW 2160



Legend

Site Boundary | State Heritage Items

Property Boundary | Report Buffer | Local Heritage Items

Scale: 0 100 200 400 600 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2018
Heritage - NSW Crown Copyright - Planning & Environment

Coordinate System: GDA 1994 MGA Zone 56

Date: 18 September 2018

Heritage

2 Montrose Avenue, Merrylands, NSW 2160

State Heritage Items

What are the State Heritage 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							

Local Heritage Items

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

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I650	Milestone	Item - General	Local	Parramatta Local Environmental Plan 2011	21/03/2014	21/03/2014	09/02/2018	88m	South East
I320	The Lodge	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	145m	North West
I321	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	216m	North West
I314	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	312m	South
I315	Homes for Unemployed cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	365m	South West
I71	Merrylands Railway Station	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	416m	North West
I74	Merrylands East Primary School, circa 1928	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	452m	West
I319	House	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	504m	South
I72	Baby health care centre, circa 1947	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	505m	North West
A5	Millmaster Feeds site	Item - Archaeological	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	548m	North
I318	House	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	551m	South East
I322	Victorian cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	552m	South East
A5	Millmaster Feeds site	Item - Archaeological	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	571m	North
I73	Federation period cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	581m	South West

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I212	William Street Group	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	616m	North East
I53	Goodlet & Smith (brickmaking plant and chimney and Hoffman kiln and chimney)	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	637m	North
I211	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	641m	North East
I192	Stone Bridge	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	641m	East
I313	Semi-detached cottages	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	644m	South East
I243	Granville South Public School	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	658m	South
I67	Merrylands Uniting Church, inter-war church, circa 1928	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	664m	North West
I120	Holy Trinity Church Group	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	667m	North East
I79	Federation period cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	668m	West
I213	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	668m	North
I317	Semi-detached cottages	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	676m	East
I316	Semi-detached cottages	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	687m	East
I141	Conjoined residences	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	697m	East
I140	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	710m	East
FID34557	Granville Conservation Area - Residential Precinct	Conservation Area - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	735m	North East
I210	Granville Public School	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	748m	North East
I112	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	764m	North East
I312	Former shop and dwelling	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	772m	East
I111	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	779m	North East
I121	Semi-detached cottages	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	804m	North East
I191	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	807m	North East
I108	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	814m	East
I190	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	831m	North East

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I209	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	858m	North East
I189	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	868m	North East
I600	Colquhoun Park, including palm trees and monument	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	887m	South East
I188	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	894m	North East
I208	Timber cottage group (Nos. 115-119)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	910m	North East
I119	Grimwood Street Group	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	921m	North East
I207	Evesham	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	922m	North East
I203	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	926m	North East
I202	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	935m	North East
I165	Conjoined residences	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	939m	North East
I125	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	939m	North East
I187	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	941m	North East
I68	Electrical substation	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	946m	North West
I105	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	947m	North East
I164	Conjoined residences	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	948m	North East
I201	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	951m	North East
I242	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	952m	South
I186	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	957m	North East
I104	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	957m	North East
I200	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	958m	North East
FID34347	Granville Conservation Area - Civic Precinct	Conservation Area - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	967m	North East
I103	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	968m	North East
I69	Merrylands School of Arts, community building, circa 1917,1925	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	969m	North West
I129	Knox Presbyterian Church	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	972m	North East

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I124	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	972m	North East
I92	Stone cottages	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	979m	North
I127	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	990m	North East
I126	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	994m	North East
I185	Conjoined residences	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	996m	North East

Natural Hazards

2 Montrose Avenue, Merrylands, NSW 2160

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
No records within buffer		

Ecological Constraints - Native Vegetation & RAMSAR Wetlands

2 Montrose Avenue, Merrylands, NSW 2160

Ecological Constraints

2 Montrose Avenue, Merrylands, NSW 2160

Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Map Unit Name	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Understorey	Disturbance	Disturbance Index	Dominant Species	Dist	Direction
Urban_E/N	Urban_E/N: Urban Exotic/Native			00: Not assessed	00: Not assessed	0: Not assessed	Urban Exotic/Native	0m	Onsite

RAMSAR Wetlands

What RAMSAR Wetland areas exist within the dataset buffer?

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

Ecological Constraints

2 Montrose Avenue, Merrylands, NSW 2160

Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
N/A	No records within buffer				

Ecological Constraints

2 Montrose Avenue, Merrylands, NSW 2160

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
N/A	No records within buffer				

Ecological Constraints

2 Montrose Avenue, Merrylands, NSW 2160

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?

Data does not include NSW category 1 sensitive species.

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Amphibia	Pseudophryne australis	Red-crowned Toadlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardea ibis	Cattle Egret	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Arenaria interpres	Ruddy Turnstone	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Botaurus poiciloptilus	Australasian Bittern	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Burhinus grallarius	Bush Stone-curlew	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Calidris acuminata	Sharp-tailed Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris canutus	Red Knot	Not Listed	Not Sensitive	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ferruginea	Curlew Sandpiper	Endangered	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris mauri	Western Sandpiper	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Calidris melanotos	Pectoral Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Calidris ruficollis	Red-necked Stint	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris tenuirostris	Great Knot	Vulnerable	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Charadrius leschenaultii	Greater Sand-plover	Vulnerable	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Chlidonias leucopterus	White-winged Black Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Circus assimilis	Spotted Harrier	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Epthianura albifrons	White-fronted Chat	Endangered Population, Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Gelochelidon nilotica	Gull-billed Tern	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	CAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Hydroprogne caspia	Caspian Tern	Not Listed	Not Sensitive	Not Listed	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	Limicola falcinellus	Broad-billed Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa lapponica	Bar-tailed Godwit	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa limosa	Black-tailed Godwit	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
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	Motacilla flava	Yellow Wagtail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
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 madagascariensis	Eastern Curlew	Not Listed	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Numenius phaeopus	Whimbrel	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Philomachus pugnax	Ruff	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Plegadis falcinellus	Glossy Ibis	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Pluvialis fulva	Pacific Golden Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
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	Ptilinopus superbus	Superb Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Rostratula australis	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Sterna hirundo	Common Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sternula albifrons	Little Tern	Endangered	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Tringa brevipes	Grey-tailed Tattler	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
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	Tringa stagnatilis	Marsh Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tyto longimembris	Eastern Grass Owl	Vulnerable	Category 3	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Xenus cinereus	Terek Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Gastropoda	Meridolum corneovirens	Cumberland Plain Land Snail	Endangered	Not Sensitive	Not Listed	
Animalia	Gastropoda	Pommerhelix duralensis	Dural Woodland Snail	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus australis	Little Bentwing-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Mormopterus norfolkensis	Eastern Freetail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia pubescens	Downy Wattle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Dillwynia tenuifolia		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Epacris purpurascens subsp. purpurascens		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Epacris purpurascens var. purpurascens		Vulnerable	Not Sensitive	Not Listed	
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	Grammitis stenophylla	Narrow-leaf Finger Fern	Endangered	Category 3	Not Listed	
Plantae	Flora	Grevillea beadleana	Beadle's Grevillea	Endangered	Category 3	Endangered	
Plantae	Flora	Hibbertia sp. Bankstown		Critically Endangered	Not Sensitive	Critically Endangered	
Plantae	Flora	Hibbertia superans		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Isotoma fluviatilis subsp. fluviatilis		Not Listed	Not Sensitive	Extinct	
Plantae	Flora	Macadamia integrifolia	Macadamia Nut	Not Listed	Not Sensitive	Vulnerable	
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	Persoonia nutans	Nodding Geebung	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pimelea curviflora subsp. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Pimelea spicata	Spiked Rice-flower	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pomaderris prunifolia	Plum-leaf Pomaderris	Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Pterostylis gibbosa	Illawarra Greenhood	Endangered	Category 2	Endangered	
Plantae	Flora	Pterostylis saxicola	Sydney Plains Greenhood	Endangered	Category 2	Endangered	
Plantae	Flora	Pultenaea parviflora		Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Pultenaea pedunculata	Matted Bush-pea	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetratheca glandulosa		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Triplarina imbricata	Creek Triplarina	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Wahlenbergia multicaulis	Tadgell's Bluebell	Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Wilsonia backhousei	Narrow-leafed Wilsonia	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Zannichellia palustris		Endangered	Not Sensitive	Not Listed	

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Appendix E

Historical Title Deeds

ABN: 36 092 724 251
Ph: 02 9099 7400
(Ph: 0412 199 304)

Level 14, 135 King Street, Sydney
Sydney 2000
GPO Box 4103 Sydney NSW 2001
DX 967 Sydney

Summary of Owners Report

LRS NSW **Sydney**

Address: - 2 Montrose Avenue, Merrylands

Description: - Lot 1 in D.P. 1170952

Note: -
The early title to this land is Crown Title

We are aware of the following events: -

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
30.11.1886	Proclaimed Granville Park	Gazette
18.04.2012	State of New South Wales	17C/752058 Now 1/1170952

# Denotes Current Registered Proprietor

Leases: - NIL

Easements: -

- 21.05.1971 Easement for Water Mains 9.45 metres wide, 7.31 metres wide and variable

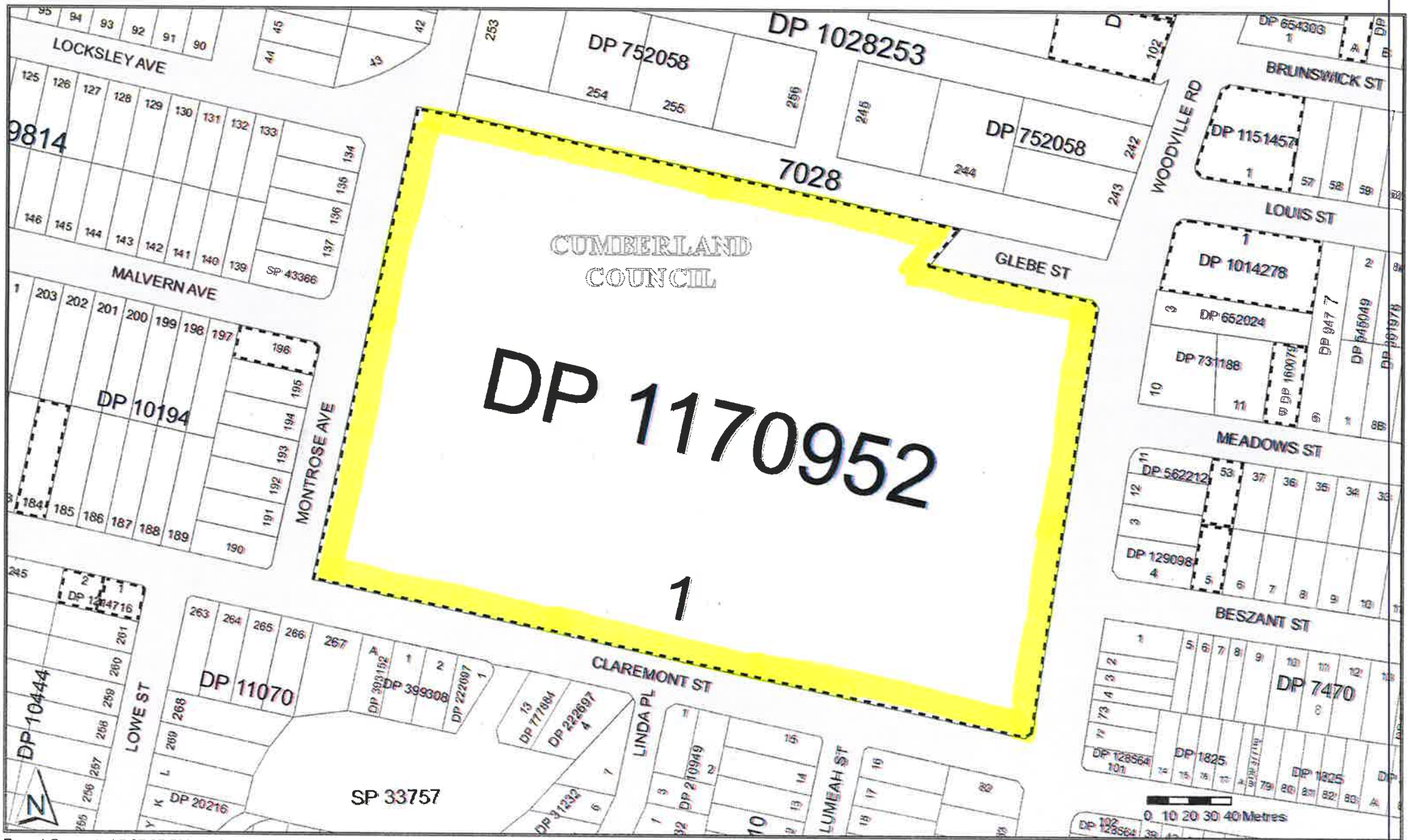
Yours Sincerely,
Mark Groll
19 September 2018

LAND REGISTRY SERVICES

Cadastral Records Enquiry Report : Lot 1 DP 1170952

Ref : CMapIT

Locality : MERRYLANDS
LGA : CUMBERLAND
Parish : ST JOHN
County : CUMBERLAND



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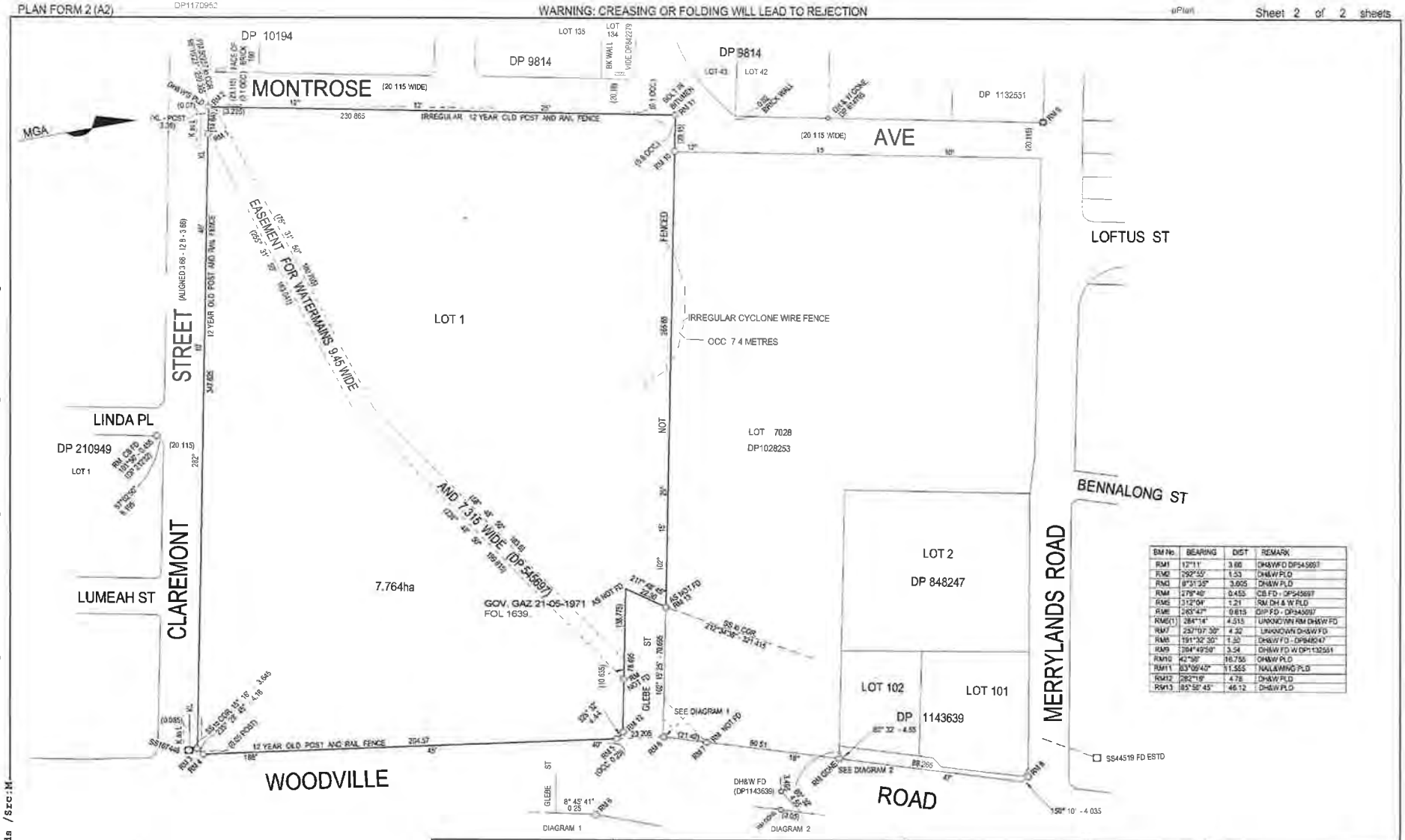
PLAN FORM 2 (A2) DP1170952 WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION ePlan Sheet 2 of 2 sheets



