



Douglas Partners
Geotechnics | Environment | Groundwater

Report on
Preliminary Site Investigation

Proposed Roseville SWELL Centre
29 & 37 Bancroft Avenue, Roseville

Prepared for
Anglican Schools Corporation

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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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Report on Preliminary Site Investigation

Proposed Roseville SWELL Centre

29 & 37 Bancroft Avenue, Roseville

1. Introduction

Douglas Partners Pty Ltd (DP) was commissioned by EPM Projects Pty Ltd on behalf of Anglican Schools Corporation to undertake a preliminary site investigation with limited sampling (PSI) for contamination for the proposed SWELL Centre at 29 & 37 Bancroft Avenue, Roseville within Roseville College (the site as shown on Drawing 1, Appendix A). The College accommodates Kindergarten to Year 12 students. The investigation was carried out with reference to DP's Proposal SYD190049.P.001.Rev1 dated 22 February 2019.

It is understood that the proposed development will be undertaken in stages as outlined in Section 5 and will involve demolition of existing facilities and construction of a two-storey carpark, four-storey building, a driveway and retaining wall, and reconstruction of Recreation Avenue. The investigation is required as part of the State significant development (SSD) application for the new educational establishment.

No known contamination investigations have been previously undertaken at the site. The current investigation comprised a review of site history information, a site walkover, intrusive sampling (including soil and groundwater), laboratory analysis for contaminants of concern and interpretation of results with reference to current NSW EPA guidelines.

The PSI was conducted with reference to *National Environment Protection (Assessment of Site Contamination) Measure* 1999, as amended 2013 (NEPC, 2013) and *the State Environmental and Planning Policy (SEPP) 55*. This report also incorporates a provisional waste classification assessment to help inform the off-site disposal of fill/soil material.

The PSI was conducted concurrently with a geotechnical investigation as reported in DP *Report on Geotechnical Investigation, Proposed Roseville College SWELL Centre, 29 & 37 Bancroft Avenue, Roseville* (DP, 2019).

2. Scope of Works

DP carried out the following scope of works:

- Review of published soil landscape, geological, topographic and acid sulfate soil maps;
- Obtain and review Lotsearch Enviro Professional Report LS005497 EP for the site, including:
 - o Department of Primary Industry groundwater bore records for registered groundwater bores in the vicinity of the site;
 - o Available historical aerial photographs to assess likely past land uses of the site;

- o Historical business listings to identify potential sources of contamination at or near the site; and
 - o NSW EPA public registers for notices and licences issued under the *Contaminated Land Management Act 1997* (CLM Act) and the *Protection of the Environment Operations Act 1997* (POEO Act).
- Review of other pertinent site history information comprising:
 - o Recent aerial imagery obtained through Nearmap;
 - o Current and historical land titles;
 - o Council's Section 10.7 Planning Certificate; and
 - o Search of the SafeWork NSW register to identify hazardous chemicals on premises.
- Conduct a site walkover to observe current and recent land use and assess the potential for contaminating activities;
- Drilling of six boreholes (BH401 to BH408) as part of the DP (2019) geotechnical investigation to a maximum depth of 10 m below ground level (bgl);
- Collection of soil samples from the boreholes at regular depth intervals, typically at the surface (0 - 0.2 m), and changes in the soil strata, where observed;
- Screening of soil samples with a photo-ionisation detector (PID) to assess the likely presence or absence of volatile organic compounds (VOC);
- Conversion of two boreholes into groundwater monitoring wells; and
- Well development, followed by groundwater sampling using low-flow sampling techniques.
- Laboratory analysis of selected soil and groundwater samples by a National Association of Testing Authorities (NATA) accredited laboratory for contaminants of potential concern (COPC) and parameters including:
 - o Eight priority metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc);
 - o Total recoverable hydrocarbons (TRH);
 - o Monocyclic aromatic hydrocarbons (benzene, toluene, ethylbenzene and xylenes – BTEX);
 - o Polycyclic aromatic hydrocarbons (PAH);
 - o Organochlorine pesticides (OCP)
 - o Organophosphorus pesticides (OPP);
 - o Polychlorinated biphenyls (PCB);
 - o Total phenols;
 - o Asbestos (presence / absence);
 - o Toxicity characteristic leachate procedure (TCLP) for preliminary waste classification purposes;
 - o pH and cation exchange capacity (CEC) for determination of ecological investigation levels (EIL);

- o Field sampling and laboratory analysis with reference to standard environmental protocols, including a data quality assurance and quality control (QA/QC) plan consisting of 10% replicate sampling, trip spikes, trip blanks, appropriate chain of custody procedures and in-house laboratory QA/QC testing for soil; and
- Preparation of this report detailing the findings of the investigation, as well as recommendations for further works, if deemed necessary. A preliminary waste classification has also been included to provide an indication of offsite disposal options.

3. Site Description

3.1 Site Identification

The site is located at 29 & 37 Bancroft Avenue, Roseville within the local government area of Ku-ring-gai Council and is identified as follows:

- Lot 18, Section C, Deposited Plan (D.P) 5035;
- Part Lot 2003, D.P 1084428;
- Part Lot 1, D.P 133073;
- Part Lot A, D.P 319571; and
- Part of Recreational Avenue.

The site is irregular in shape and has an approximate area of 0.4 ha. Based on the Ku-ring-gai Local Environmental Plan 2012 and 2015 referenced in the Lotsearch report, the site is zoned as SP2 - Infrastructure (Educational establishment), and R2 - Low Density Residential respectively.

3.2 Site Walkover

A site walkover was conducted by a DP environmental geologist on 16 July 2019.

At the time of the investigation, the northern portion of Lot 18 was occupied by a residential house with a lawn and paved areas (Photograph 1). The walkover did not include an inspection of the residential house. There was a carport along the eastern site boundary. The southern portion of the lot consisted of a tennis court with a swimming pool to the east (Photograph 2). There were some mature trees, mainly along the northern and western boundary. Beyond the southern boundary of Lot 18 (Part Lot 1, D.P 133073), there was an asphaltic concrete pathway (Photograph 3).

Part Lot 2003 consisted of a tennis court with a grassed area to the south and some outdoor seating areas (Photograph 4). There was an asphaltic concrete driveway along the western site boundary.

The portion of Recreation Avenue within the site comprised an asphaltic concrete pavement. There was a grassed batter approximately 1 m high extending along the eastern side of the road (Photograph 5), sloping down towards the Tennis Club (Lot A, D.P 319571). A similar height, timber sleeper retaining wall was located at the northern and southern end of the eastern boundary, with backfilled material behind the wall (Photograph 6).

The surrounding land use is summarised below:

- North: Bancroft Avenue and residential land use beyond;
- East: Residential properties;
- South: Roseville Lawn Tennis Club, buildings associated with Roseville College and Recreation Avenue; and
- West: Residential properties and buildings associated with Roseville College.

It is noted that small-scale chemical storage rooms were located within the buildings of Roseville College.

4. Soil Landscapes, Geology, Topography, Hydrology, Hydrogeology and Acid Sulfate Soil Potential

4.1 Soil Landscapes

Reference to the Sydney 1:100 000 Soils Landscape Sheet indicates the following:

- A minor region within the northern portion of the site is underlain by the Lucas Heights (residual) soil landscape (mapping unit lh) characterised by gently undulating crests and ridges on plateau surfaces of the Mittagong Formation (alternating bands of shale and fine-grained sandstone), with local relief to 30 m and slopes typically < 10%. These soils typically have low soil fertility and low available water capacity; and
- The southern portion of the site is underlain by the Glenorie (erosional) soil landscape (mapping unit gn) characterised by undulating to rolling low hills on Wianamatta Group shales, with local relief of 50 – 80 m, slopes typically 5 - 20%, narrow ridges, hillcrests and valleys. The soils vary from red podzolic soils on crests; red and brown podzolic soils on upper slopes; yellow podzolic soils on lower slopes; and humic gleys, yellow and gleyed podzolic soils along drainage lines. These soils typically have high soil erosion hazard, localised impermeable highly plastic subsoil and are moderately reactive.