BM No.	BEARING	DIST	REMARK
RM1	17°11'	3.66	DH&WFD DP545697
RM2	292°55'	1.53	DH&W PLD
RM3	8°31'35"	3.605	DH&W PLD
RM4	278°40'	0.453	CB FD - DP545697
RM5	312°04'	1.21	RM DH & W PLD
RM6	283°47'	0.615	DIP FD - DP545697
RM5(1)	284°14'	4.515	UNKNOWN RM DH&W FD
RM7	252°07' 30"	4.32	UNKNOWN DH&W FD
RM8	191°32' 30"	1.30	DH&W FD - DP848247
RM9	284°49'30"	3.54	DH&W FD W DP1132551
RM10	42°55'	16.755	DH&W PLD
RM11	83°09'40"	11.555	NAIL&WMG PLD
RM12	282°16'	4.78	DH&W PLD
RM13	85°58' 45"	46.12	DH&W PLD

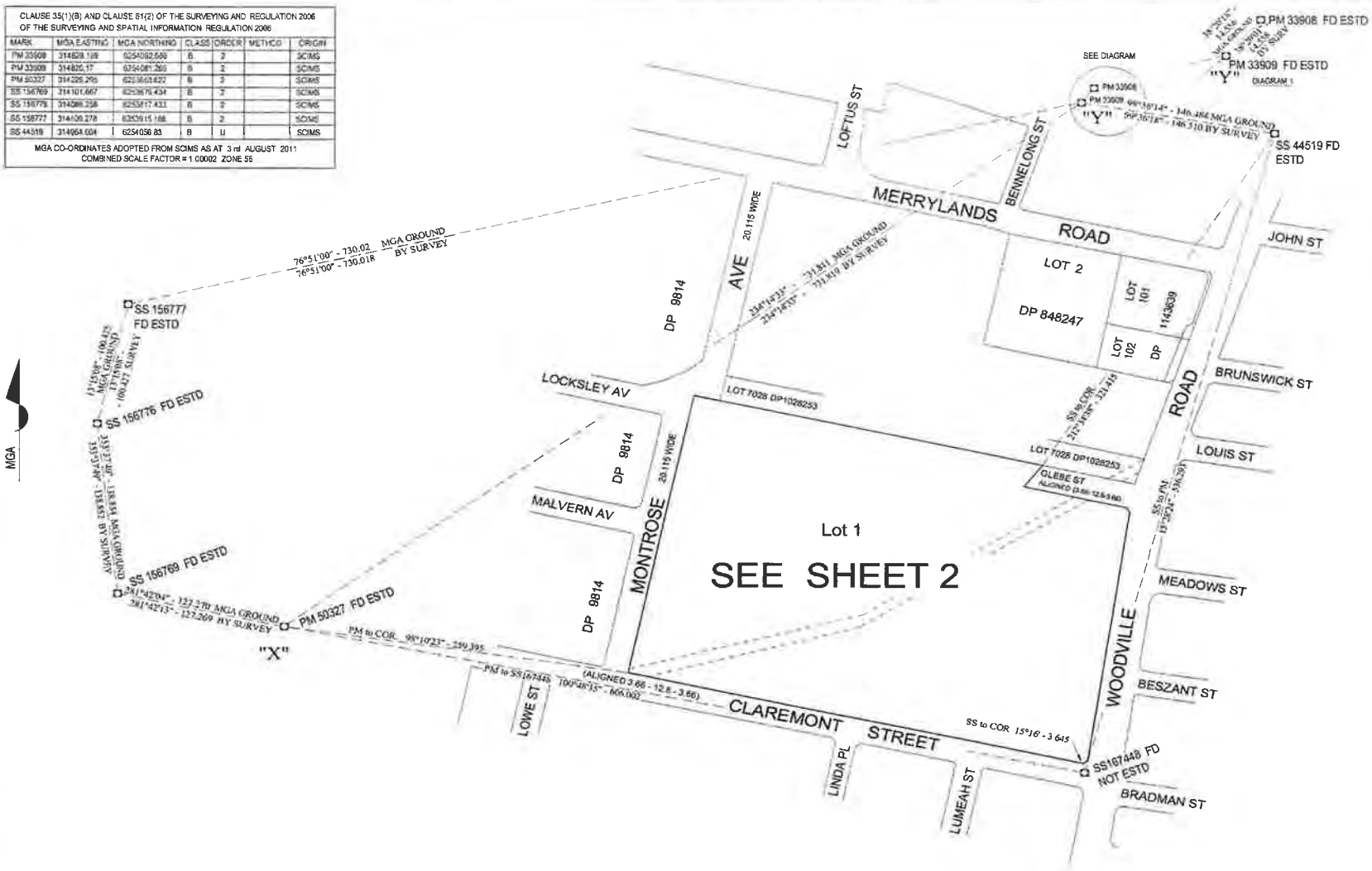
Surveyor: ROSS JOHN HANSEN Date of Survey: 7 11 2011 Surveyor's Ref: 16158 (REPORT) E. No.12/10 - Clause 63(2)	PLAN OF DELIMITATION OF LOT 17C IN DP752058	LGA: PARRAMATTA Locality: GRANVILLE Subdivision No: —— Lengths are in metres Reduction Ratio 1:1250	Registered 18 4 2012	DP1170952

10 20 30 40 80 Table of mm 90 100 115 125 130 140

CLAUSE 35(1)(B) AND CLAUSE 61(2) OF THE SURVEYING AND REGULATION 2006
OF THE SURVEYING AND SPATIAL INFORMATION REGULATION 2006

MARK	MGA EASTING	MGA NORTHING	CLASS	ORDER	METHOD	ORIGIN
PM 33908	314628.109	6254092.566	B	2		SCIMS
PM 33909	314835.17	6254081.265	B	2		SCIMS
PM 50327	314226.270	6253663.622	B	2		SCIMS
SS 156769	314101.667	6253676.434	B	2		SCIMS
SS 156776	314089.258	6253517.433	B	2		SCIMS
SS 156777	314100.278	6253515.188	B	2		SCIMS
SS 44519	314963.604	6254056.83	B	U		SCIMS

MGA CO-ORDINATES ADOPTED FROM SCIMS AS AT 3rd AUGUST 2011
COMBINED SCALE FACTOR = 1.00002 ZONE 56



Surveyor: ROSS JOHN HANSEN Date of Survey: 7.11.2011 Surveyor's Ref: 16158 (REPORT) E. No. 12/10 - Clause 63(2)	PLAN OF DELIMITATION OF LOT 17C IN DP752058	LGA: PARRAMATTA Locality: GRANVILLE Subdivision No:	Registered 18.4.2012	DP1170952

PLAN FORM 6 **WARNING: Creasing or folding will lead to rejection** ePlan

DEPOSITED PLAN ADMINISTRATION SHEET

Sheet 1 of 1 sheet(s)

SIGNATURES, SEALS and STATEMENTS of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

Use PLAN FORM 6A
for additional certificates, signatures, seals and statements

DP1170952

Registered: 18.4.2012
Title System: TORRENS
Purpose: DELIMITATION

PLAN OF DELIMITATION
OF LOT 17C IN DP 752058

LGA: PARRAMATTA
Locality: GRANVILLE
Parish: ST JOHN
County: CUMBERLAND

Crown Lands NSW/Western Lands Office Approval

I, Peter B. Cusack in approving this plan certify
(Authorised Officer)
that all necessary approvals in regard to the allocation of the land shown herein have been given

Signature:
Date: 19/12/11
File Number:
Office: GROUP LEADER, CROWN LAND DIVISION, DEPT PRIMARY INDUSTRIES

Subdivision Certificate

I certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to:

the proposed..... set out herein
(insert 'subdivision' or 'new road')

.....
* Authorised Person/General Manager/Accredited Certifier

Consent Authority: .....
Date of Endorsement: .....
Accreditation no: .....
Subdivision Certificate no: .....
File no: .....

* Delete whichever is inapplicable.

Surveying Regulation, 2006

I, ..ROSS JOHN HANSEN.....
of ..PARRAMATTA CITY COUNCIL.....
a surveyor registered under the *Surveying and Spatial Information Act, 2002*, certify that the survey represented in this plan is accurate, has been made in accordance with the *Surveying and Spatial Information Regulation, 2006* and was completed on:....11 NOVEMBER 2011.....

The survey relates to .....LOT 1.....
...
(specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey)

Signature Ross John Hansen *Dated:* 11/11/2011
Surveyor registered under the Surveying Act, 2002

Datum Line: 'X' 'Y'
Type: Urban/Rural

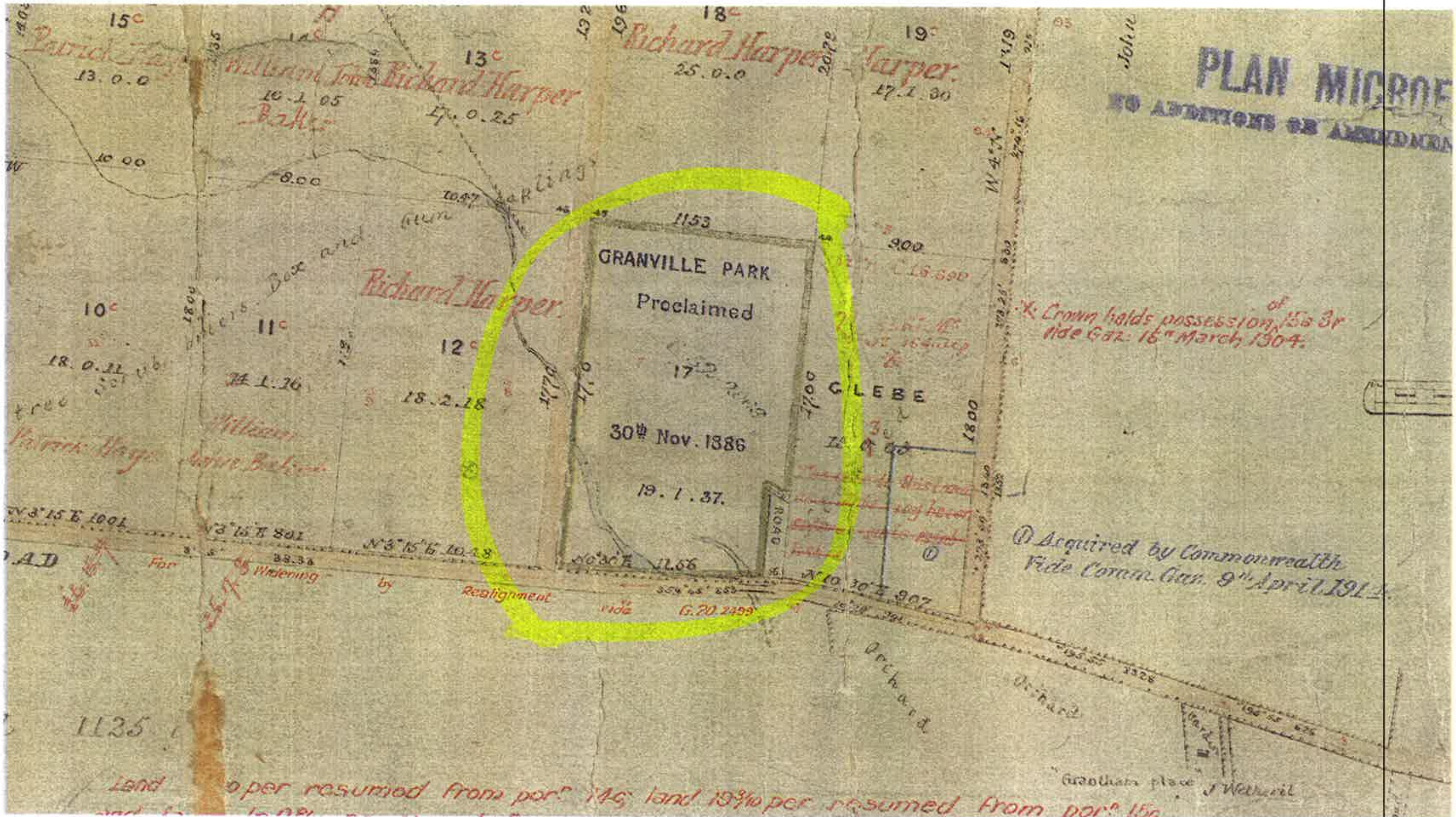
Plans used in the preparation of survey/compilation

DP 1028253	DP 10194	C45-2030
DP 545697	DP 842297	C21-2499
DP 848247	DP 210949	
DP 9814	DP 752058	
DP1143639	DP 614795	
DP 1132551		