4.2 Geology

Reference to the Sydney 1:100,000 Geology Sheet indicates the site is underlain by Ashfield Shale (mapping unit Rwa) of the Wianamatta Group of the Triassic age. This formation typically comprises laminite and dark grey siltstone.

4.3 Topography, Hydrology and Hydrogeology

The site has an overall topographic difference of approximately 4.5 m from the highest part (approximately 86.5 m, relative to the Australian height datum (AHD)) within the western portion of the site to the lowest part (approximately 82 m AHD) within the south eastern portion of the site as shown on 2 m elevation contours obtained through published topographic maps. The regional topography slopes from the south west towards Moores Creek, located approximately 550 m to the north east.

Surface water is anticipated to drain to the local stormwater system and follow the general regional topography, ultimately draining into Moores Creek. Likewise, groundwater is also anticipated to flow towards Moores Creek.

A search of the groundwater bore database maintained by the Department of Primary Industry was included in the Lotsearch report provided in Appendix C. Review of the records indicates that there are twelve registered groundwater bores located to the south west, within approximately 500 m of the site. Review of records indicates the authorised and intended purpose of the bores are for monitoring purposes. The standing water level of bore GW114836 and GW114837 was measured at 8.8 m and 2.6 m respectively.

4.4 Acid Sulfate Soils

Reference to the *Atlas of Australian Acid Sulfate Soils* included in the Lotsearch report indicates that the site lies in a “Class B” area, where there is a low probability of occurrence (6 - 70% chance of occurrence) of acid sulfate soils.

Furthermore, given that the site lies predominately on an erosional soil profile, at an elevation of approximately 82 m AHD, the probability of ASS being present on site is considered extremely unlikely.

The Ku-ring-gai Local Environmental Plan 2015 included in the Lotsearch report maps the eastern portion of the site as “Class 5” and notes that “*Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 meters AHD and by which the watertable is likely to be lowered below 1 m AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk.*”

Based on the mapped site conditions, no further investigation of acid sulfate soil conditions is warranted.

5. Proposed Development

The proposed development is considered to be within the State Significant development and it is understood to be undertaken in three stages as summarised below:

Stage 1: The first stage is to involve the demolition of two existing sports courts and construction of a two-storey carpark consisting of a one to two level basement, with two hardcourts constructed on the rooftop;

Stage 2: The second stage is to involve the demolition of a residential building at 37 Bancroft Avenue and construction of a four-storey building including a swimming pool, gym, general learning areas and other student/staff facilities with basement parking. Excavations of up to 6 m are anticipated for the basement levels; and

Stage 3: The third stage is to involve widening and reconstruction of Recreation Avenue, together with the construction of a new driveway connecting to the new basement carpark, as well as construction of a new retaining wall along the common boundary with Roseville Lawn Tennis Club.

6. Site History Information

It should be noted that the site boundary was revised (to include a portion of Recreation Avenue) after the Lotsearch report, title deeds and SafeWork documentation was ordered. However, based on review of the Lotsearch Report (see Sections 6.1 to 6.3 below) which covers the entire site (as shown on Drawing 1, Appendix A), DP considers that the site history obtained is adequate for the current investigation.

6.1 Historical Aerial Photographs

Historical aerial photographs from 1943 to 2009 were included in the Lotsearch report (Appendix C).

These were reviewed to identify past land uses and hence the potential for contaminating activities to have impacted the site. A summary of the aerial photograph review is given below.

1943 – The north western portion of the site appears to be occupied by two residential properties with backyards and some tree cover. Recreation Avenue can be seen within the southern portion of the site, and Roseville Lawn Tennis Club can be seen immediately east of this road. There appears to be a small structure/likely shed immediately north of Recreation Avenue, and another shed can be seen along the western site boundary, south of the residential property (western-most property). There appears to be a residential property within the north eastern corner of the site and the present-day tennis court can be seen within the southern portion of the lot.

Bancroft Avenue can be seen north of the site, beyond the site boundary. The surrounding land use appears to be predominately residential to the north, and a mix of residential and recreational land to the east. What appears to be Roseville College can be seen to the west of Recreation Avenue, beyond the residential houses.

1951 & 1956 - The resolution of the 1951 aerial photograph is of poor quality. The site and surrounds appear much the same as in 1943.

1961 - The site appears much the same as in 1956. Beyond the eastern site boundary, a new sports ground / possible tennis court has been constructed.

1965 - The trees within the southern portion of the site (i.e. backyards of the two residential properties) have been cleared and a new structure(s) have been constructed within this area. The shed-like structure, north of Recreation Avenue appears to be demolished. It appears that a shed / new structure has been constructed south of the eastern-most residential property.

1970 - Little change has taken place at the site and surrounds since 1965.

1982 - The site appears much the same as in 1970. Further east of the site, the tennis court / sports field has been amalgamated into an open space / park.

1991 - The site appears much the same as in 1982. Roseville College has undergone development with the demolition of some of the houses west of Recreation Avenue and construction of a building.

2005 - Significant change has taken place at the site. The two residential properties located within the north western portion of the site have been demolished and have been replaced with a tennis court. South west of the site, Roseville College has expanded with the construction of new buildings.

2009 - The residential property and structures within the southern portion of the site (north of Recreation Avenue) have been demolished, and the area appears to be landscaped / grass covered. Construction of Roseville College has extended north. A portion of Recreation Avenue within the site appears to be concrete pavement.

Current - Based on review of Near map aerial imagery, the site and surrounds appear much the same as in 2009. The portion of Recreation Avenue that was concrete pavement in 2009, now appears to be asphaltic concrete.

6.2 Historical Business Listings

A review of historical business records from 1943 to 1993 provided in the Lotsearch report (Appendix C) was undertaken to identify potentially contaminating business activities that could impact the site. 'High risk' business activities (including, but not limited to dry cleaners, motor garages and service stations) are typically identified as potential sources of contamination to the site if they are located upgradient of the site, and within approximately 150 m from the site.

Based on the review, there were no 'high risk' business activities upgradient and within 150 m from the site.

6.3 NSW EPA Public Registers Search

The EPA maintains a public database of contaminated sites under Section 58 of the CLM Act. The notices relate to investigation and/or remediation of site contamination considered to be significantly contaminated under the definition in the CLM Act.

A site will appear on the Contaminated Land: Record of Notices if the site has been issued a regulatory notice by the EPA. Sites appearing in the List of NSW Contaminated Sites Notified to the EPA indicate that they are considered to be contaminated by the notifier and warrant reporting to the EPA. However, the contamination may or may not be significant enough to warrant regulation and is subject to further review by the EPA. The NSW EPA also issues environmental protection licenses under Section 308 of the POEO Act.

Based on the Lotsearch report, the following is indicated:

- No notices or orders made under the CLM Act have been issued for the site or adjacent properties;
- The site and adjacent properties have not been included in the list of NSW contaminated sites notified to EPA, however, it is noted that Mobil Service Station, located approximately 430 m south west of the site is included on the list;
- No licences under Schedule 1 of the POEO Act have been issued for the site or adjacent properties; and

- No records were found relating to former gasworks, waste management facilities, or sites that are part of the EPA PFAS investigation, within 1 km of the site.

6.4 Title Deeds

A historical title deeds search was conducted on the site by Infotrack Pty Ltd to obtain information regarding previous land ownership and occupancy details. This information provides an indication of previous land uses and also gives an insight into potential sources of contamination at the site. However, title deeds alone are not conclusive of land use and need to be used in conjunction with other site history information (e.g. aerial photographs) to gain a better understanding of the likely land use.

Title deeds dating back to 1911 and 1908 were obtained for Lot 18, Section C, D.P 5035 and part Lot 2003, D.P 1084428, respectively. A full copy of the title deeds, along with a summarised version is provided in Appendix C.

Based on review of the title deeds, it is inferred that Lot 18 was residential land use from the period 1911 to the present day. It is noted that Anglican Schools Corporation were the registered owners of the land since 2016. Review of the title deeds for Part Lot 2003 indicates that this portion of the site was previously divided into four parts (in relation to the current site boundary as shown on Drawing 1, Appendix A). The past land use of this Lot was likely to be residential, prior to being used as a school / college from 1983 onwards. It is noted that Anglican Schools Corporation were the registered owners of the land since 1999.

6.5 Safe Work

The results of the SafeWork NSW Site Search for Schedule 11 Hazardous Chemicals on Premises undertaken in June 2019 did not identify any records pertaining to the site (excluding Recreation Avenue). The SafeWork records are included in Appendix C.

6.6 Section 10.7 Certificate

A review of the planning certificates for the site dated 3 December 2018 indicated that there were no listed site contamination matters relating to Section 59 (2) of the Contaminated Land Management Act 1997.

It is noted that 37 Bancroft Avenue is within a Heritage Conservation Area under the provisions of Ku-ring-gai Local Environmental Plan 2015.

The certificates also note that prior to urban settlement, sizeable areas of Ku-ring-gai were covered by agricultural and horticultural activities, which are listed in the Managing Land Contamination Planning Guidelines as activities that may cause contamination.

7. Conceptual Site Model

A conceptual site model (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 either in the present or in the future i.e. it enables an assessment of the potential source – pathway – receptor linkages (complete pathways).

Based on the review of site history information and the site walkover, the following potential sources of contamination and associated contaminants of potential concern (COPC) have been identified and are summarised in Table 1 below.

Table 1: Potential Contaminant Sources and Contaminants of Potential Concern

Potential Source	Description of Potential Contaminating Activity	Contaminants of Potential Concern
Fill and surficial soil (S1)	<p>It is likely that fill was placed at the site to achieve the design levels. As the source of fill is unknown, there is potential for contaminants to be present in the fill.</p> <p>Furthermore, the earliest available aerial photograph (1943) showed that there were formerly residential properties and associated structures within the western portion of the site (part Lot 2003). The demolition / deterioration of the structures (likely to contain hazardous building material) over time may have impacted the fill / soil.</p>	Heavy metals, TPH, BTEX, PAH, PCB, OCP, OPP, phenols and asbestos.
Hazardous building materials in existing structures (S2)	The existing residential house within Lot 18 appears to have been built in the 1940s. Considering the age of the structure, it is considered likely that hazardous building materials, including ACM were used in the construction materials.	Asbestos, lead and PCB.

Notes :

TPH -	total petroleum hydrocarbon
BTEX -	benzene, toluene, ethylbenzene, xylene
PAH -	polycyclic aromatic hydrocarbons
PCB -	polychlorinated biphenyls
OCP -	organochlorine pesticides
OPP -	organophosphorus pesticides

It should be noted that based on review of the aerial photographs, the site was used for residential land use since at least 1943, therefore contamination associated with agricultural / horticultural activities (see Section 6.6) have not been included in the CSM.

7.1 Potential Receptors

The following potential receptors (R) have been identified:

Human Health Receptors:

R1 – Construction workers (during site redevelopment);

R2 – Future site users; and

R3 – Land users in adjacent areas.

Environmental Receptors:

R4 - Local groundwater;

R5 - Nearby surface water bodies (i.e. Moores Creek, located approximately 550 north east of the site); and

R6 - Terrestrial ecosystems.

DP notes that a large portion of the proposed development footprint will be excavated for construction of the basement, or will be covered in hardstand. However, it is understood that landscaped areas with accessible soils will also be incorporated into the design, therefore terrestrial ecosystems have been included as potential environmental receptors.

7.2 Potential Pathways

The following potential exposure pathways are primarily relevant to human receptors:

- P1 – Ingestion and dermal contact; and
- P2 – Inhalation of fibres/dust and/or vapours.

The following potential exposure pathways are primarily relevant to environmental receptors:

- P3 – Leaching of contaminants and vertical migration into groundwater;
- P4 – Surface water run-off;
- P5 – Lateral migration of groundwater; and
- P6 – Contact with terrestrial ecology.

7.3 Summary of CSM

A 'source – pathway – receptor' approach has been used to assess the potential risks of harm being caused to the identified receptors from contamination sources on or in the vicinity of the site, via exposure pathways (complete pathways). The possible pathways between the above sources (S1 and S2) and receptors are provided in Table 2 below.

Table 2: Conceptual Site Model

Source	Transport Pathway	Receptor	Risk Management Action Recommended
S1: Fill and surficial soil.	P1 – Ingestion and dermal contact.	R1 - Construction workers. R2 – Future site users.	<p>An intrusive investigation of site soils is recommended to assess possible contamination issues as detailed in this report.</p> <p>Given that two groundwater wells are to be installed as part of the DP (2019) investigation, groundwater sampling will also be conducted, as detailed in this report.</p>
	P2 – Inhalation of fibres/ dust and/or vapours.	R1 - Construction workers. R2 – Future site users. R3 – Land users in adjacent areas.	
	P3 – Leaching of contaminants and vertical migration into groundwater.	R4 – Local groundwater.	
	P4 – Surface water run-off. P5 – Lateral migration of groundwater.	R5 – Surface water bodies.	
	P6 – Contact with terrestrial ecology.	R6 – Terrestrial ecosystems.	
S2: Hazardous building materials in existing structures	P1 – Ingestion and dermal contact.	R1 - Construction workers. R2 – Future site users.	<p>A hazardous materials survey should be conducted prior to demolition.</p> <p>Areas beneath the building should be assessed post-demolition.</p>
	P2 – Inhalation of fibres/ dust and/or vapours.	R1 - Construction workers. R2 – Future site users. R3 – Land users in adjacent areas.	

8. Fieldwork

8.1 Fieldwork Methods and Rationale

Field investigations for drilling works were undertaken from 26 to 28 June 2019 by a DP geotechnical engineer. The field investigation was designed in accordance with the seven step data quality

objectives (DQO) process provided in Appendix B, Schedule B2 of the National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended 2013 (NEPC, 2013). The DQO adopted for this investigation are provided in Appendix F.

The field work comprised the drilling of eight boreholes, which were positioned on the basis of the geotechnical requirements (DP, 2019). The borehole locations are shown on Drawing 1, Appendix A. It is noted that the NSW EPA Sampling Design Guidelines (1995) recommends eleven sampling points for a 0.4 ha site, however, given the preliminary nature of this investigation, the adopted sampling density was considered adequate.