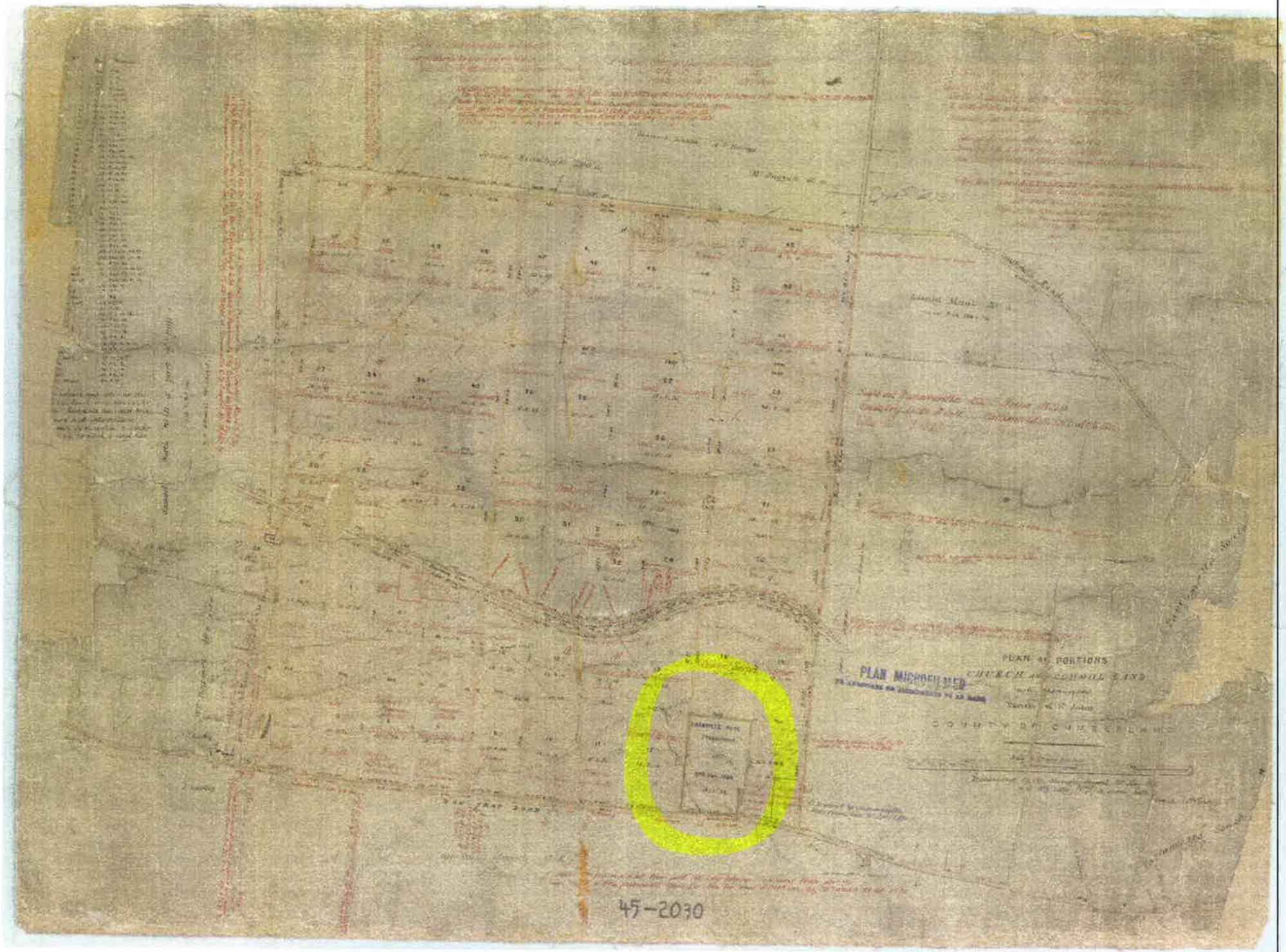
(if insufficient space use Plan Form 6A annexure sheet)

SURVEYOR'S REFERENCE:16158(REPORT)

* OFFICE USE ONLY



PLAN MICROF
NO ADDITIONS OR AMENDMEN
GRANVILLE PARK
Proclaimed
17
30th Nov. 1886
19.1.37.
GLEBE
Richard Harper
Richard Harper
Richard Harper
Harper.
William Baker
Patrick Hag
13.0.0
25.0.0
17.1.30
17.0.25
10.1.05
18.0.11
18.2.18
10c
11c
12c
13c
15c
18c
19c
1153
900
1800
ROAD
For Widening by Realignment vide G.70.2499
Box and Gum Saplings
X Crown holds possession of 15a 3r vide Gaz: 16th March 1904.
(1) Acquired by Commonwealth Vide Comm. Gaz. 9th April 1914.
Orchard
Orchard
Grantham place J Wetherill
1125
Land ... per resumed from porn 14c land 19¾ per resumed from porn 15c



LAND REGISTRY SERVICES Title Search

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

WARNING: ***** FOLIO CANCELLED *****

FOLIO: 17C/752058

SEARCH DATE	TIME	EDITION NO	DATE
18/9/2018	7:37 PM	-	-

CERTIFICATE OF TITLE HAS NOT ISSUED

LAND

LOT 17C IN DEPOSITED PLAN 752058
AT MERRYLANDS
LOCAL GOVERNMENT AREA PARRAMATTA
PARISH OF ST JOHN COUNTY OF CUMBERLAND
(FORMERLY KNOWN AS PORTION 17C)
TITLE DIAGRAM CROWN PLAN 45.2030

FIRST SCHEDULE

THE STATE OF NEW SOUTH WALES (CA139467)

SECOND SCHEDULE (5 NOTIFICATIONS)

* 1 THE LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER.
* 2 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.
* 3 NOTIFICATION IN GOVERNMENT GAZETTE DATED 21-05-1971 FOL 1639.EASEMENT FOR WATER MAINS 9.45 METRES WIDE,7.31 METRES WIDE AND VARIABLE WIDTH AFFECTING THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BURDENED IN DP545697.
* 4 THE LAND IS DEDICATED FOR A PUBLIC PURPOSE
* 5 DP1170952 ********** FOLIO CANCELLED ********** NEW FOLIOS HAVE BEEN CREATED FOR LOT(S) 1 IN DP1170952

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

LAND REGISTRY SERVICES

Historical Title

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
18/9/2018 7:43PM

FOLIO: 1/1170952

First Title(s): THIS FOLIO
Prior Title(s): 17C/752058

Recorded	Number	Type of Instrument	C.T. Issue
18/4/2012	DP1170952	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
15/6/2016	AK509587	DEPARTMENTAL DEALING	

*** END OF SEARCH ***

merrylands PRINTED ON 18/9/2018

LAND REGISTRY SERVICES **Title Search**

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/1170952

SEARCH DATE	TIME	EDITION NO	DATE
18/9/2018	7:44 PM	-	-

CERTIFICATE OF TITLE HAS NOT ISSUED

LAND

LOT 1 IN DEPOSITED PLAN 1170952
AT GRANVILLE
LOCAL GOVERNMENT AREA CUMBERLAND
PARISH OF ST JOHN COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1170952

FIRST SCHEDULE

THE STATE OF NEW SOUTH WALES

SECOND SCHEDULE (3 NOTIFICATIONS)

* 1 THE LAND IS A RESERVE WITHIN THE MEANING OF PART 5 OF THE CROWN LANDS ACT 1989 AND THERE ARE RESTRICTIONS ON TRANSFER AND OTHER DEALINGS IN THE LAND UNDER THAT ACT, WHICH MAY REQUIRE CONSENT OF THE MINISTER.

* 2 NOTIFICATION IN GOVERNMENT GAZETTE DATED 21-05-1971 FOL 1639.EASEMENT FOR WATER MAINS 9.45 METRES WIDE,7.31 METRES WIDE AND VARIABLE WIDTH AFFECTING THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BURDENED IN THE TITLE DIAGRAM

* 3 THE LAND IS DEDICATED FOR A PUBLIC PURPOSE

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

merrylands PRINTED ON 18/9/2018

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

Received: 18/09/2018 19:44:11

Appendix F

Section 10.7 Certificate

CUMBERLAND COUNCIL

Our Reference: C-10-06/13
Contact: Strategic Planning

Cumberland Council
PO Box 42
MERRYLANDS NSW 2160

Certificate No: 32092
Receipt No: 000000
Date: 08-Oct-2018
Your Reference: COMBERLAND COUNCIL

PLANNING CERTIFICATE

Issued under Section 10.7(2) (5) of the
Environmental Planning and Assessment Act, 1979

PROPERTY DETAILS

Address: 188 Woodville Road, MERRYLANDS NSW 2160

Legal Description: Lot 1 DP 1170952

Owner(s) Name (as recorded by Council):

Department of Lands - Crown Lands Division
NSW Trade and Investment Parramatta Office
LEVEL 12/10 Valentine Avenue
PARRAMATTA NSW 2150

In accordance with the requirements of Section 10.7(2) of the *Environmental Planning and Assessment Act, 1979* (as amended), the following prescribed matters relate to the land at the date of this certificate.

Note: The information contained in Planning Certificates issued for a lot within Strata-Titled development relates to the land the development is situated on.

Important *English*

This letter contains important information. If you do not understand it please ask a relative or friend to translate it or come to Council and discuss this letter with Council's staff using the Telephone Interpreter Service.

هام *Arabic*

تحتوي هذه الرسالة على معلومات هامة. إذا لم تكن تفهمها يُرجى طلب ترجمتها من قريب أو صديق أو إحضر إلى المجلس وناقش هذه الرسالة مع موظفي المجلس عن طريق الاستعانة بخدمة الترجمة الهاتفية.

重要資訊 *Cantonese*

本函包含重要的資訊。如果您無法理解相關內容，可請您的親屬或朋友翻譯成中文，或者前往市政府並通過電話傳譯服務與市政府的工作人員討論本函內容。

مهم *Dari*

این نامه حاوی معلومات مهم است. اگر شما آن را نمی فهمید، از دوستان یا فامیل تان بخواهید که برایتان ترجمه کند و یا به شورا آمده و در مورد این نامه با کارمندان شورا با استفاده از خدمات ترجمه تلیفونی بحث کنید.

Σημαντικό *Greek*

Αυτή η επιστολή περιέχει σημαντικές πληροφορίες. Εάν δεν την καταλαβαίνετε, ζητήστε από ένα συγγενή ή φίλο να σας την μεταφράσει, ή ελάτε στο Συμβούλιο και συζητήστε για την επιστολή με το προσωπικό του Συμβουλίου χρησιμοποιώντας την Τηλεφωνική Υπηρεσία Διερμηνέων.

महत्वपूर्ण *Hindi*

इस पत्र में महत्वपूर्ण जानकारी दी गई है । यदि आप इसे नहीं समझ पाते हैं तो कृपया अपने रिश्तेदार या दोस्त से कहें कि वे इसे अनुवाद कर बताएँ या परिषद में आएँ और टेलीफोन दुभाषिया सेवा का इस्तेमाल करते हुए परिषद के स्टाफ के साथ इस पत्र पर चर्चा करें ।

IMPORTANTE *Italian*

Questa lettera contiene informazioni importanti. Se non la comprende chieda ad un parente od amico di tradurgliela, o venga al Municipio a discuterla col personale del Comune con l'aiuto del Servizio Telefonico Interpreti.

중요 *Korean*

이 서신에는 중요한 정보가 포함되어 있습니다. 잘 이해되지 않으면, 친척이나 친구에게 번역을 부탁하거나 또는 위원회를 방문하여 전화 통역 서비스로 위원회 직원과 이 서신에 대해 논의하십시오.

Importanti *Maltese*

Din l-ittra fiha taghrif importanti. Jekk ma tifimhiex, jekk joghgbok staqsi lil qarib jew habib biex jittraducihielek jew ejja sal-Kunsill u ddiskuti din l-ittra ma' l-istaff tal-Kunsill billi tuza s-Servizz Telefoniku tal-Interpreti.

重要信息 *Mandarin*

本函包含重要的信息。如果您无法理解相关内容，可请您的亲属或朋友翻译成中文，或者前往市政府并通过电话传译服务与市政府的工作人员讨论本函内容。

Mahalaga *Tagalog*

Ang sulat na ito ay naglalaman ng mahalagang impormasyon. Kung hindi mo ito nauunawaan, mangyaring hilingin ang isang kamag-anak o kaibigan na isalin ito o lumapit sa isang Council at talakayin ang sulat na ito sa kawani ng Council gamit ang Serbisyo ng Interpreter sa Telepono.

முக்கிய குறிப்பு: *Tamil*

இந்த கடிதத்தில் முக்கிய தகவல் அடங்கியுள்ளது. உங்களுக்கு இது புரியவில்லையென்றால், உங்கள் உறவினர் அல்லது நண்பரை மொழிபெயர்க்க சொல்லி கேட்கவும் அல்லது அமைச்சகத்திற்கு வருகை அளித்து, அமைச்சக ஊழியருடன் தொலைபேசி மொழிபெயர்ப்பு சேவை உதவியுடன் இந்த கடிதத்தைப் பற்றி விவாதிக்கவும்.

Önemli *Turkish*

Bu mektup önemli bilgiler içermektedir. Bu bilgileri anlamıyorsanız lütfen bir akrabanızdan veya arkadaşınızdan onu çevirmesini isteyin ya da Konseye gelin ve Telefonla Sözlü Çeviri Hizmeti'ni kullanarak bu mektup hakkında Konsey personeli ile görüşün.

TIN QUAN TRỌNG *Vietnamese*

Tin tức trong thư này rất quan trọng. Nếu quí vị không hiểu rõ, xin hỏi những người thân hoặc bạn bè phiên dịch cho quí vị hoặc đến hỏi nhân viên Tòa Hành Chánh, tại đây có phương tiện Thông Ngôn Qua Điện Thoại

SECTION A

The following Environmental Planning Instrument and land zoning provisions apply to the land:

Parramatta Local Environmental Plan 2011

The land is zoned R2 Low Density Residential PLEP2011

Issued pursuant to Section 10.7 of the *Environmental Planning and Assessment Act, 1979.*
NOTE: This table is an excerpt from *Parramatta Local Environmental Plan 2011* and must be read in conjunction with and subject to the other provisions of that instrument, and in force at that date.

1 Objectives of zone

- To provide for the housing needs of the community within a low density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To ensure that non-residential land uses are located in a context and setting that minimises impacts on the amenity of a low density residential environment.
- To allow for a range of community facilities to be provided to serve the needs of residents, workers and visitors in residential neighbourhoods.

2 Permitted without consent

Home occupations

3 Permitted with consent

Bed and breakfast accommodation; Boarding houses; Building identification signs; Business identification signs; Community facilities; Dual occupancies; Dwelling houses; Educational establishments; Emergency services facilities; Environmental facilities; Environmental protection works; Exhibition homes; Exhibition villages; Flood mitigation works; Group homes; Health consulting rooms; Home-based child care; Home businesses; Home industries; Hospitals; Hostels; Neighbourhood shops; Public administration buildings; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Roads; Seniors housing; Water recycling facilities

4 Prohibited

Any development not specified in item 2 or 3.

The land is zoned RE1 Public Recreation PLEP2011

Issued pursuant to Section 10.7 of the *Environmental Planning and Assessment Act, 1979.*
NOTE: This table is an excerpt from *Parramatta Local Environmental Plan 2011* and must be read in conjunction with and subject to the other provisions of that instrument, and in force at that date.

1 Objectives of zone

- To enable land to be used for public open space or recreational purposes.
- To provide a range of recreational settings and activities and compatible land uses.
- To protect and enhance the natural environment for recreational purposes.
- To conserve, enhance and promote the natural assets and cultural heritage significance of Parramatta Park.
- To create a riverfront recreational opportunity that enables a high quality relationship between the built and natural environment.

2 Permitted without consent

Environmental protection works; Flood mitigation works

3 Permitted with consent

Boat launching ramps; Boat sheds; Charter and tourism boating facilities; Community facilities; Environmental facilities; Information and education facilities; Jetties; Kiosks; Markets; Recreation areas, Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Restaurants or cafes; Roads; Take away food and drink premises; Water recreation structures; Water recycling facilities

4 Prohibited

Any development not specified in item 2 or 3.

SECTION B

State Environmental Planning and Sydney Regional Environmental Policies are listed in **Annexure B1**.

Draft Local Environmental Plans

The land is not affected by a Draft Local Environmental Plan which has been placed on Public Exhibition and has not yet been published.

Development Control Plans

The land is affected by Parramatta Development Control Plan 2011

Other Development Provisions

The land is identified as Class 4 on the Acid Sulfate Soils Map. Refer to Clause 6.1 of Parramatta Local Environmental Plan 2011.
The land is identified as Class 5 on the Acid Sulfate Soils Map. Refer to Clause 6.1 of Parramatta Local Environmental Plan 2011.

Complying Development

This does not constitute a Complying Development Certificate under section 85 of the EP&A Act

This information only addresses matters raised in **Clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1)(c3) and 1.19** of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

It is your responsibility to ensure that you comply with the general requirements of the State Environmental Planning Policy (Exempt and Complying Codes) 2008. Failure to comply with these provisions may mean that a Complying Development Certificate issued under the provisions of State Environmental Planning Policy (Exempt and Complying Codes) 2008 is invalid.

General Housing Code

Complying Development pursuant to the General Housing Code **may not** be carried out on the land. The land is affected by specific land exemptions under Clause 1.17A (1), (c) to (e), (2), (3), (4), 1.18 (1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. The land exemptions are:

- the land is reserved for a public purpose in an environmental planning instrument,
- the land is located within an environmentally sensitive area under an environmental planning instrument,

Rural Housing Code

The land is not affected by the Rural Housing Code.

Housing Alterations Code and Industrial Alterations Code

Complying Development pursuant to the Housing Alterations Code and Industrial Alterations Code **may** be carried out on the land under Clause 1.17A (1), (c) to (e), (2), (3), (4), 1.18 (1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

General Development Code

Complying Development pursuant to the General Development Code **may** be carried out on the land under Clause 1.17A (1), (c) to (e), (2), (3), (4), 1.18 (1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Demolition Code

Complying Development pursuant to the Demolition Code **may** be carried out on the land under Clause 1.17A (1), (c) to (e), (2), (3), (4), 1.18 (1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Commercial and Industrial (New Buildings and Additions) Code

Complying Development pursuant to the Commercial and Industrial (New Buildings and Additions) Code **may not** be carried out on the land. The land is affected by specific land exemptions under Clause 1.17A (1), (c) to (e), (2), (3), (4), 1.18 (1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. The land exemptions are:

- the land is reserved for a public purpose in an environmental planning instrument,
- the land is located within an environmentally sensitive area under an environmental planning instrument),

General Commercial and Industrial (Alterations) Code

Complying Development pursuant to the General Commercial and Industrial (Alterations) Code **may** be carried out on the land under Clause 1.17A (1), (c) to (e), (2), (3), (4), 1.18 (1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Subdivision Code

Complying Development pursuant to the Subdivision Code **may** be carried out on the land under Clause 1.17A (1), (c) to (e), (2), (3), (4), 1.18 (1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Fire Safety Code

Complying Development pursuant to the Fire Safety Code **may** be carried out on the land under Clause 1.17A (1), (c) to (e), (2), (3), (4), 1.18 (1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land when a land based restriction applies to the land, but it may not apply to all of the land.

Development Contribution Plan

The Parramatta Development Contributions Plan (Amendment No. 4) applies to the land.

Heritage Item /Heritage Conservation Area

An item of environmental heritage is not situated on the land.

The land is not located in a heritage conservation area.

Land Reservation Acquisition

The land is not affected by Land Reservation Acquisition in *Parramatta Local Environmental Plan 2011.*

Site Compatibility Certificates (Seniors Housing, Infrastructure and Affordable Rental Housing)

At the date of issue of this certificate Council is not aware of any

a. Site Compatibility Certificate (Affordable Rental Housing);
b. Site Compatibility Certificate (Infrastructure, schools or TAFE establishments);
c. Site Compatibility Certificate (Seniors Housing)

In respect to the land issued pursuant to the environmental planning and assessment amendment (*Site Compatibility Certificates Regulation) 2009.*

Contamination

The land is not affected by any of the matters contained in Clause 59(2) as amended in the Contaminated Land Management Act 1997 – as listed

a. that the land to which the certificate relates is significantly contaminated land
b. that the land to which the certificate relates is subject to a management order
c. that the land to which the certificate relates is the subject of an approved voluntary management proposal
d. that the land to which the certificate relates is subject to an ongoing maintenance order
e. that the land to which the certificate relates is the subject of a site audit statement.

Tree Preservation

The land is subject to Section 5.4 Preservation of Trees or Vegetation in *Parramatta Development Control Plan 2011.*

Council has not been notified of an order under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land.

Coastal Protection

In relation to a coastal council - whether the owner (or any previous owner) of the land has consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act)?

Note: "Existing coastal protection works" are works to reduce the impact of coastal hazards on land (such as seawalls, revetments, groynes and beach nourishment) that existed the commencement of section 553B of the *Local Government Act 1993.*

NO.

Council Policy

Council has not adopted a policy to restrict the development of the land by reason of the likelihood of projected sea level rise (coastal protection), tidal inundation, subsidence or any other risk on land subject to the *Parramatta Local Environmental Plan 2011.*

Council has adopted a policy covering areas subject to the *Parramatta Local Environmental Plan 2011* to restrict development of any land by reason of the likelihood of flooding.
Council has adopted by resolution a policy on contaminated land that applies to areas subject to the

Parramatta Local Environmental Plan 2011. The Policy will restrict the development of the land if the circumstances set out in the policy prevail.

Mine Subsidence

The land is not affected by Section 15 of the Mine *Subsidence Compensation Act 1961* proclaiming land to be a Mine Subsidence District.

Threatened Species

The Director General with responsibility for the *Threatened Species Conservation Act 1995* has not advised Council that the land includes or comprises a critical habitat.

Bush fire Prone, Biodiversity certified, Biodiversity Stewardship Site or a Native Vegetation clearing set aside

The land is not bush fire prone, biodiversity certified, a biodiversity stewardship site or a native vegetation clearing set aside.

Affected building notices and building product rectification orders

(1) A statement of whether there is any affected building notice of which the council is aware that is in force in respect of the land.

(2) A statement of:

(a) whether there is any building product rectification order of which the council is aware that is in force in respect of the land and has not been fully complied with, and

(b) whether any notice of intention to make a building product rectification order of which the council is aware has been given in respect of the land and is outstanding.

(3) In this clause:

***affected building notice** has the same meaning as in Part 4 of the Building Products (Safety) Act 2017.*

***building product rectification order** has the same meaning as in the Building Products (Safety) Act 2017.*

Council is not aware of the land being affected.

SECTION C

The following additional information is provided by Council under section 10.7(5) in good faith and Council takes no responsibility for the accuracy of the information.

Flooding

The land is affected by a 100 year Average Recurrence Interval flood as indicated by Council's current flooding information. As such Council is required to take that into account when determining any development application made in respect of the land.

Further information please contact Council's Engineering Division on 97351222.

Additional advice should be also sought from an appropriately qualified person as to the extents and potential hazards associated with the likely flooding of the land. The names of qualified persons may be obtained from the Institution of Engineers Australia.

Aboriginal Sensitivity

Aboriginal Heritage Study - High Sensitivity

SPECIAL NOTE

Applicants for section 10.7 Certificates are advised that Council does not hold sufficient information to fully detail the effect of any encumbrances on the title of the subject land. The information available to Council is provided on the basis that neither Council nor its employees hold out advice or warrant to you in any way its accuracy, nor shall Council or its employees, be liable for any negligence in the preparation of that information. Further information should be sought from relevant Statutory Departments.

Hamish McNulty
GENERAL MANAGER

Per: Monica Cologna
Manager – Strategic Planning - PLANNING

ANNEXURE B1

The following State Environmental Planning Policies (SEPPs) and Deemed SEPPS apply to the land:

State Environmental Planning Policy No.1 Development Standards

State Environmental Planning Policy No.19 Bushland in Urban Areas

State Environmental Planning Policy No.21 Caravan Parks

State Environmental Planning Policy No.33 Hazardous and Offensive Development

State Environmental Planning Policy No 50 Canal Estate Development

State Environmental Planning Policy No.55 Remediation of Land

State Environmental Planning Policy No.64 Advertising and Signage

State Environmental Planning Policy No.65 Design Quality of Residential Flat Development.

State Environmental Planning Policy No.70 Affordable Housing (Revised Schemes)

State Environmental Planning Policy (Housing For Seniors or People with a Disability) 2004

State Environmental Planning Policy (Building Sustainability Index: Basix) 2004

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

State Environmental Planning Policy (Affordable Rental Housing) 2009

State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007

State Environmental Planning Policy (State and Regional Development) 2011

State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017

State Environmental Planning Policy (Vegetation in non -rural areas)

Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005

Sydney Regional Environmental Plan (Extractive Industry No.2) 1995.

Appendix G

Data Quality Assessment

DATA QUALITY ASSESSMENT

Q1. Data Quality Objectives

The Preliminary Site (Contamination) Investigation (PSI) was prepared with reference to the seven step data quality objective (DQO) process which is provided in Appendix B, Schedule B2 of the *National Environment Protection (Assessment of Site Contamination) Measure* 1999 as amended 2013 (NEPC, 2013). The DQO process is outlined as follows:

- Stating the Problem;
- Identifying the Decision;
- Identifying Inputs to the Decision;
- Defining the Boundary of the Assessment;
- Developing a Decision Rule;
- Specifying Acceptable Limits on Decision Errors; and
- Optimising the Design for Obtaining Data.

The DQOs have been addressed within the report as shown in Table Q1.

Table Q1: Data Quality Objectives

Data Quality Objective	Report Section where Addressed
State the Problem	S1 Introduction
Identify the Decision	S1 Introduction (objective) S9 Fieldwork and Laboratory Results S10 Conclusions and Recommendations
Identify Inputs to the Decision	S1 Introduction S2 Scope of Work S3 Site Information S6 Preliminary Conceptual Site Model S8 Site Assessment Criteria S9 Fieldwork and Laboratory Results
Define the Boundary of the Assessment	S3 Site Information Drawing 1 - Appendix C
Develop a Decision Rule	S8 Site Assessment Criteria
Specify Acceptable Limits on Decision Errors	S8 Site Assessment Criteria S9 Fieldwork and Laboratory Results QA/QC Procedures and Results – Sections Q2, Q3
Optimise the Design for Obtaining Data	S2 Scope of Works S7 Fieldwork and Analysis QA/QC Procedures and Results – Sections Q2, Q3

Q2. FIELD AND LABORATORY QUALITY CONTROL

The field and laboratory quality control (QC) procedures and results are summarised in Tables Q2 and Q3. Reference should be made to the fieldwork and analysis procedures in Section 7 and the laboratory results certificates in Appendix I for further details.

Table Q2: Field QC

Item	Frequency	Acceptance Criteria	Achievement
Intra-laboratory replicates	5% primary samples	RPD <30% inorganics), <50% (organics)	yes[1]
Inter-laboratory replicates	5% primary samples	RPD <30% inorganics), <50% (organics)	yes[2]
Trip Spikes	1 per field batch	60-140% recovery	yes
Trip Blanks	1 per field batch	<PQL/LOR	yes

NOTES: 1 qualitative assessment of RPD results overall; refer Section Q2.1
2 qualitative assessment of RPD results overall; refer Section Q2.2

Table Q3: Laboratory QC

Item	Frequency	Acceptance Criteria	Achievement
Analytical laboratories used		NATA accreditation	yes
Holding times		In accordance with NEPC (2013) which references various Australian and international standards	yes
Laboratory / Reagent Blanks	1 per lab batch	<PQL	yes
Laboratory duplicates	10% primary samples	Laboratory specific [1]	
Matrix Spikes	1 per lab batch	70-130% recovery (inorganics); 60-140% (organics); 10-140% (SVOC, speciated phenols)	yes

NOTES: 1 ELS: <5xPQL – any RPD; >5xPQL – 0-50%RPD

In summary, the QC data is considered to be of sufficient quality to be acceptable for the assessment.

Table Q4: Relative Percentage Difference Results – Intra-laboratory Replicates

Lab	Sample ID	Date Sampled	Media	Units	Metals										PAH				TRH				BTEX			
					As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Fe	Mn	total	BaP TEQ	BaP	Naphthalene	C6-C10	>C10-C16	>C16-C34	>C34-C40	Benzene	Toluene	Ethylbenzene	xylene
ELS	BH2 0.1-0.2	13/09/2018	filling	mg/kg	8	<0.4	16	19	54	0.1	15	130	-	-	<0.05	<0.05	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2
ELS	BD1/130918	13/09/2018	filling	mg/kg	7	<0.4	16	20	53	0.2	16	100	-	-	-	<0.05	-	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2
Difference				mg/kg	1	0	0	1	1	0.1	1	-30	-	-	-	0	-	-	0	0	0	0	0	0	0	0
RPD				%	13	-	-	5	2	**66**	6	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ELS	BH7 0.9-1.0	14/09/2018	clay	mg/kg	10	<0.4	19	14	13	<0.1	4	15	-	-	<0.05	<0.05	<0.05	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2
ELS	BD3/140918	14/09/2018	clay	mg/kg	13	<0.4	24	10	23	<0.1	8	26	-	-	-	<0.05	-	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2
Difference				mg/kg	3	0	5	4	10	0	4	11	-	-	-	0	-	-	0	0	0	0	0	0	0	0
RPD				%	29	-	23	33	**55**	-	**67**	**54**	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes: - not applicable, not tested

The calculated RPD values were within the acceptable range of ± 30 for inorganic analytes and ± 50% for organics with the with the exception of those in bold. However, this is not considered to be significant because:

- The typically low actual differences in the concentrations of the replicate pairs where some RPD exceedances occurred. High RPD values reflect the small differences between two small numbers;
- The number of replicate pairs being collected from fill soils which were heterogeneous in nature;
- Most of the recorded concentrations being relatively close to the LOR/PQL. High RPD values reflect the low concentrations;
- The majority of RPDs within a replicate pair being within the acceptable limits; and
- All other QA/QC parameters met the DQIs.

Overall, the intra-laboratory replicate comparisons indicate that the sampling techniques were generally consistent and repeatable.

Q3. Data Quality Indicators

The reliability of field procedures and analytical results was assessed against the following data quality indicators (DQIs):

- Completeness – a measure of the amount of usable data from a data collection activity;
- Comparability – the confidence (qualitative) that data may be considered to be equivalent for each sampling and analytical event;
- Representativeness – the confidence (qualitative) of data representativeness of media present on-site;
- Precision – a measure of variability or reproducibility of data; and
- Accuracy – a measure of closeness of the data to the 'true' value.

The DQIs were assessed as outlined in the following Table Q5.