Boreholes were drilled using a Geoprobe fitted with a push tube, with the exception of BH403, BH407 and BH408 which were drilled using a hand-auger to a maximum depth of 2 m, or prior refusal. Boreholes BH401, BH405 and BH406 were drilled using a combination of push tube and NMLC-sized (50 mm diameter) diamond core drilling techniques to a depth of approximately 10 m bgl. Borehole BH401 was first hand augered to a depth of 1.5 m prior to use of the push tube. Boreholes BH402 and BH404 were drilled to the top of weathered rock. Groundwater monitoring wells were installed in boreholes BH401 and BH406.

Soil samples were collected from all boreholes at regular depth intervals, targeting fill layers and any change in the soil profile. Borehole logs were completed for all boreholes indicating the geological profile observed (refer to Appendix E). Logs included, where relevant, sample identification, coordinates, date of collection, a description of the substrate conditions encountered, visual or olfactory evidence of contamination, the depth of samples and QA/QC samples collected, the sampler and equipment used.

8.2 Soil Sampling Procedure

Sampling data was recorded to comply with routine chain-of-custody requirements and DP's standard operating procedures outlined in the DP Field Procedures Manual. The general sampling, handling, transport and tracking procedures are detailed below:

- Soils were sampled from the tip of the auger (hand augered locations) or from the push tube. Disposable nitrile gloves were used to collect all samples. Gloves were replaced prior to the collection of each sample in order to prevent cross-contamination;
- Samples collected for laboratory analysis were transferred into a new laboratory prepared glass jar, with minimal headspace, and sealed with a Teflon lined lid. Each jar was individually sealed to reduce the potential for cross contamination during transportation to the laboratory;
- Field screening of replicate soil samples, collected in sealed plastic bags, for Total Photoionisable Compounds (TOPIC) using a calibrated photoionisation detector (PID);
- Sample containers were labelled with individual and unique identification including project number, sample ID, depth and date of sampling;
- Placement of sample containers and bags into a cooled, insulated and sealed container for transport to the laboratory; and
- Use of chain of custody documentation so that sample tracking and custody could be cross-checked at any point in the transfer of samples from the field to the laboratory. Copies of completed chain of custody forms are included in Appendix G.

8.3 Well Construction

The groundwater monitoring wells were constructed of 50 mm diameter acid-washed class 18 PVC casing and machine slotted well screen intervals. Joints were screw threaded, thereby avoiding the use of glues and solvents which may contaminate the wells. The groundwater wells were capped and a Gatic cover placed flush with the ground surface.

The specific construction details for the monitoring wells are presented in Table 3 below.

Table 3: Well Construction Details

Construction Details	MW401	MW406
Well installation depth (m bgl)	10	9.9
Screen (m bgl)	4 to 10	4 to 9.9
Gravel pack (m bgl)	3.5 to 10	3.4 to 9.9
Bentonite (m bgl)	0.3 to 3.5	0.3 to 3.4
Backfill (m bgl)	0 to 0.3	0 to 0.3
Gatic cover	Flush with ground level	Flush with ground level

8.4 Groundwater Development and Sampling Procedure

Following installation of groundwater wells MW401 and MW406, the wells were developed on 29 June 2019 by purging the wells dry. The purpose of well development was to remove as far as practicable fluid and sediment introduced via drilling and to facilitate connection of the well to the local groundwater regime.

Groundwater sampling was undertaken on 16 July 2019. An interface probe was first used to measure the standing water level (SWL) of the bores and also to detect light non-aqueous phase liquids (LNAPL), if present.

Sampling was undertaken using low-flow sampling techniques utilising a peristaltic pump. The pump was set to the lowest possible flow rate that could produce laminar flow. Prior to sampling, field parameters (pH, temperature, dissolved oxygen (DO), conductivity, turbidity (NTU) and redox), which were measured using a calibrated water quality meter, were first allowed to stabilise.

Samples were transferred directly into appropriately preserved bottles, with minimum aeration. For analysis of metals, the relevant sample fraction was filtered using an in-line disposable 0.45 µm filter that was changed between wells to minimise the risk of cross-contamination.

The sample handling and management comprised the following:

- Sample bottles were labelled with individual and unique identification including project number, Well ID and date of sampling;
- The sample was placed in an insulated cooler and maintained at a cool temperature using ice until transported to the analytical laboratory, and
- Use of chain of custody documentation so that sample tracking and custody could be cross-checked at any point in the transfer of samples from the field to the laboratory. Copies of completed chain of custody forms are included in Appendix G.

8.5 Analytical Rationale (Soil)

Based on site observations (e.g. odour, staining, etc.) and the location of soil samples within the subsoil strata, selected samples were analysed for the primary contaminants of concern as identified in Section 7. The potential for VOC was measured using PID screening. The analytical scheme was designed to obtain an indication of the potential presence and possible distribution of identified contaminants of concern, as outlined below:

- Fill samples from varying depth (0.2 m to 1.0 m);
- Two samples from natural soil were analysed for a reduced contaminant suite; and
- Three samples from natural (from the top 2 m of the soil profile) were analysed for pH and CEC for derivation of the EIL.

8.6 Analytical Laboratory

All primary soil and groundwater samples collected were submitted to Envirolab Services Pty Ltd (Envirolab). Envirolab is NATA accredited and are required to conduct in-house QA / QC procedures. These are incorporated into every analytical run and include assessment of reagent blanks, spike recovery, surrogate recovery and laboratory duplicates. The analytical methods and the in-house QA/QC procedures used are summarised in the laboratory certificates of analysis, included in Appendix G. The inter-laboratory duplicate for soil was submitted to Eurofins, a NATA accredited laboratory.

9. Site Assessment Criteria

9.1 Soil

The Site Assessment Criteria (SAC) applied in the current investigation are informed by the CSM, which identified human and environmental receptors to potential contamination on the site (refer to Section 7), as well as consideration of the proposed development.

The laboratory analytical results have been assessed against the investigation and screening levels in Schedule B1 of NEPC (2013). These guidelines are endorsed by the NSW EPA under the CLM Act 1997.

Schedule B1, NEPC (2013) provides investigation and screening levels for commonly encountered contaminants which are applicable to generic land uses, and where relevant, also include consideration of soil type and the depth of contamination. It should be highlighted that the investigation and screening levels are not intended to be used as clean up levels, and any contaminants which have concentrations that exceed the investigation/screening levels should be further assessed using a Tier 2 risk assessment.

9.1.1 Health Investigation and Screening Levels

The 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. HIL are intentionally conservative, based on a reasonable worst-case scenario for four generic land use settings.

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

Health Screening Levels (HSL) are applicable to selected petroleum compounds and fractions (BTEX, naphthalene, F1 and F2) to assess the risk to human health via inhalation and direct contact pathways. HSL apply to the same land use settings as the HIL, however, also take into consideration soil types and depths to contamination.

Given the proposed development is part of Roseville College, the most conservative land use criteria has been applied. In summary, the SAC is as follows:

- HIL A (primary schools);
- HSL A & B (Low to high density residential) - NEPC 2013 states that school buildings should be assessed using HSL A, therefore the HSL A&B has been applied; and
- HSL A (Low – high density residential - for direct contact).

It is noted that HSL for intrusive maintenance workers (direct contact) are listed in CRC CARE (2011) Technical report 10, Health screening levels for petroleum hydrocarbons in soil and groundwater, Part 1: Technical development document (CRC CARE, 2011), however, these have not been used as SAC for the current investigation as the screening levels are higher than HSL-A and therefore are considered unlikely to be risk drivers for further assessment.

The selected HSL inputs are summarised in Table 4, and the adopted HIL / HSL are given in Table 5.