Table Q5: Data Quality Indicators

Data Quality Indicator	Method(s) of Achievement
Completeness	Planned systematic and selected target locations sampled; Preparation of field logs, sample location plan and chain of custody (COC) records; Laboratory sample receipt information received confirming receipt of samples intact and appropriateness of the chain of custody; Samples analysed for contaminants of potential concern (COPC) identified in the Conceptual Site Model (CSM); Completion of COC documentation; NATA endorsed laboratory certificates provided by the laboratory; Satisfactory frequency and results for field and laboratory QC samples as discussed in Section Q2.
Comparability	Using appropriate techniques for sample recovery, storage and transportation, which were the same for the duration of the project; Works undertaken by appropriately experienced and trained DP environmental scientist / engineer; Use of NATA registered laboratories, with test methods the same or similar between laboratories; Satisfactory results for field and laboratory QC samples.
Representativeness	Target media sampled; Spatial and temporal distribution of sample locations; Sample numbers recovered and analysed are considered to be representative of the target media and complying with DQOs;

Data Quality Indicator	Method(s) of Achievement
	Samples were extracted and analysed within holding times; Samples were analysed in accordance with the analysis request.
Precision	Acceptable RPD between original samples and replicates; Satisfactory results for all other field and laboratory QC samples.
Accuracy	Satisfactory results for all field and laboratory QC samples.

Based on the above, it is considered that the DQIs have been complied with. As such, it is concluded that the field and laboratory test data obtained are reliable and useable for this assessment.

Appendix H

Borehole Log Results

Sampling Methods

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Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:

  4,6,7
  N=13

- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:

  15, 30/40 mm

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.

Soil Descriptions

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Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are based on Australian Standard AS 1726-1993, Geotechnical Site Investigations Code. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	20 - 63
Medium gravel	6 - 20
Fine gravel	2.36 - 6
Coarse sand	0.6 - 2.36
Medium sand	0.2 - 0.6
Fine sand	0.075 - 0.2

The proportions of secondary constituents of soils are described as:

Term	Proportion	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	20 - 35%	Sandy Clay
Slightly	12 - 20%	Slightly Sandy Clay
With some	5 - 12%	Clay with some sand
With a trace of	0 - 5%	Clay with a trace of sand

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	vs	<12
Soft	s	12 - 25
Firm	f	25 - 50
Stiff	st	50 - 100
Very stiff	vst	100 - 200
Hard	h	>200

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	SPT N value	CPT qc value (MPa)
Very loose	vl	<4	<2
Loose	l	4 - 10	2 -5
Medium dense	md	10 - 30	5 - 15
Dense	d	30 - 50	15 - 25
Very dense	vd	>50	>25

Soil Descriptions

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Transported soils - formed somewhere else and transported by nature to the site; or
- Filling - moved by man.

Transported soils may be further subdivided into:

- Alluvium - river deposits
- Lacustrine - lake deposits
- Aeolian - wind deposits
- Littoral - beach deposits
- Estuarine - tidal river deposits
- Talus - scree or coarse colluvium
- Slopewash or Colluvium - transported downslope by gravity assisted by water. Often includes angular rock fragments and boulders.

Rock Strength

Rock strength is defined by the Point Load Strength Index ($Is_{(50)}$) and refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects. The test procedure is described by Australian Standard 4133.4.1 - 2007. The terms used to describe rock strength are as follows:

Term	Abbreviation	Point Load Index $Is_{(50)}$ MPa	Approximate Unconfined Compressive Strength MPa*
Extremely low	EL	<0.03	<0.6
Very low	VL	0.03 - 0.1	0.6 - 2
Low	L	0.1 - 0.3	2 - 6
Medium	M	0.3 - 1.0	6 - 20
High	H	1 - 3	20 - 60
Very high	VH	3 - 10	60 - 200
Extremely high	EH	>10	>200

* Assumes a ratio of 20:1 for UCS to $Is_{(50)}$. It should be noted that the UCS to $Is_{(50)}$ ratio varies significantly for different rock types and specific ratios should be determined for each site.

Degree of Weathering

The degree of weathering of rock is classified as follows:

Term	Abbreviation	Description
Extremely weathered	EW	Rock substance has soil properties, i.e. it can be remoulded and classified as a soil but the texture of the original rock is still evident.
Highly weathered	HW	Limonite staining or bleaching affects whole of rock substance and other signs of decomposition are evident. Porosity and strength may be altered as a result of iron leaching or deposition. Colour and strength of original fresh rock is not recognisable
Moderately weathered	MW	Staining and discolouration of rock substance has taken place
Slightly weathered	SW	Rock substance is slightly discoloured but shows little or no change of strength from fresh rock
Fresh stained	Fs	Rock substance unaffected by weathering but staining visible along defects
Fresh	Fr	No signs of decomposition or staining

Degree of Fracturing

The following classification applies to the spacing of natural fractures in diamond drill cores. It includes bedding plane partings, joints and other defects, but excludes drilling breaks.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with some fragments
Fractured	Core lengths of 40-200 mm with some shorter and longer sections
Slightly Fractured	Core lengths of 200-1000 mm with some shorter and longer sections
Unbroken	Core lengths mostly > 1000 mm

Rock Descriptions

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} \geq 100 \text{ mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or better. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e. drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

For sedimentary rocks the following terms may be used to describe the spacing of bedding partings:

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Symbols & Abbreviations

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Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U_{50}	Undisturbed tube sample (50mm)
W	Water sample
pp	Pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	Lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

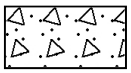
Symbols & Abbreviations

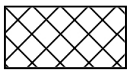
Graphic Symbols for Soil and Rock

General

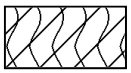

Asphalt

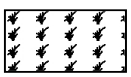

Road base

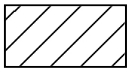

Concrete

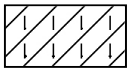

Filling

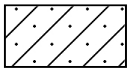
Soils


Topsoil

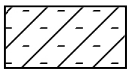

Peat

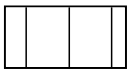

Clay

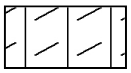

Silty clay

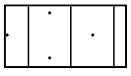

Sandy clay

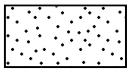

Gravelly clay

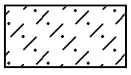

Shaly clay

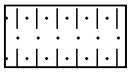

Silt


Clayey silt


Sandy silt

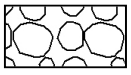

Sand

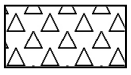

Clayey sand


Silty sand


Gravel

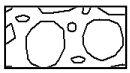

Sandy gravel


Cobbles, boulders

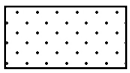

Talus

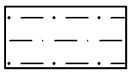
Sedimentary Rocks

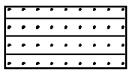

Boulder conglomerate

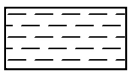

Conglomerate


Conglomeratic sandstone

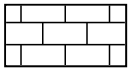

Sandstone


Siltstone

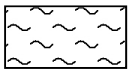

Laminite

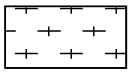

Mudstone, claystone, shale

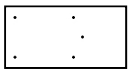

Coal


Limestone

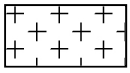
Metamorphic Rocks

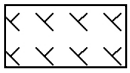

Slate, phyllite, schist

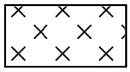

Gneiss

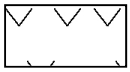

Quartzite

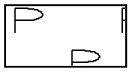
Igneous Rocks


Granite


Dolerite, basalt, andesite


Dacite, epidote


Tuff, breccia


Porphyry

BOREHOLE LOG

CLIENT: Cumberland Council
PROJECT: Granville Park Upgrade
LOCATION: 2 Montrose Avenue, Merrylands

SURFACE LEVEL: 17.0 AHD
EASTING: 314585
NORTHING: 6253786
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 86543.00
DATE: 13/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
17	0.015	ASPHALTIC CONCRETE							A/E			
	0.4	FILLING: brown-grey silty sand filling with some fine to medium sub-angular igneous gravel, trace glass fragments, humid, apparently well compacted, no odour							A/E			
	0.7	FILLING: orange-red mottled pale yellow silty clay filling, trace of fine to medium, sub-angular ironstone gravel and silt (possibly natural), humid, no odour							A/E S			5,14,19 N = 33
16	1											
	1.8	CLAY: hard, pale grey mottled orange-brown clay, trace of fine sub-angular ironstone gravel, humid						Unless otherwise stated rock is fractured along rough planar iron stained bedding dipping 0°-10°				
15	2											
	2.38	SHALE: extremely low to low strength, pale grey and orange brown shale with iron indurated bands						2.42m: J 85°, un, ro, fe stn 2.55m: Cs 15mm 2.74m: J 70°-90°, un, ro, cln 2.87m: J 45°, cu, ro, cly vn 2.95m: J 30°, pl, ro, fe stn 2.98m: Cs 50mm 3.04m: Ds 15mm 3.21m: Cs 20mm 3.25m: Cs 20mm 3.3m: J 75°, pl, ro, fe stn 3.36-3.94m: Ds (x3) 30mm 3.59m: Ds 90mm 3.66-3.79m: Cz (x2) 30mm, fine sub-angular 3.84-3.89m: B (x2) 0°, pl, ro,cly vn 3.96m: CORE LOSS: 100mm 4.06-4.16m: Ds 100mm 4.19m: J 85°-90°, un, ro, fe stn 4.4m: Cs 20mm 4.75-4.85m: B (x2) 0°, pl, sm, inf cly 3mm 4.88-5.10m: J 85°-90°, pl, ro, fe stn 5.27m: J 70°, pl, ro, fe stn 5.29m: Ds 25mm 5.45m: Ds 30mm	C	100	28	PL(A) = 0.1 PL(A) = 0.6 PL(A) = 0.1
14	3	SILTSTONE: low and medium strength, highly to moderately weathered, fractured, grey-brown siltstone with iron indurated bands and pale grey fine grained sandstone bands, bedding dipping 0°-5°										
13	4											
	4.06											
	4.29	SANDSTONE: medium to very high strength, moderately to slightly weathered, fractured sandstone with bands of low strength, moderately weathered grey siltstone 100-200mm thick, bedding dipping 0°-5°							C	93	37	PL(A) = 0.3 PL(A) = 4.8 PL(A) = 2 PL(A) = 0.2
12	5											
	5.49	Bore discontinued at 5.49m Limit of Investigation										
11	6											
10	7											
9	8											
8	9											

RIG: Bobcat **DRILLER:** JE **LOGGED:** AH **CASING:** HW to 1.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 1.5m, rotary washbore to 2.38m, NMLC-coring to 5.49m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS: Standpipe installed (screen 5.49-2.49m, blank 2.49-0.08m, gravel 5.49-2.0m, bentonite 2.0-1.0m, backfill to surface with flush gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	$\dot{W}$	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▽	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Cumberland Council
PROJECT: Granville Park Upgrade
LOCATION: 2 Montrose Avenue, Merrylands

SURFACE LEVEL: 15.6 AHD
EASTING: 314601
NORTHING: 6253767
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 86543.00
DATE: 13/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
15	0.3	FILLING: dark brown, fine to medium silty sand filling, trace rootlets in top 0.1m, humid							A/E			
		CLAY: very stiff to hard, red-orange mottled pale grey clay, trace fine to medium sub-angular ironstone gravel, humid							A/E			
1		0.7m: pale grey mottled orange-brown							A/E S			6,13,19 N = 32
14	1.8	SHALE: extremely low and very low strength, grey brown shale with iron indurated bands						Unless otherwise stated rock is fractured along rough planar iron stained bedding dipping 0°-10°				
2	2.25	SILTSTONE: extremely low to low strength, highly to moderately weathered, fractured, grey-brown siltstone with 5-10% fine grained sandstone bands up to 100mm thick, bedding dipping 0°-5° and iron cemented bands						2.27-2.29m: B (x3) 0°-5° pl, ro, cly vn 2.33m: Cs 30mm 2.37m: Ds 60mm 2.53-2.60m: J (x2) 40°, pl, ro, fe stn 2.55-2.57m: J 80°-90°, un, ro, fe stn 2.73m: J 90°, pl, ro, fe stn 2.75m: Cz 10mm, fine grained sub-angular	C	100	62	PL(A) = 0.1 PL(A) = 0.2 PL(A) = 3.5
13	3.29	SANDSTONE: medium and very high strength, slightly weathered pale grey sandstone with low strength, moderately weathered brown-grey siltstone bands 50-150mm thick						2.83-3.01m: Ds 180mm 3.04m: Cz 20mm, fine to medium grained sub-angular 3.11m: Cz 10mm, fine grained sub-angular 3.15-3.36m: Ds (x3) 10mm 3.81m: Ds 5mm 4.13m: Ds 20mm 4.36m: Ds 40mm	C	100	96	PL(A) = 0.2 PL(A) = 0.5 PL(A) = 0.8 PL(A) = 1.1
3	4.7	LAMINITE: medium and high strength, slightly weathered to fresh stained, grey and dark grey laminite (approximately 60% sandstone and 40% siltstone), bedding dipping 0°-10°										
12	5.25	Bore discontinued at 5.25m Limit of Investigation										
4												
11												
5												
10												
6												
9												
7												
8												
8												
7												
9												
6												

RIG: Bobcat **DRILLER:** JE **LOGGED:** AH **CASING:** HW to 1.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 1.5m, rotary washbore to 2.25m, NMLC-coring to 5.25m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS: *BD1/130918 taken from 0.1-0.2m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Cumberland Council
PROJECT: Granville Park Upgrade
LOCATION: 2 Montrose Avenue, Merrylands

SURFACE LEVEL: 16.8 AHD
EASTING: 314569
NORTHING: 6253755
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 86543.00
DATE: 14/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
16	0.05	ASPHALTIC CONCRETE							A/E			
	0.1	FILLING: brown silty clay filling with some fine gravel, humid							A/E			
	0.4	CLAY: very stiff red-brown mottled orange-brown clay, with fine to medium ironstone gravel, humid							S			4,6,12 N = 18
15	1											
	2.05	SHALE: extremely low to low strength, highly weathered, fractured, pale brown shale with medium to high strength ironstone bands						2.1m: B 0°, pl, cly 5mm 2.13m: B 20°, pl, cly 5mm	C	100	0	
	2.47											
14	2.57	SANDSTONE: high and very high strength, highly weathered to fresh stained, fractured, light grey fine grained sandstone with some extremely low strength bands and high strength ironstone bands						2.28-2.31m: B (x3) 0°, pl, cly vn, fe 2.38m: J 70°, pl, cln 2.47m: CORE LOSS: 100mm 2.59m: Cs 10mm 2.65m: Cs 50mm 2.79m: Cs 10mm 2.93m: B 0°, pl, cly 8mm, fe 3.17m: Cs 30mm 3.21-3.24m: B (x3) 0°, pl, cly vn, fe 3.43m: B 5°, pl, fe 2mm 3.67m: Cs 30mm 3.86m: B 0°, pl, cly 4mm 4.32m: B 0°, pl, fe 2mm 4.39-4.42m: fe	C	96	80	PL(A) = 4.2 PL(A) = 1.9 PL(A) = 0.6 PL(A) = 0.4 PL(A) = 0.7 PL(A) = 0.8 PL(A) = 1.1
13	3.24											
	4.04	SILTSTONE: medium strength, moderately weathered, slightly fractured brown siltstone with iron indurated bands										
12		LAMINITE: medium and high strength, moderately weathered then fresh, slightly fractured, grey and light grey laminite										
11	5.07	Bore discontinued at 5.07m Limit of Investigation										
10	6											
9	7											
8	8											
7	9											

RIG: Bobcat **DRILLER:** JE **LOGGED:** RB **CASING:** HW to 1.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 1.5m, rotary washbore to 2.05m, NMLC-coring to 5.07m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS: Standpipe installed (screen 5.07-2.07m, blank 2.07-0.0m, gravel 5.07-1.5m, bentonite 1.5-0.5m, backfill to GL with flush gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Cumberland Council
PROJECT: Granville Park Upgrade
LOCATION: 2 Montrose Avenue, Merrylands

SURFACE LEVEL: 15.8 AHD
EASTING: 314609
NORTHING: 6253788
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 86543.00
DATE: 13/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
15	0.3	FILLING: dark brown, fine to medium sandy silty clay filling, trace rootlets in the top 0.1m, moist		A/E	0.1 0.2				
		CLAY: very stiff to hard, pale grey mottled red clay, trace of fine sub-angular ironstone gravel		A/E	0.4 0.5				
14	1.3			A/E S	0.9 1.0		10,16,24 N = 40		
		SILTSTONE: extremely low strength, pale grey siltstone with orange-brown iron-indurated bands			1.45				
		2.1m: low strength							
13	2.6	Bore discontinued at 2.6m TC-bit Refusal		A	2.5 2.6				

RIG: Bobcat **DRILLER:** JE **LOGGED:** AH **CASING:** HW to 1.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.6m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	⧗	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Cumberland Council
PROJECT: Granville Park Upgrade
LOCATION: 2 Montrose Avenue, Merrylands

SURFACE LEVEL: 16.5 AHD
EASTING: 314582
NORTHING: 6253751
DIP/AZIMUTH: 90°/--

BORE No: BH5
PROJECT No: 86543.00
DATE: 14/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
16	0.02	ASPHALTIC CONCRETE		A/E	0.1				
	0.3	FILLING: dark grey fine to medium slightly silty gravelly sand filling, gravel is fine to medium igneous		A/E	0.2				
	0.5	FILLING: dark brown, fine to medium clayey sand filling, damp			0.4				
15	1	CLAY: very stiff, orange-red mottled pale grey clay, trace of fine to medium sub-angular ironstone gravel, humid		A/E	0.5				
		1.0m: pale grey mottled orange-red			0.9				
				S	1.0		4,6,13 N = 19		
	1.7	SILTSTONE: extremely low strength, pale grey siltstone with orange-brown iron-indurated bands			1.45				
14	2	1.9m: low strength, grey-brown		A	1.9				
	2.0	Bore discontinued at 2.0m TC-bit Refusal			2.0				
13	3								
12	4								
11	5								
10	6								
9	7								
8	8								
7	9								

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

RIG: Bobcat **DRILLER:** JE **LOGGED:** AH **CASING:** Uncased

TYPE OF BORING: Solid flight auger (TC-bit) to 2.0m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	⧗	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Cumberland Council
PROJECT: Granville Park Upgrade
LOCATION: 2 Montrose Avenue, Merrylands

SURFACE LEVEL: 15.9 AHD
EASTING: 314586
NORTHING: 6253734
DIP/AZIMUTH: 90°/--

BORE No: BH6
PROJECT No: 86543.00
DATE: 14/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
15	0	FILLING: dark brown fine silty sand filling, trace of rootlets in top 0.1m, humid		A/E	0.1 0.2				
	0.5	0.4m: with some clay		A/E	0.4 0.5				
	1	CLAY: stiff to very stiff, orange-red mottled pale grey clay, trace of fine to medium sub-angular ironstone gravel, humid 1.0m: pale grey mottled orange-red		A/E S	0.9 1.0 1.45		3,5,8 N = 13		
14	1.8	SILTSTONE: extremely low strength, grey-brown siltstone with orange-brown iron indurated bands 2.3m: low to medium strength		A	2.4				
	2.5	Bore discontinued at 2.5m TC-bit Refusal			2.5				

RIG: Bobcat **DRILLER:** JE **LOGGED:** AH **CASING:** Uncased

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	⧗	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Cumberland Council
PROJECT: Granville Park Upgrade
LOCATION: 2 Montrose Avenue, Merrylands

SURFACE LEVEL: 16.1 AHD
EASTING: 314572
NORTHING: 6253721
DIP/AZIMUTH: 90°/--

BORE No: BH7
PROJECT No: 86543.00
DATE: 14/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
16	0.15	FILLING: dark brown, fine grained silty sand filling, trace rootlets, humid		A/E	0.05 0.15				
	0.152	ASPHALTIC CONCRETE		A/E	0.4 0.5				
	0.7	FILLING: dark brown slightly sandy silty clay filling, trace of glass fragments, wet			0.7				
15	1	CLAY: stiff, orange-red mottled pale grey clay, trace of fine to medium sub-angular ironstone gravel, moist		A/E	0.9 1.0				
				B S			3,3,5 N = 8		
					1.45				
		1.8m: pale grey mottled orange-red, humid			1.7				
14	2								
					2.5				
	2.8			S			6,11,24 N = 35		
		SILTSTONE: extremely low strength, pale grey siltstone with orange-brown iron-indurated bands			2.95				
13	3								
	3.2	3.1m: high strength band							
		Bore discontinued at 3.2m TC-bit Refusal							
12	4								
11	5								
10	6								
9	7								
8	8								
7	9								

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

RIG: Bobcat **DRILLER:** JE **LOGGED:** AH **CASING:** Uncased

TYPE OF BORING: Solid flight auger (TC-bit) to 3.2m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS: *BD3/140918 taken from 0.4-0.5m

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	⧗	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Cumberland Council
PROJECT: Granville Park Upgrade
LOCATION: 2 Montrose Avenue, Merrylands

SURFACE LEVEL: 16.8 AHD
EASTING: 314555
NORTHING: 6253733
DIP/AZIMUTH: 90°/--

BORE No: BH8
PROJECT No: 86543.00
DATE: 14/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
16	0.03	ASPHALTIC CONCRETE							
	0.12	CONCRETE		A/E	0.4				
	0.6	FILLING: dark brown, slightly sandy silty clay filling with some fine, sub-angular ironstone gravel, damp			0.5				
	1	CLAY: very stiff, orange-red mottled pale grey clay, trace of fine, sub-angular ironstone gravel, humid		A/E	0.9				
		1.0m: pale grey mottled orange-red			1.0		4,8,10 N = 18		
				S					
					1.45				
15	1.6	SILTSTONE: extremely low strength, pale grey to grey siltstone with orange-brown iron indurated bands							
	1.9	1.8m: low strength		A	1.8				
		Bore discontinued at 1.9m			1.9				
		TC-bit Refusal							

RIG: Bobcat **DRILLER:** JE **LOGGED:** AH **CASING:** Uncased

TYPE OF BORING: Diacore to 0.13m, solid flight auger (TC-bit) to 1.9m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	⧗	Water level	V	Shear vane (kPa)

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Appendix I

Laboratory Results Summary Table

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Table I1: Soil Laboratory Results Summary (mg/kg unless shown otherwise)

				Metals										TRH									BTEX					PAH		
				Arsenic	Cadmium	Chromium	Copper	Lead	Lead TCLP	Mercury	Nickel	Nickel TCLP	Zinc	C6 - C9	C6-C10	vTPH C6 - C10 less BTEX (F1)	C10 - C14	>C10-C16 (F2)	C15 - C28	>C16-C34 (F3)	C29-C36	>C34-C40	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Benzo(a) pyrene	B(a)P TEQ	PAHs (Sum of total)
PQL				4	0.4	1	1	1		0.1	1		1	25			50		100		100		0.2	1	0.5	2	1	0.05	0.5	
NEPM 2013 HIL C - Recreational				300	90	300	17,000	600		80	1200		30,000			NL		NL		27,000									300	
NEPM 2013 HSL C- Recreational / Open Space, Vapour Intrusion, Sand 0-1m														NL		NL	NL	NL					NL	NL	NL	NL	NL			
NEPM 2013 Management Limits in Parklands/Open Space, Coarse Soil														700		700		1000		2500		10,000								
NEPM 2013 EILs/ESLs for Recreational/ Open Space, Coarse/Sand 0-2m				100		410	90	1100			25		270	180		180		120		300		2800	50	70	85	105	105	0.7		
CRC Care 2011 Direct Contact HSLs														NL	26,000		NL						NL	NL	NL	NL	NL			
ANZECC (1992) - Background Ranges For Natural Material				0.2-30	0.04-2	0.5-110	1-190	<2-200	-	0.001-0.1	2-400	-	2-180	LRL	LRL	LRL	LRL	LRL	LRL	LRL	LRL	LRL	0.05-1	LRL	0.1-1	LRL	LRL			
NSW EPA (2014) General Solid Waste (CT1)				100	20	100	-	100	-	4	40	-	-	650	10,000								10	600	288	1000		0.8		200
NSW EPA (2014) General Solid Waste (SCC1, TCLP1)				500	5	100	1	1500	2	-	1500	2	5	650	10,000								18	1080	518	1800		10		200
NSW EPA (2014) Restricted Solid Waste (CT2)				400	80	400	-	400	-	16	160	-	-	2600	40,000								40	2400	1152	4000		3.2		800
NSW EPA (2014) Restricted Solid Waste (SCC2, TCLP2)				2000	20	400	4	7600	8	-	6000	8	20	2600	40,000								72	4320	2073	7200		23		800
Location	**Depth (m)**	**Date**	**Soil Type**																											
BH1	0.05-0.1	13/09/2018	Filling	7	0.9	23	140	460	0.1	0.1	18	-	670	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	0.2	<0.05	1.5
BH1	1.0-1.45	13/09/2018	Filling	6	<0.4	7	38	22	-	<0.1	18	-	100	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	<0.05	<0.05	<0.05
BH2	0.1-0.2	13/09/2018	Filling	8	<0.4	16	19	54	-	0.1	15	-	130	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	<0.05	<0.05	<0.05
BD1/130918	0.1-0.2	13/09/2018	Filling	7	<0.4	16	20	53	-	0.2	16	-	100	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	-	<0.05	-
BH2	0.4-0.5	13/09/2018	Natural	18	<0.4	29	35	22	-	<0.1	15	-	70	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	<0.05	<0.05	<0.05
BH3	0.1-0.2	14/09/2018	Filling	10	<0.4	18	9	34	-	<0.1	6	-	39	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	0.08	<0.05	0.5
BH4	0.1-0.2	13/09/2018	Filling	8	<0.4	15	19	68	-	0.1	7	-	67	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	0.3	<0.05	2.5
BH4	0.4-0.5	13/09/2018	Natural	8	<0.4	8	54	17	-	<0.1	17	-	91	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	<0.05	<0.05	<0.05
BH5	0.4-0.5	14/09/2018	Filling	10	<0.4	22	12	17	-	<0.1	15	-	21	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	<0.05	<0.05	<0.05
BH5	0.9-1.0	14/09/2018	Natural	9	<0.4	15	16	16	-	<0.1	5	-	15	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	<0.05	<0.05	<0.05
BH6	0.1-0.2	14/09/2018	Filling	4	<0.4	22	40	24	-	<0.1	42	<0.02	130	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	<0.05	<0.05	<0.05
BH6	0.9-1.0	14/09/2018	Natural	10	<0.4	10	10	14	-	<0.1	2	-	7	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	<0.05	<0.05	<0.05
BH7	0.4-0.5	14/09/2018	Filling	13	<0.4	25	16	34	-	<0.1	12	-	53	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	<0.05	<0.05	<0.05
BH7	0.9-1.0	14/09/2018	Natural	10	<0.4	19	14	13	-	<0.1	4	-	15	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	<0.05	<0.05	<0.05
BD3/140918	0.9-1.0	14/09/2018	Natural	13	<0.4	24	10	23	-	<0.1	8	-	26	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	-	<0.05	-
BH8	0.4-0.5	14/09/2018	Filling	9	<0.4	19	14	47	-	<0.1	10	-	35	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	<0.05	<0.05	<0.05
BH8	0.9-1.0	14/09/2018	Natural	8	<0.4	12	19	14	-	<0.1	4	-	23	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	<0.05	<0.05	<0.05
TS	-	13/09/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75%	92%	87%	76%	76%	-	-	-
TB	-	13/09/2018	-	-	-	-	-	-	-	-	-	-	-	<25	<25	<25	<50	<50	<100	<100	<100	<100	<0.2	<1	<0.5	<2	<1	-	-	-
BMS04	-	18/09/2018	Material	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMS05	-	18/09/2018	Material	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES

NSW EPA (2014)	Waste Classification Guidelines - Part 1: Classifying Waste
*	Moderately harmful pesticides; Note 6 to Table 1 of NSW EPA (2014)
**	Scheduled Chemicals; Note 11 to Table 1 of NSW EPA (2014)
***	PCBs must be managed in accordance with the EPA's PCB Chemical Control Order 1997.
****	All readings for NEPM 2013 HSL C- Recreational / Open Space, Vapour Intrusion, Sand 0-1m are NL
-	Not tested / Not Applicable
NAD	Not detected at the laboratory reporting limit of 0.1g/kg
AD	Asbestos Detected

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Table I1: Soil Laboratory Results Summary (mg/kg unless shown otherwise)

				Organochlorine Pesticides																			Organophosphorous Pesticides						Polychlorinated Biphenyls									
				4,4-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Chlorpyrifos	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Phenol	Asbestos	pH	CEC
PQL				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5	0.1 g/kg	0.1 ph units	1 meq/100g
NEPM 2013 HIL C - Recreational				400				70	70					340	340		20			10		400	250												40,000			
NEPM 2013 HSL C- Recreational / Open Space, Vapour Intrusion, Sand 0-1m																																						
NEPM 2013 Management Limits in Parklands/Open Space, Coarse Soil																																						
NEPM 2013 EILs/ESLs for Recreational/ Open Space, Coarse/Sand 0-2m												180																										
CRC Care 2011 Direct Contact HSLs																																						
ANZECC (1992) - Background Ranges For Natural Material																																						
NSW EPA (2014) General Solid Waste (CT1)				<50 **										60			<50 **						4	250 *				<50 ***							288	none		
NSW EPA (2014) General Solid Waste (SCC1, TCLP1)				<50**										108			<50**						7.5	250 *				<50 ***							518	none		
NSW EPA (2014) Restricted Solid Waste (CT2)				<50**										240			<50**						16	1000 *				<50 ***							1152	none		
NSW EPA (2014) Restricted Solid Waste (SCC2, TCLP2)				<50**										432			<50**						30	1000 *				<50 ***							2073	none		
Location	**Depth (m)**	**Date**	**Soil Type**																																			
BH1	0.05-0.1	13/09/2018	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-
BH1	1.0-1.45	13/09/2018	Filling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	0.1-0.2	13/09/2018	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	6.8	8.7
BD1/130918	0.1-0.2	13/09/2018	Filling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH2	0.4-0.5	13/09/2018	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3	0.1-0.2	14/09/2018	Filling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	0.1-0.2	13/09/2018	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-
BH4	0.4-0.5	13/09/2018	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5	0.4-0.5	14/09/2018	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-
BH5	0.9-1.0	14/09/2018	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	20
BH6	0.1-0.2	14/09/2018	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-
BH6	0.9-1.0	14/09/2018	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7	0.4-0.5	14/09/2018	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	7.4	10
BH7	0.9-1.0	14/09/2018	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD3/140918	0.9-1.0	14/09/2018	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8	0.4-0.5	14/09/2018	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	-	-
BH8	0.9-1.0	14/09/2018	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TS	-	13/09/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TB	-	13/09/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BMS04	-	18/09/2018	Material	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	AD	-	-
BMS05	-	18/09/2018	Material	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	AD	-	-