Table 4: Inputs to the Derivation of the HSL

Variable	Input	Rationale
Potential exposure pathway	Inhalation of vapours / direct contact	Potential exposure pathways identified in the CSM
Soil Type	Silt	Based on dominant soil type encountered (see logs) which comprised of silty clay / clay. Values for silt have been adopted given that silt is more conservative for HSL application.
Depth to Contamination	0 m to <1 m	Potential contamination sources likely to impact surface soils. This depth range is also the most conservative.

Table 5: Health Investigation and Screening Levels

Contaminants		HIL – A / HSL A (Direct Contact)	HSL A&B silt 0 m to <1 m
Metals	Arsenic	100	-
	Cadmium	20	-
	Chromium (VI)	100	-
	Copper	6000	-
	Lead	300	-
	Mercury (inorganic)	40	-
	Nickel	400	-
	Zinc	7400	-
PAH	Benzo(a)pyrene TEQ ¹	3	-
	Total PAH	300	-
	Naphthalene	*1400	4
Phenols	Phenol (Pentachlorophenol as initial screen)	3000	-
TRH	C6-C10	*4400	-
	>C10-C16	*3300	-
	>C16-C34	*4500	-
	>C34-C40	*6300	-
	C6 – C10 (less BTEX) [F1]	-	40
	>C10-C16 (less Naphthalene) [F2]	-	230

Contaminants		HIL – A / HSL A (Direct Contact)	HSL A&B silt
			0 m to <1 m
BTEX	Benzene	*100	0.6
	Toluene	*14 000	390
	Ethylbenzene	*4500	NL ³
	Xylenes	*12 000	95
OCP	DDT+DDE+DDD	240	-
	Aldrin and dieldrin	6	-
	Chlordane	50	-
	Endosulfan	270	-
	Endrin	10	-
	Heptachlor	6	-
	HCB	10	-
	Methoxychlor	300	-
OPP	Chlorpyrifos	160	-
PCB	PCBs ²	1	-

Notes

- 1 sum of carcinogenic PAH
 - 2 non dioxin-like PCB only
 - 3 The soil saturation concentration (Csat) is defined as the soil concentration at which the porewater phase cannot dissolve any more of an individual chemical. The soil vapour that is in equilibrium with the porewater will be at its maximum. If the derived soil HSL exceeds Csat, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'.
- * Direct contact HSL.

9.1.2 Ecological Investigation and Screening Levels

The EIL are applicable for assessing risk to terrestrial ecosystems and have been derived for As, Cr III, Cu, Pb, Ni, Zn, naphthalene and DDT for three generic land use scenarios. EIL 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) as follows:

$$\text{EIL} = \text{ABC} + \text{ACL}$$

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. ACL are based on soil characteristics including pH, CEC and clay content.

There are different methods for determining the ABC, the preferred method being through direct measurement at an appropriate reference site. In situations where an appropriate reference point cannot be determined, the methods detailed in Olszowy et al. (1995) or Hamon et al. (2004) may be used.

The EIL (and ACL where appropriate) for As, Pb, naphthalene and DDT are generic in that they are not dependent on soil properties, whereas the EIL for Cr III, Cu, Ni and Zn are site specific. To derive these site specific EIL, an *Interactive (Excel) Calculation Spreadsheet* was used. (SCEW (Standing Council on Environment and Water) website (<http://www.scew.gov.au/node/941>)).

The site-specific data and assumptions used to determine the EIL is summarised in Table 6 below, and the adopted EILs are shown in Table 7. A conservative clay content of 10% has been adopted, in the absence of site-specific data.

Table 6: Inputs to the Derivation of EIL

Variable	Input	Rationale
Depth of EIL application	Top 2 m of the soil profile	The top 2 m depth below ground level corresponds to the root zone and habitation zone of many species.
Contamination type	Aged	Given the likely source of soil contaminants (i.e. historical site use/fill), the contamination is considered as “aged” (>2 years).
Input Parameters	state = NSW traffic volume = high	The site is in NSW, and is located within a developed area.
Land Use	Urban residential and Public Open Space	This land use is broadly equivalent to the HIL-A land use scenario. A protection level of 80% for urban residential areas and public open space has been adopted.

Table 7: Ecological Investigation Levels (EIL) in mg/kg

Analyte		EIL Residential Open Space	Comments
Metals	Arsenic	100	Generic value
	Chromium III	410 ^a	Adopted values: pH = 5.2 (average of three samples) CEC = 3.6 cmol _e /kg (average of three samples and replicate) Clay content:10 %
	Copper	95 ^b	
	Lead	1100	Generic value
	Nickel	20 ^c	Adopted values: pH = 5.2 (average of three samples) CEC = 3.6 cmol _e /kg (average of three samples and replicate) Clay content:10 %
	Zinc	240 ^b	
OCP	DDT	180	Generic value
PAH	Naphthalene	170	Generic value

 Notes: ^a – EIL value based on clay content

^b – EIL value based on pH and CEC

^c – EIL value based on CEC

The ESL have also been developed for assessing risk to terrestrial ecosystems. ESL broadly apply to coarse and fine-grained soils and have been derived for the same three land use settings as the EIL.

The ESL have been derived for petroleum fractions F1 to F4 as well as BTEX and benzo(a)pyrene. The inputs to the derivation of the ESL is shown in Table 8, and the adopted ESL, extracted from Table 1B (6), Schedule B1 of NEPC (2013) are shown in Table 9.

Table 8: Inputs to the Derivation of ESL

Variable	Input	Rationale
Depth of ESL application	Top 2 m of the soil profile	The top 2 m depth below ground level corresponds to the root zone and habitation zone of many species.
Soil Texture	Fine	Based on dominant soil type (see Logs) which identified predominately silty clay / clay soils
Land use	Urban residential and Public Open Space	This land use is broadly equivalent to the HIL-A land use scenario.

Table 9: Ecological Screening Levels in mg/kg

Analyte		ESL (fine)	Comments
TRH	C6 – C10 (less BTEX) [F1]	180*	ESLs are of low reliability except where indicated by an asterisk (*) which are of moderate reliability
	>C10-C16 (less Naphthalene) [F2]	120*	
	>C16-C34 [F3]	1300	
	>C34-C40 [F4]	5600	
BTEX	Benzene	65	
	Toluene	105	
	Ethylbenzene	125	
	Xylenes	45	
PAH	Benzo(a)pyrene	0.7	

9.1.3 Management Limits

In addition to the application of HSL and ESL, a further screening measure is applicable to petroleum hydrocarbons, which takes into account policy considerations and reflect the nature and properties of petroleum hydrocarbons, including:

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

'Management limits' have been adopted in NEPC (2013) as interim Tier 1 guidance to avoid or minimise these potential effects. The criteria have been developed for petroleum fractions F1 to F4. The inputs to the derivation of the 'management limits' are presented in Table 10, and the values adopted, extracted from Table 1B(7), Schedule B1 of NEPC (2013) are shown in Table 11.

Table 10: Inputs into the Derivation of Management Limits

Variable	Input	Rationale
Depth of Management Limit application	Any depth within the soil profile	'Management limits' apply to any depth within the soil profile
Soil Texture	Fine	Based on dominant soil type (see Logs) which identified predominately silty clay / clay soils
Land use	Residential, parkland and public open space	This land use is broadly equivalent to the HIL-A land use scenario.

Table 11: Management Limits

Analyte		Management Limit (fine)
TRH	C ₆ – C ₁₀ (F1)	800
	>C ₁₀ -C ₁₆ (F2)	1000
	>C ₁₆ -C ₃₄ (F3)	3500
	>C ₃₄ -C ₄₀ (F4)	10 000

9.1.4 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.

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 fibrous asbestos (FA) and asbestos fines (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 was not undertaken as part of these works therefore 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.