NOTES

NSW EPA (2014)	Waste Classification Guidelines - Part 1: Classifying Waste
*	Moderately harmful pesticides; Note 6 to Table 1 of NSW EPA (2014)
**	Scheduled Chemicals; Note 11 to Table 1 of NSW EPA (2014)
***	PCBs must be managed in accordance with the EPA's PCB Chemical Control Order 1997.
****	All readings for NEPM 2013 HSL C- Recreational / Open Space, Vapour Intrusion, Sand 0-1m are NL
-	Not tested / Not Applicable
NAD	Not detected at the laboratory reporting limit of 0.1g/kg
AD	Asbestos Detected

Appendix J

Laboratory Certificates, Sample Receipt Advice

and Chain of Custody Documentation

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 201160

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden, Jack Snowden
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**86543.01, Granville Park Upgrade**
Number of Samples	19 Soil, 2 Material
Date samples received	19/09/2018
Date completed instructions received	19/09/2018

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	26/09/2018
Date of Issue	02/10/2018
Reissue Details	This report replaces R00 created on 26/09/2018 due to: sample ID error

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Analysed by Asbestos Approved Identifier: Aida Marner
Authorised by Asbestos Approved Signatory: Matt Tang

Results Approved By
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vTRH(C6-C10)/BTEXN in Soil						
Our Reference		201160-1	201160-2	201160-3	201160-4	201160-5
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.05-0.1	1.0-1.45	0.1-0.2	0.4-0.5	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	13/09/2018	13/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	91	88	85	93	86

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		201160-6	201160-7	201160-8	201160-9	201160-10
Your Reference	UNITS	BH4	BH4	BH5	BH5	BH6
Depth		0.1-0.2	0.4-0.5	0.4-0.5	0.9-1.0	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	14/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	86	87	89	84	86

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		201160-11	201160-12	201160-13	201160-14	201160-15
Your Reference	UNITS	BH6	BH7	BH7	BD3/140918	BH1/130918
Depth		0.9-1.0	0.4-0.5	0.9-1.0	-	-
Date Sampled		14/09/2018	14/09/2018	14/09/2018	14/09/2018	13/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	84	78	82	85	85

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		201160-16	201160-17	201160-18	201160-19
Your Reference	UNITS	BH8	BH8	TS	TB
Depth		0.4-0.5	0.9-1.0	-	-
Date Sampled		14/09/2018	14/09/2018	13/09/2018	13/09/2018
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018
TRH C_6 - C_9	mg/kg	<25	<25	[NA]	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	[NA]	[NA]
Benzene	mg/kg	<0.2	<0.2	75%	<0.2
Toluene	mg/kg	<0.5	<0.5	87%	<0.5
Ethylbenzene	mg/kg	<1	<1	92%	<1
m+p-xylene	mg/kg	<2	<2	76%	<2
o-Xylene	mg/kg	<1	<1	76%	<1
naphthalene	mg/kg	<1	<1	[NA]	[NA]
Total +ve Xylenes	mg/kg	<1	<1	[NA]	[NA]
Surrogate aaa-Trifluorotoluene	%	80	78	98	87

svTRH (C10-C40) in Soil						
Our Reference		201160-1	201160-2	201160-3	201160-4	201160-5
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.05-0.1	1.0-1.45	0.1-0.2	0.4-0.5	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	13/09/2018	13/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	92	93	95	94	95

svTRH (C10-C40) in Soil						
Our Reference		201160-6	201160-7	201160-8	201160-9	201160-10
Your Reference	UNITS	BH4	BH4	BH5	BH5	BH6
Depth		0.1-0.2	0.4-0.5	0.4-0.5	0.9-1.0	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	14/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	130
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	130
Surrogate o-Terphenyl	%	93	95	94	94	95

svTRH (C10-C40) in Soil						
Our Reference		201160-11	201160-12	201160-13	201160-14	201160-15
Your Reference	UNITS	BH6	BH7	BH7	BD3/140918	BH1/130918
Depth		0.9-1.0	0.4-0.5	0.9-1.0	-	-
Date Sampled		14/09/2018	14/09/2018	14/09/2018	14/09/2018	13/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	93	92	92	91	93

svTRH (C10-C40) in Soil			
Our Reference		201160-16	201160-17
Your Reference	UNITS	BH8	BH8
Depth		0.4-0.5	0.9-1.0
Date Sampled		14/09/2018	14/09/2018
Type of sample		Soil	Soil
Date extracted	-	21/09/2018	21/09/2018
Date analysed	-	21/09/2018	21/09/2018
TRH C_{10} - C_{14}	mg/kg	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50
Surrogate o-Terphenyl	%	88	92

PAHs in Soil						
Our Reference		201160-1	201160-2	201160-3	201160-4	201160-5
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.05-0.1	1.0-1.45	0.1-0.2	0.4-0.5	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	13/09/2018	13/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
Naphthalene	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	0.2	<0.1	<0.1	<0.1	0.2
Pyrene	mg/kg	0.2	<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	0.2	<0.1	<0.1	<0.1	0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.3	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.2	<0.05	<0.05	<0.05	0.08
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	1.5	<0.05	<0.05	<0.05	0.5
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	119	88	89	86	86

PAHs in Soil						
Our Reference		201160-6	201160-7	201160-8	201160-9	201160-10
Your Reference	UNITS	BH4	BH4	BH5	BH5	BH6
Depth		0.1-0.2	0.4-0.5	0.4-0.5	0.9-1.0	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	14/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
Naphthalene	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	0.4	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.4	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.3	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	2.5	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	85	89	85	90	88

PAHs in Soil						
Our Reference		201160-11	201160-12	201160-13	201160-16	201160-17
Your Reference	UNITS	BH6	BH7	BH7	BH8	BH8
Depth		0.9-1.0	0.4-0.5	0.9-1.0	0.4-0.5	0.9-1.0
Date Sampled		14/09/2018	14/09/2018	14/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
Naphthalene	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+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	89	84	89	88	87

Organochlorine Pesticides in soil						
Our Reference		201160-1	201160-3	201160-6	201160-8	201160-10
Your Reference	UNITS	BH1	BH2	BH4	BH5	BH6
Depth		0.05-0.1	0.1-0.2	0.1-0.2	0.4-0.5	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	13/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	101	95	97	96

Organochlorine Pesticides in soil			
Our Reference		201160-12	201160-16
Your Reference	UNITS	BH7	BH8
Depth		0.4-0.5	0.4-0.5
Date Sampled		14/09/2018	14/09/2018
Type of sample		Soil	Soil
Date extracted	-	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018
HCB	mg/kg	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	93	97

Organophosphorus Pesticides						
Our Reference		201160-1	201160-3	201160-6	201160-8	201160-10
Your Reference	UNITS	BH1	BH2	BH4	BH5	BH6
Depth		0.05-0.1	0.1-0.2	0.1-0.2	0.4-0.5	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	13/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	101	95	97	96

Organophosphorus Pesticides			
Our Reference		201160-12	201160-16
Your Reference	UNITS	BH7	BH8
Depth		0.4-0.5	0.4-0.5
Date Sampled		14/09/2018	14/09/2018
Type of sample		Soil	Soil
Date extracted	-	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Surrogate TCMX	%	93	97

PCBs in Soil						
Our Reference		201160-1	201160-3	201160-6	201160-8	201160-10
Your Reference	UNITS	BH1	BH2	BH4	BH5	BH6
Depth		0.05-0.1	0.1-0.2	0.1-0.2	0.4-0.5	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	13/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	101	101	95	97	96

PCBs in Soil			
Our Reference		201160-12	201160-16
Your Reference	UNITS	BH7	BH8
Depth		0.4-0.5	0.4-0.5
Date Sampled		14/09/2018	14/09/2018
Type of sample		Soil	Soil
Date extracted	-	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate TCLMX	%	93	97

Acid Extractable metals in soil						
Our Reference		201160-1	201160-2	201160-3	201160-4	201160-5
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.05-0.1	1.0-1.45	0.1-0.2	0.4-0.5	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	13/09/2018	13/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Arsenic	mg/kg	7	6	8	18	10
Cadmium	mg/kg	0.9	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	23	7	16	29	18
Copper	mg/kg	140	38	19	35	9
Lead	mg/kg	460	22	54	22	34
Mercury	mg/kg	0.1	<0.1	0.1	<0.1	<0.1
Nickel	mg/kg	18	18	15	15	6
Zinc	mg/kg	670	100	130	70	39

Acid Extractable metals in soil						
Our Reference		201160-6	201160-7	201160-8	201160-9	201160-10
Your Reference	UNITS	BH4	BH4	BH5	BH5	BH6
Depth		0.1-0.2	0.4-0.5	0.4-0.5	0.9-1.0	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	14/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Arsenic	mg/kg	8	8	10	9	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	8	22	15	22
Copper	mg/kg	19	54	12	16	40
Lead	mg/kg	68	17	17	16	24
Mercury	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	7	17	15	5	42
Zinc	mg/kg	67	91	21	15	130

Acid Extractable metals in soil						
Our Reference		201160-11	201160-12	201160-13	201160-14	201160-15
Your Reference	UNITS	BH6	BH7	BH7	BD3/140918	BH1/130918
Depth		0.9-1.0	0.4-0.5	0.9-1.0	-	-
Date Sampled		14/09/2018	14/09/2018	14/09/2018	14/09/2018	13/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Arsenic	mg/kg	10	13	10	13	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	10	25	19	24	16
Copper	mg/kg	10	16	14	10	20
Lead	mg/kg	14	34	13	23	53
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Nickel	mg/kg	2	12	4	8	16
Zinc	mg/kg	7	53	15	26	100

Acid Extractable metals in soil			
Our Reference		201160-16	201160-17
Your Reference	UNITS	BH8	BH8
Depth		0.4-0.5	0.9-1.0
Date Sampled		14/09/2018	14/09/2018
Type of sample		Soil	Soil
Date prepared	-	21/09/2018	21/09/2018
Date analysed	-	21/09/2018	21/09/2018
Arsenic	mg/kg	9	8
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	19	12
Copper	mg/kg	14	19
Lead	mg/kg	47	14
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	10	4
Zinc	mg/kg	35	23

Misc Soil - Inorg						
Our Reference		201160-1	201160-3	201160-6	201160-8	201160-10
Your Reference	UNITS	BH1	BH2	BH4	BH5	BH6
Depth		0.05-0.1	0.1-0.2	0.1-0.2	0.4-0.5	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	13/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/09/2018	21/09/2018	24/09/2019	24/09/2020	24/09/2021
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg			
Our Reference		201160-12	201160-16
Your Reference	UNITS	BH7	BH8
Depth		0.4-0.5	0.4-0.5
Date Sampled		14/09/2018	14/09/2018
Type of sample		Soil	Soil
Date prepared	-	24/09/2022	24/09/2023
Date analysed	-	24/09/2018	24/09/2018
Total Phenolics (as Phenol)	mg/kg	<5	<5

Moisture						
Our Reference		201160-1	201160-2	201160-3	201160-4	201160-5
Your Reference	UNITS	BH1	BH1	BH2	BH2	BH3
Depth		0.05-0.1	1.0-1.45	0.1-0.2	0.4-0.5	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	13/09/2018	13/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
Moisture	%	3.9	8.9	8.6	11	6.0

Moisture						
Our Reference		201160-6	201160-7	201160-8	201160-9	201160-10
Your Reference	UNITS	BH4	BH4	BH5	BH5	BH6
Depth		0.1-0.2	0.4-0.5	0.4-0.5	0.9-1.0	0.1-0.2
Date Sampled		13/09/2018	13/09/2018	14/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
Moisture	%	15	15	12	17	3.7

Moisture						
Our Reference		201160-11	201160-12	201160-13	201160-14	201160-15
Your Reference	UNITS	BH6	BH7	BH7	BD3/140918	BH1/130918
Depth		0.9-1.0	0.4-0.5	0.9-1.0	-	-
Date Sampled		14/09/2018	14/09/2018	14/09/2018	14/09/2018	13/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/09/2018	21/09/2018	21/09/2018	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018	24/09/2018	24/09/2018
Moisture	%	16	17	18	16	7.8

Moisture			
Our Reference		201160-16	201160-17
Your Reference	UNITS	BH8	BH8
Depth		0.4-0.5	0.9-1.0
Date Sampled		14/09/2018	14/09/2018
Type of sample		Soil	Soil
Date prepared	-	21/09/2018	21/09/2018
Date analysed	-	24/09/2018	24/09/2018
Moisture	%	17	15

Asbestos ID - soils						
Our Reference		201160-1	201160-3	201160-5	201160-6	201160-8
Your Reference	UNITS	BH1	BH2	BH3	BH4	BH5
Depth		0.05-0.1	0.1-0.2	0.1-0.2	0.1-0.2	0.4-0.5
Date Sampled		13/09/2018	13/09/2018	14/09/2018	13/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	26/09/2018	26/09/2018	26/09/2018	26/09/2018	26/09/2018
Sample mass tested	g	Approx. 40g	Approx. 40g	Approx. 35g	Approx. 35g	Approx. 35g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils				
Our Reference		201160-10	201160-12	201160-16
Your Reference	UNITS	BH6	BH7	BH8
Depth		0.1-0.2	0.4-0.5	0.4-0.5
Date Sampled		14/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil
Date analysed	-	26/09/2018	26/09/2018	26/09/2018
Sample mass tested	g	Approx. 40g	Approx. 40g	Approx. 40g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected

Misc Inorg - Soil				
Our Reference		201160-3	201160-9	201160-12
Your Reference	UNITS	BH2	BH5	BH7
Depth		0.1-0.2	0.9-1.0	0.4-0.5
Date Sampled		13/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil
Date prepared	-	25/09/2018	25/09/2018	25/09/2018
Date analysed	-	25/09/2018	25/09/2018	25/09/2018
pH 1:5 soil:water	pH Units	6.8	5.4	7.4

CEC				
Our Reference		201160-3	201160-9	201160-12
Your Reference	UNITS	BH2	BH5	BH7
Depth		0.1-0.2	0.9-1.0	0.4-0.5
Date Sampled		13/09/2018	14/09/2018	14/09/2018
Type of sample		Soil	Soil	Soil
Date prepared	-	24/09/2018	24/09/2018	24/09/2018
Date analysed	-	24/09/2018	24/09/2018	24/09/2018
Exchangeable Ca	meq/100g	5.3	3.0	7.2
Exchangeable K	meq/100g	0.5	0.3	0.1
Exchangeable Mg	meq/100g	2.8	13	2.5
Exchangeable Na	meq/100g	0.13	3.6	0.16
Cation Exchange Capacity	meq/100g	8.7	20	10

Asbestos ID - materials			
Our Reference		201160-20	201160-21
Your Reference	UNITS	BMS04	BMS05
Depth		-	-
Date Sampled		18/09/2018	18/09/2018
Type of sample		Material	Material
Date analysed	-	25/09/2018	25/09/2018
Mass / Dimension of Sample	-	111x90x5mm	120x70x6mm
Sample Description	-	Beige layered fibre cement material	Grey compressed fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected Organic fibres detected	Chrysotile asbestos detected Amosite asbestos detected