9.2 Groundwater

The groundwater investigation levels (GIL) adopted in NEPC (2013) are based on:

- Australian Water Quality Guidelines 2000 (AWQG);
- Australian Drinking Water Guidelines 2011 (ADWG); and
- National water quality management strategy. Australian and New Zealand guidelines for fresh and marine water quality 2000 (ANZECC & ARMCANZ).

The ANZECC & ARMCANZ (2000) guidelines were revised and replaced in 2018 with the Australian and New Zealand Governments (ANZG), Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018 (ANZG, 2018). However, given that these guidelines are currently under review, the ANZECC & ARMCANZ (2000) guidelines have been adopted for this investigation.

The GIL used for interpretation of the groundwater data are based on the risks posed by contaminated groundwater, at or down-gradient of the site, as well as the potential uses of groundwater, as follows:

- Risk to aquatic ecosystems - based on general site topography, groundwater that flows beneath the site is anticipated to discharge to Moores Creek, located north east of the site. The 'freshwater' guidelines have therefore been applied for the protection of aquatic ecosystems, consistent with the freshwater discharge point.
- Risk to human health - exposure to VOC (including TRH and BTEXN) via the vapour intrusion pathway is considered a risk to human health, therefore the groundwater HSLs for vapour intrusion have been applied for protection of human health; and
- Potential groundwater use – Based on review of the groundwater bore database (see Section 4.3), there were no bores used for irrigation or potable use within 500 m of the site. Therefore, the drinking water criteria has not been adopted. Furthermore, given that the nearest surface water body is located approximately 500 m from the site, the recreational guidelines are not considered to be relevant.

A summary of the groundwater criteria applied in the investigation is given in Table 12 below.

Table 12: Summary of Groundwater Criteria

Risk Assessment	Criteria	Source	Comments / Rationale
Aquatic Ecosystems	<p>Trigger values for freshwater (Groundwater Investigation Levels)</p> <p>95% level of species protection (or 99% for certain analytes – see comments column)</p>	ANZECC & ARMCANZ (2000)	<p>The GIL for freshwater has been applied as it is consistent with the expected discharge point of Moores Creek.</p> <p>The 95% level of species protection has been applied, consistent with a slightly-moderately disturbed system.</p> <p>ANZECC & ARMCANZ (2000) note that for certain contaminants (i.e. mercury, chlordane, DDT, endosulfan, endrin, and heptachlor), a 99% level of species protection should be applied.</p>
Human Health	HSL A & B (applying silt and depth range of 2 m to <4 m)	NEPC (2013) and CRC CARE (2011)	<p>HSL for silt has been selected, as this is the dominant soil type at the site, and also more conservative than clay.</p> <p>A depth range of 2 m to <4 m has been used as an initial conservative screen. Should any hydrocarbon contamination in groundwater be <2.0 m from or in contact with a future proposed basement, a site-specific human health risk assessment may be warranted.</p>

10. Fieldwork Results

10.1 Soil

Details of the subsurface conditions encountered are given in the borehole logs in Appendix E, together with notes defining classification methods and descriptive terms. A summary of the ground profile encountered is provided below:

ASPHALTIC CONCRETE/ CONCRETE: Asphaltic concrete was encountered in BH406, underlain by a 150 mm thick concrete slab. Concrete kerb was encountered to depths of 0.15 m in BH407.

FILL: Fill was encountered in all boreholes, with the exception of BH406, to depths of up to 1.2 m. Relatively shallow fill, up to depths of 0.3 m was encountered in BH405 and BH407.

The fill varied from sand, silt, clay and gravel, but typically comprised clay fill. Roadbase gravel was encountered in BH407 from depths of 0.15 m to 0.3 m. Anthropogenic inclusions including ceramic fragments, plastic and concrete gravel were observed in the fill in BH401, BH403 and BH404.

CLAY: Varying from orange, red, brown, grey clay was encountered in all boreholes to depths of up to 2.5 m (but typically up to depths of approximately 2.0 m). Sandy clay was observed in BH401 from depths of 1.2 m to 2.0 m. Boreholes BH403, BH407 and BH408 terminated in clay due to hand auger refusal on an ironstone band at depths of 1.1 m, 1.4 m and 1.6 m respectively.

SANDSTONE: varying from extremely low strength to high strength sandstone was encountered in BH401, BH402, BH404, BH405, BH406 underlying clay to borehole termination. Push tube refusal on extremely low strength sandstone was encountered in BH402 and BH404 at depths of 3.15 m and 2.35 m respectively.

Results of PID sample screening are shown on borehole logs. The PID readings were all <5 ppm, suggesting the general absence of gross VOC / hydrocarbon contamination at the locations sampled and screened.

No free groundwater was observed in any of the boreholes during push tubing or augering.

10.2 Groundwater Levels

Groundwater wells were surveyed using a dGPS to obtain ground level in m AHD. The results of the groundwater level measurements recorded prior to sampling are presented in Table 13. It should be noted that groundwater levels are potentially transient.

Table 13: Summary of Groundwater Level Measurements

Well Sampling				
Well ID	Location of Monitoring Well	Ground Level* (m AHD)	SWL (m bgl)	SWL (m AHD)
MW401	Down-gradient	82.1	3.8	78.3
MW406	Up-gradient	86.4	3.3	83.1

Notes: *surveyed using a dGPS
 AHD – Australian Height Datum
 SWL – standing water level
 bgl – below ground level

No LNAPL was observed or detected by the bailer or interface meter during well sampling.

11. Laboratory Analytical Results

11.1 Soil

The analytical results for the soil samples are summarised in Tables D1 to D2, Appendix D together with the adopted SAC. Laboratory certificates of analysis are provided in Appendix G.

- The recorded concentrations of BTEX, phenols, OCP, OPP, PCB and asbestos were below the laboratory limit of reporting (LOR) and SAC for all soil samples;
- The recorded concentrations of metals and PAH were below the LOR and / or SAC for all soil samples with the exception of the following:
 - o Concentrations of copper in sample BH405/0.2 (200 mg/kg) which exceeded the EIL of 95 mg/kg; and
 - o Concentrations of benzo(a)pyrene in samples BH408/0.2 (1.2 mg/kg) and BH408/0.5 (0.85 mg/kg) which exceeded the ESL of 0.7 mg/kg.
- The recorded concentrations of TRH were below the LOR and /or SAC in all samples.

The above results are discussed in detail below.

Given that the concentration of copper in sample BH405/0.2 was less than 250% of the SAC, the 95% UCL was calculated for the dataset, noting that the sample size of the dataset consisted of nine distinct data values, as opposed to the recommended ten. The calculated 95 % UCL for copper was 124.1 mg/kg (see Appendix D), which is above the SAC (refer to Section 12 for further details).

DP notes that the NEPM ESL of 0.7 mg/kg is based on a single invertebrate species referenced in the 1999 Canadian Soil Quality Guidelines (since updated) and is considered conservative in the Australian context. These guidelines were updated in 2010 and now suggest a B(a)P concentration of 20 mg/kg for the protection of environmental health based on the soil contact exposure pathway. In addition, given the low reliability of B(a)P ESL, NEPC (2013) makes reference to Table 11 of the CRC (2017). CRC (2017) indicates a high reliability ecological guideline for fresh B(a)P of 33 mg/kg (and a

range of 21 mg/kg to 135 mg/kg). As the concentrations of B(a)P recorded are well below 20 mg/kg, no further investigation or remediation is considered to be warranted at location BH408.