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Method ID	Methodology Summary
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	201160-3
Date extracted	-			21/09/2018	1	21/09/2018	21/09/2018		21/09/2018	21/09/2018
Date analysed	-			24/09/2018	1	24/09/2018	24/09/2018		24/09/2018	24/09/2018
TRH C_6 - C_9	mg/kg	25	Org-016	<25	1	<25	<25	0	85	80
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	1	<25	<25	0	85	80
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	94	86
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	75	71
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	84	79
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	86	81
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	102	89
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	83	1	91	99	8	87	73

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	21/09/2018	21/09/2018		[NT]	[NT]
Date analysed	-			[NT]	12	24/09/2018	24/09/2018		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	[NT]	12	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	[NT]	12	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	12	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	12	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	12	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	12	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	12	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	12	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	12	78	77	1	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	201160-3
Date extracted	-			21/09/2018	1	21/09/2018	21/09/2018		21/09/2018	21/09/2018
Date analysed	-			21/09/2018	1	21/09/2018	21/09/2018		21/09/2018	21/09/2018
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	1	<50	<50	0	99	106
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	1	<100	<100	0	92	104
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	1	<100	<100	0	75	130
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	1	<50	<50	0	99	106
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	1	<100	<100	0	92	104
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	1	<100	<100	0	75	130
Surrogate o-Terphenyl	%		Org-003	90	1	92	96	4	94	95

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	21/09/2018	21/09/2018		[NT]	[NT]
Date analysed	-			[NT]	12	21/09/2018	21/09/2018		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	[NT]	12	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	[NT]	12	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	[NT]	12	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	[NT]	12	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	[NT]	12	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	[NT]	12	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	12	92	92	0	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	201160-3
Date extracted	-			21/09/2018	1	21/09/2018	21/09/2018		21/09/2018	21/09/2018
Date analysed	-			24/09/2018	1	24/09/2018	24/09/2018		24/09/2018	24/09/2018
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	109	96
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	105	86
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	0.2	67	115	108
Anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	1	0.2	0.4	67	110	109
Pyrene	mg/kg	0.1	Org-012	<0.1	1	0.2	0.4	67	102	101
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.2	67	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	0.2	0.2	0	105	103
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	0.3	0.4	29	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	0.2	0.2	0	104	101
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	0.2	0.2	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	92	1	119	89	29	87	82

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	21/09/2018	21/09/2018		[NT]	[NT]
Date analysed	-			[NT]	12	24/09/2018	24/09/2018		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	12	<0.1	0.2	67	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	12	<0.1	0.2	67	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	12	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	12	<0.05	0.09	57	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	12	84	87	4	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	201160-3
Date extracted	-			21/09/2018	1	21/09/2018	21/09/2018		21/09/2018	21/09/2018
Date analysed	-			24/09/2018	1	24/09/2018	24/09/2018		24/09/2018	24/09/2018
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	93	95
gamma-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	88	89
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	98	99
delta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	91	91
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	96	96
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	95	95
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	103	103
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	108	111
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	94	94
Endosulfan II	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	88	88
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	94	1	101	99	2	112	108

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	21/09/2018	21/09/2018		[NT]	[NT]
Date analysed	-			[NT]	12	24/09/2018	24/09/2018		[NT]	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	12	93	95	2	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	201160-3
Date extracted	-			21/09/2018	1	21/09/2018	21/09/2018		21/09/2018	21/09/2018
Date analysed	-			24/09/2018	1	24/09/2018	24/09/2018		24/09/2018	24/09/2018
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	92	96
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	96	100
Dimethoate	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	111	118
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	126	128
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	100	83
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	106	107
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	98	102
Surrogate TCMX	%		Org-008	94	1	101	99	2	94	99

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	21/09/2018	21/09/2018		[NT]	[NT]
Date analysed	-			[NT]	12	24/09/2018	24/09/2018		[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-008	[NT]	12	93	95	2	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	201160-3
Date extracted	-			21/09/2018	1	21/09/2018	21/09/2018		21/09/2018	21/09/2018
Date analysed	-			24/09/2018	1	24/09/2018	24/09/2018		24/09/2018	24/09/2018
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	104	110
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	94	1	101	99	2	94	99

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	21/09/2018	21/09/2018		[NT]	[NT]
Date analysed	-			[NT]	12	24/09/2018	24/09/2018		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	[NT]	12	93	95	2	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	201160-3
Date prepared	-			21/09/2018	1	21/09/2018	21/09/2018		21/09/2018	21/09/2018
Date analysed	-			21/09/2018	1	21/09/2018	21/09/2018		21/09/2018	21/09/2018
Arsenic	mg/kg	4	Metals-020	<4	1	7	6	15	103	83
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	0.9	0.8	12	103	79
Chromium	mg/kg	1	Metals-020	<1	1	23	22	4	102	87
Copper	mg/kg	1	Metals-020	<1	1	140	110	24	104	94
Lead	mg/kg	1	Metals-020	<1	1	460	430	7	98	78
Mercury	mg/kg	0.1	Metals-021	<0.1	1	0.1	0.1	0	93	91
Nickel	mg/kg	1	Metals-020	<1	1	18	17	6	98	76
Zinc	mg/kg	1	Metals-020	<1	1	670	620	8	100	#

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	12	21/09/2018	21/09/2018		[NT]	[NT]
Date analysed	-			[NT]	12	21/09/2018	21/09/2018		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	12	13	12	8	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	12	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	12	25	24	4	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	12	16	26	48	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	12	34	34	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	12	12	18	40	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	12	53	68	25	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	201160-3
Date prepared	-			24/09/2018	1	21/09/2018	21/09/2018		24/09/2018	24/09/2018
Date analysed	-			24/09/2018	1	24/09/2018	24/09/2018		24/09/2018	24/09/2018
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	1	<5	<5	0	102	#

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			25/09/2018	[NT]	[NT]	[NT]	[NT]	25/09/2018	[NT]
Date analysed	-			25/09/2018	[NT]	[NT]	[NT]	[NT]	25/09/2018	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			24/09/2018	3	24/09/2018	24/09/2018		24/09/2018	[NT]
Date analysed	-			24/09/2018	3	24/09/2018	24/09/2018		24/09/2018	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	3	5.3	5.2	2	106	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	3	0.5	0.5	0	109	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	3	2.8	2.9	4	104	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	3	0.13	0.13	0	107	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

Acid Extractables Metals in Soil:
Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples 201160-2,3,5,6,8,10,12,16 were sub-sampled from jars provided by the client.

Total Phenolics
Low spike recovery was obtained for this sample. The sample was re-digested and re-spiked and the low recovery was confirmed.
This is due to matrix interferences. However, an acceptable recovery was obtained for the LCS.

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No: 86543.02.01	**Suburb:** Granville	**To:** Lab name	
Project Name: Granville Park Upgrade	**Order Number**		
Project Manager: DA	**Sampler:** AH	**Attn:**	
Emails: Jack.Snowden; David.Holder@douglaspartners.com.au		**Phone:**	
Date Required: Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☒		**Email:**	
Prior Storage: ☐ Esky ☒ Fridge ☐ Shelved	Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8a	Combo 3a	Combo 3	Herbicides (Phenoxy acid & Triazine)	TRH/BTEX	PH	CEC	Metals		Notes/preservation
BH1 0.05-0.1	1	13.9.18	S	G	X									
BH1 1.0-1.45	2	↓	↓	↓			X							
BH2 0.1-0.2	3	~~14.9.18~~			X					X	X			
BH2 0.4-0.5	4	↓					X							
BH3 0.1-0.2	5	14.9.18				X								
BH4 0.1-0.2	6	13.9.18			X									
BH4 0.4-0.5	7	13.9.18					X							
BH5 0.4-0.5	8	14.9.18			X									
BH5 0.9-1.0	9	↓					X			X	X			
BH6 0.1-0.2	10				X									
BH6 0.9-1.0	11						X							
BH7 0.4-0.5	12				X					X	X			
BH7 0.9-1.0	13	↓					X							
BD3/140918	14	14.9.18							X			X		
BD8/130918	15	13.9.18	↓	↓					X			X		
PQL (S) mg/kg														ANZECC PQLs req'd for all water analytes ☐

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 201160
Date Received: 19/9/18
Time Received: 15:30
Received By: KC
Temp: Cool/Ambient
Cooling: Ice/Icepack 12-6
Security: Intact/Broken/None

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container: 20 **Relinquished by:** JS **Transported to laboratory by:** Courier

Send Results to: Douglas Partners Pty Ltd **Address:** 96 Hermitage Rd West Ryde **Phone:** 0450464009 **Fax:**

Signed: JS **Received by:** K. Cook **Date & Time:** 19/9/18 15:30

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No: 86543.001	**Suburb:** Granville	**To:** Lab name
Project Name: Granville Park Upgrade	**Order Number**	
Project Manager: DH	**Sampler:** AH	**Attn:**
Emails: Jack.Snowden; David.Holder@douglaspartners.com.au		**Phone:**
Date Required: Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☒		**Email:**
Prior Storage: ☐ Esky ☒ Fridge ☐ Shelved	Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)	

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8a	Combo 3a	Combo 3	Herbicides (Phenoxy acid & Triazine)	TRH / BTEX	PAH	CEC	Asbestos ID		Notes/preservation
BH8 0.4-0.5	16	18.9.18	S	G	x									
BH8 0.9-1.0	17	↓	↓	↓			x							
TS/TB	18, 19	—	—	G					x					
BMS04	20	18.9.18	Material	P								x		
BMS05	21	↓	↓	↓								x		
PQL (S) mg/kg														

ANZECC PQLs req'd for all water analytes ☐

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container: | **Relinquished by:** | **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd | **Address:** | **Phone:** | **Fax:**

Signed: | **Received by:** K. Cano | **Date & Time:** 19/9/18 15:30

201160

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden, Jack Snowden

Sample Login Details

Your reference	86543.01, Granville Park Upgrade
Envirolab Reference	201160
Date Sample Received	19/09/2018
Date Instructions Received	19/09/2018
Date Results Expected to be Reported	26/09/2018

Sample Condition

Samples received in appropriate condition for analysis	YES
No. of Samples Provided	19 Soil, 2 Material
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	12.6
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
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12 Ashley St Chatswood NSW 2067
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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticidesin soil	Organophosphorus Pesticides	PCBsin Soil	Acid Extractable metalsin soil	Misc Soil - Inorg	Asbestos ID - soils	Misc Inorg - Soil	CEC	Asbestos ID - materials
BH1-0.5-0.1	✓	✓	✓	✓	✓	✓	✓	✓	✓			
BH1-1.0-1.45	✓	✓	✓				✓					
BH2-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BH2-0.4-0.5	✓	✓	✓				✓					
BH3-0.1-0.2	✓	✓	✓				✓		✓			
BH4-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓			
BH4-0.4-0.5	✓	✓	✓				✓					
BH5-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓			
BH5-0.9-1.0	✓	✓	✓				✓			✓	✓	
BH6-0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓			
BH6-0.9-1.0	✓	✓	✓				✓					
BH7-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BH7-0.9-1.0	✓	✓	✓				✓					
BD3/140918	✓	✓					✓					
BH1/130918	✓	✓					✓					
BH8-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓			
BH8-0.9-1.0	✓	✓	✓				✓					
TS	✓											
TB	✓											
BMS04												✓
BMS05												✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 201160-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden, Jack Snowden
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**86543.01, Granville Park Upgrade**
Number of Samples	19 Soil, 2 Material
Date samples received	19/09/2018
Date completed instructions received	27/09/2018

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	05/10/2018
Date of Issue	04/10/2018

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Long Pham, Team Leader, Metals

Authorised By

Jacinta Hurst, Laboratory Manager

Metals in TCLP USEPA1311			
Our Reference		201160-A-1	201160-A-10
Your Reference	UNITS	BH1	BH6
Depth		0.5-0.1	0.1-0.2
Date Sampled		13/09/2018	14/09/2018
Type of sample		Soil	Soil
Date extracted	-	28/09/2018	28/09/2018
Date analysed	-	28/09/2018	28/09/2018
pH of soil for fluid# determ.	pH units	8.8	7.7
pH of soil TCLP (after HCl)	pH units	1.8	1.8
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.2	5.0
Lead in TCLP	mg/L	0.1	[NA]
Nickel in TCLP	mg/L	[NA]	<0.02

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.

QUALITY CONTROL: Metals in TCLP USEPA1311					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			28/09/2018	[NT]	[NT]	[NT]	[NT]	28/09/2018	[NT]
Date analysed	-			28/09/2018	[NT]	[NT]	[NT]	[NT]	28/09/2018	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	114	[NT]
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	[NT]	[NT]	[NT]	[NT]	119	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
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Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

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Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Andrew Fitzsimons

From: Nancy Zhang
Sent: Thursday, 27 September 2018 10:42 AM
To: Jack Snowden; Aileen Hie
Cc: David Holden; Samplereceipt
Subject: RE: Envirolab Invoice No SY525063 for Registration 201160 86543.01, Granville Park Upgrade

Hi Jack,

No problem.

ELS: ZG1160-A
TAT: 5 days
Due: 5/10/18
Fitz

Regards,

Nancy Zhang | Assistant Lab Manager | Envirolab Services Pty Ltd

Great Science, Great Service.

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200 **F** 612 9910 6201
E nzhang@envirolab.com.au | **W** www.envirolab.com.au

From: Jack Snowden [mailto:Jack.Snowden@douglaspartners.com.au]
Sent: Thursday, 27 September 2018 9:02 AM
To: Nancy Zhang <NZhang@envirolab.com.au>; Aileen Hie <AHie@envirolab.com.au>
Cc: David Holden <David.Holden@douglaspartners.com.au>
Subject: RE: Envirolab Invoice No SY525063 for Registration 201160 86543.01, Granville Park Upgrade

Aileen,

Please schedule TCLP testing on the following:

BH1 0.5-0.1 Lead - 1
BH6 0.1-0.2 Nickel - 10

Thanks

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www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden, Jack Snowden

Sample Login Details

Your reference	86543.01, Granville Park Upgrade
Envirolab Reference	201160-A
Date Sample Received	19/09/2018
Date Instructions Received	27/09/2018
Date Results Expected to be Reported	05/10/2018

Sample Condition

Samples received in appropriate condition for analysis	YES
No. of Samples Provided	19 Soil, 2 Material
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	12.6
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
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12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	pH of soil for fluid#determ.	pH of soil TCLP (after HCl)	Extraction fluid used	pH of final Leachate	Lead in TCLP	Nickel in TCLP	On Hold
BH1-0.5-0.1	✓	✓	✓	✓	✓		
BH1-1.0-1.45							✓
BH2-0.1-0.2							✓
BH2-0.4-0.5							✓
BH3-0.1-0.2							✓
BH4-0.1-0.2							✓
BH4-0.4-0.5							✓
BH5-0.4-0.5							✓
BH5-0.9-1.0							✓
BH6-0.1-0.2	✓	✓	✓	✓		✓	
BH6-0.9-1.0							✓
BH7-0.4-0.5							✓
BH7-0.9-1.0							✓
BD3/140918							✓
BH1/130918							✓
BH8-0.4-0.5							✓
BH8-0.9-1.0							✓
TS							✓
TB							✓
BMS04							✓
BMS05							✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

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