11.2 Groundwater

The analytical results for the groundwater samples are summarised in Table D3, Appendix D together with the adopted SAC. Laboratory certificates of analysis are provided in Appendix G.

Concentrations of all contaminants were either below the LOR or the SAC, with the exception of zinc in all samples (concentrations ranging from 10 to 16 µg/L) which exceeded the GIL of 8 µg/L. These results are however considered to be typical of groundwater conditions in urban settings. DP notes that the detection limit for some analytes were higher than the SAC.

11.3 Preliminary Waste Classification

EPA (2014) contains a six-step procedure for determining the type of waste and the waste classification. Part of the procedure, for materials not classified as special waste or pre-classified waste, is a comparison of analytical data initially against contaminant threshold (CT) values specific to a waste category. Alternatively, the data can be assessed against specific contaminant concentration (SCC) thresholds when used in conjunction with toxicity characteristic leaching procedure (TCLP) thresholds.

The following Table 14 presents the results of the six-step procedure outlined in EPA (2014) for determining the type of waste and the waste classification. This process applies to the fill (including surface soils) at the site, which do not meet the definition of virgin excavated natural material (VENM).

Table 14: Waste Classification

Step	Comments	Rationale
1. Is the waste special waste?	No	No ACM was observed during the field investigation and asbestos was not detected in laboratory analysed samples.
2. Is the waste liquid waste?	No	The filling comprised a soil matrix.
3. Is the waste "pre-classified"?	No	The filling material is not pre-classified with reference to EPA (2014).
4. Does the waste possess hazardous waste characteristics?	No	The waste was not observed to contain or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances, corrosive substances, coal tar, batteries, lead paint or dangerous goods containers.
5. Determining a wastes classification using chemical assessment	Conducted	Refer to Table D4, Appendix D.
6. Is the waste putrescible or non-putrescible?	Non-Putrescible	The filling does not contain materials considered to be putrescible ^a .

Note: a wastes that are generally not classified as putrescible include soils, timber, garden trimmings, agricultural, forest and crop materials, and natural fibrous organic and vegetative materials (EPA, 2014).

The results of the preliminary waste classification have been tabulated against the relevant waste classification criteria from NSW EPA (2014) Waste Classification Guidelines in Table D4, Appendix D. A summary of the waste classification results exceeding the general solid waste (GSW) criteria without TCLP (CT1) thresholds is outlined below:

- Lead (140 mg/kg) and benzo(a)pyrene (1.2 mg/kg) in sample BH408/0.2 exceeded the CT1 criterion of 100 mg/kg and 0.8 mg/kg, respectively; and
- Benzo(a)pyrene (0.85 mg/kg) in sample BH408/0.5 exceeded the CT1 criterion of 0.8 mg/kg.

TCLP testing was undertaken on sample BH408/0.2 for lead and benzo(a)pyrene. Based on the TCLP results, filling material at the site has a general preliminary classification of general solid waste (GSW).

The laboratory analytical results have also been assessed against published background ranges for VENM classification. As shown on Table D4, contaminant concentrations of the natural soils were within the typical background concentrations. Therefore, natural soils at the site are preliminarily classified as VENM.

12. Discussion

The site history review identified that there were residential houses on the site since at least 1943 and over time, most of the structures were demolished. Part Lot 18 appears to have remained as

residential land use to the present day, however Part Lot 2003 appears to have been operating as a school / college from 1983 onwards. Based on the site history, the site is considered to have a low potential for contamination.

The current investigation comprised the drilling of eight boreholes and installation of two groundwater monitoring wells. Fill was encountered in all boreholes, with the exception of BH406, to depths of up to 1.2 m. Relatively shallow fill, up to depths of 0.3 m was encountered in BH405 and BH407. Anthropogenic inclusions including ceramic fragments, plastic and concrete gravel were observed in the fill in BH401, BH403 and BH404.

The soil laboratory analytical results indicated that concentrations of the fill and natural samples were below the SAC, with the exception of copper in sample BH405/0.2 and benzo(a)pyrene in sample BH408/0.2 and BH408/0.5 which exceeded the ecological-based SAC. With reference to Table 11 of the CRC (2017), the benzo(a)pyrene exceedances at BH408 was not considered to warrant further investigation.

With regards to the copper exceedance, the significance and applicability of this exceedance would be dependent on the proposed development and also site-specific soil physiochemical properties. On the basis that ecological receptors are likely to have adapted to the current environment (i.e. vegetation in the locality of BH405 appeared to be in good condition), no further investigation is warranted at this stage. If site soils in the vicinity of BH405 are to be reused in landscaped areas as part of the proposed development, then further assessment of their physiochemical properties is recommended.

Concentrations of contaminants in the groundwater samples were either below the LOR or the SAC, with the exception of zinc in all samples (concentrations ranging from 10 to 16 µg/L) which exceeded the GIL of 8 µg/L. These results however are considered to be typical of groundwater conditions in urban settings.

On the basis of the site history and the soil and groundwater results, DP does not consider a more detailed site investigation is warranted, subject to implementation of the recommendations outlined in Section 13 below.

13. Conclusion and Recommendations

DP considers that the site is suitable for the proposed development in accordance with SEPP 55 subject to the following conditions:

- If site soils in the vicinity of BH405 are to be reused in landscaped areas as part of the proposed development, then further assessment of the soil physiochemical properties is recommended;
- Data Gaps Assessment - Following demolition of the existing house, a data gaps assessment should be undertaken within the building footprint;
- Unexpected Finds - DP recommends the incorporation of an UFP to establish a strategy / management procedure to be followed during construction works, should unexpected finds of contamination be uncovered;

- Waste Classification - A detailed waste classification assessment should be undertaken during construction works to classify surplus soils for off-site disposal or potential off-site re-use, if required; and
- Considering the floor of the pool concourse level is proposed between RL 76.40 and 76.90 m AHD and the measured standing water level during the PSI is between RL 78.3 and 83.1 m AHD, passive dewatering (i.e. sump-and-pump system) is likely to be required. Groundwater can be discharged into stormwater or sewer subject to dewatering testing/monitoring of groundwater quality prior to/during dewatering and approval from the relevant authorities.

14. Exclusion

SSD application is assessed by the Department of Planning, Industry and Environment. The development application for a SSD must be accompanied by an Environmental Impact Statement (EIS). It should be noted that this report is not an EIS and does not fully comply with the Secretary's Environmental Assessment Requirements (SEARs). Some of the SEARs are addressed or overlapped in this report but excludes the following:

- **Rivers, streams, wetlands, estuaries (as described in s4.2 of the Biodiversity Assessment Method)** - The map will not address the s. 4.2 of the Biodiversity Assessment Method as this is beyond the scope of a contamination investigation;
- **Wetlands as described in s4.2 of the Biodiversity Assessment Method** - The map will not address the s. 4.2 of the Biodiversity Assessment Method as this is beyond the scope of a contamination investigation;
- **Groundwater dependent ecosystems** - Please note that for the baseline groundwater quality reported in the PSI, the groundwater criteria that have been adopted are based on the protection of freshwater species and are therefore considered to be generally protective of groundwater dependent ecosystems;
- **Intake and discharge locations** - The map will not show intake and discharge locations as this is beyond the scope of a contamination investigation;
- **Identify an adequate and secure water supply for the life of the project. This includes confirmation that water can be sourced from an appropriately authorised and reliable supply. This is also to include an assessment of the current market depth where water entitlement is required to be purchased.** This requirement does not apply to our current PSI scope and typically applicable to other disciplines;
- **Provide a detailed and consolidated site water balance** – This requirement does not apply to our current PSI scope and is typically applicable to an Environmental Impact Statement (EIS) or similar;
- **Provide an Assessment of impacts on surface and ground water sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian lands, and groundwater dependent ecosystems, and measures to proposed to reduce and mitigate these impacts** – We cannot comment on impacts relevant to: related infrastructure, adjacent licensed water users, basic landholder rights, watercourses,

riparian lands and measures to proposed to reduce and mitigate these impacts as such information is usually an outcome of an EIS or similar;

- **Provide proposed surface and groundwater monitoring activities and methodologies.** Considering that there was no natural surface water observed on site, surface water monitoring would not be required. We have carried out groundwater investigation which consisted of one round of groundwater sampling event. We would not normally recommend long-term monitoring unless there is significant finding of groundwater contamination. Groundwater monitoring activities and methodologies required for dewatering should addressed in a dewatering management plan.

15. Limitations

Douglas Partners (DP) has prepared this report for this project at 29 & 37 Bancroft Avenue, Roseville in accordance with DP's proposal SYD190049.P.001.Rev1 dated 22 February 2019 and acceptance received from EPM Projects Pty Ltd, dated 6 March 2019, on behalf of the client, Anglican Schools Corporation. The work was carried out under a contract provided by Anglican Schools Corporation. This report is provided for the exclusive use of Anglican Schools Corporation for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site 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. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached 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 fill materials at the test locations sampled and analysed. Building demolition materials, such as concrete and ceramic fragments were, however, located in previous below-ground fill 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 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 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

Drawing

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

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

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

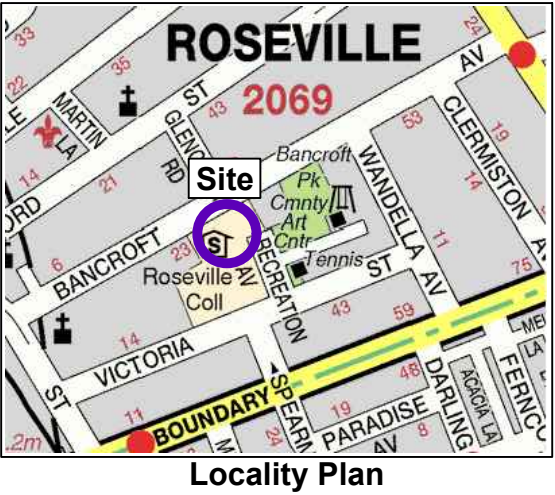
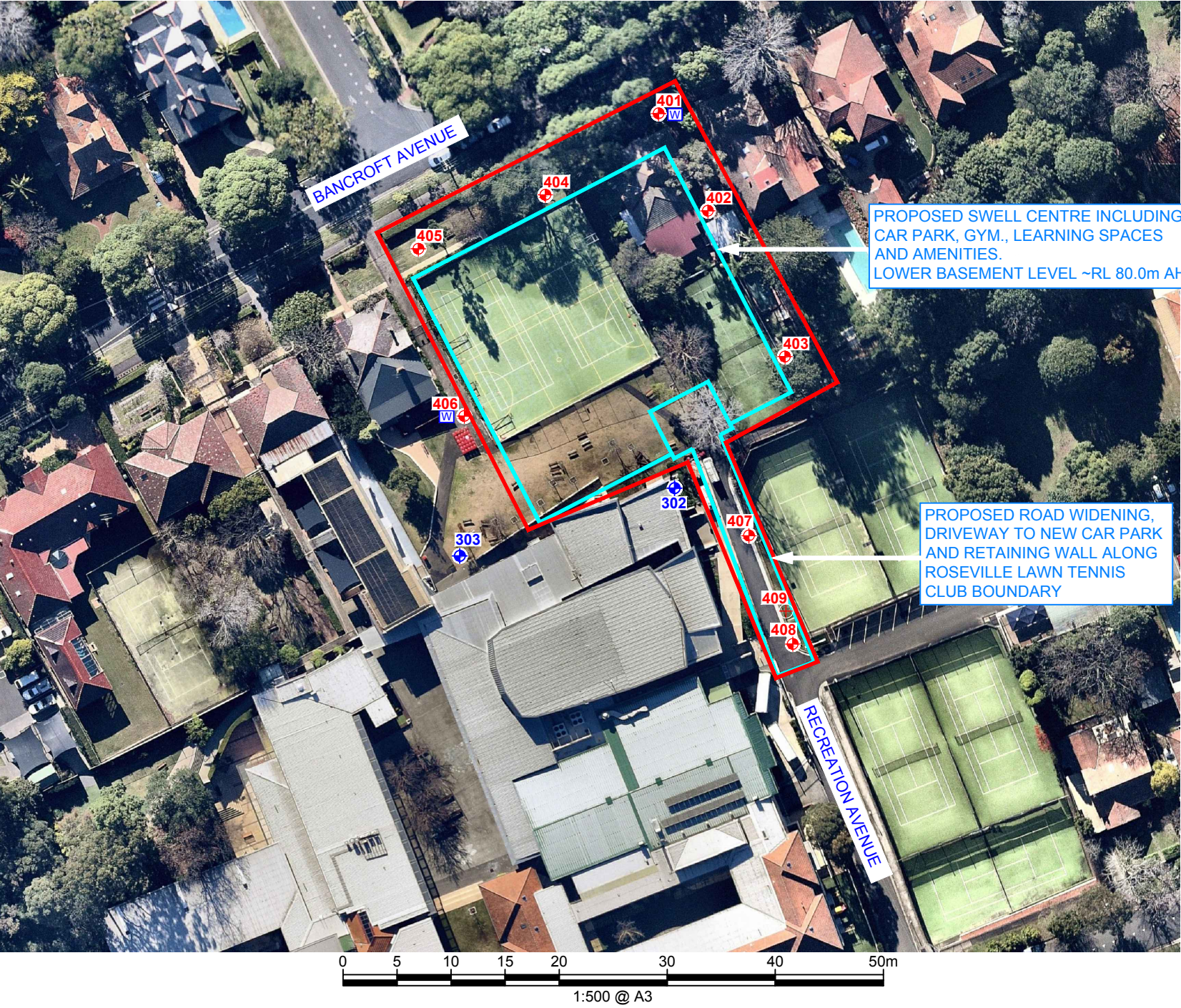
In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later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



NOTE:
2: Base image from Nearmap.com
(Date 1.7.2019)
2: Test locations are approximate only and are
shown with reference to existing features.

- LEGEND**
- ✚ Borehole location
 - + DCP test location
 - ✚ Previous borehole location
 - W Groundwater monitoring well
 - Proposed development boundary
 - Approximate site boundary



CLIENT: Anglican Schools Corporation
OFFICE: Sydney DRAWN BY: PSCH
SCALE: 1:1000 @ A3 DATE: 30.7.2019

TITLE: **Site Boundary and Borehole Locations**
Proposed Roseville College SWELL Centre
29 & 37 Bancroft Avenue, ROSEVILLE



PROJECT No: 85310.02
DRAWING No: 1
REVISION: 0

Appendix B

Site Photographs



Photo 1 – Residential house (northern portion of Lot 18)



Photo 2 – Swimming pool and tennis court (southern portion of Lot 18)



Site Photographs

Proposed Roseville SWELL Centre
29 & 37 Bancroft Avenue, Roseville

CLIENT: Anglican Schools Corporation

PROJECT: 85310.02

PLATE No: 1

REV: A

DATE: 16 July 2019



Photo 3 – Asphaltic concrete pathway



Photo 4 – Part Lot 2003.



Site Photographs

Proposed Roseville SWELL Centre
29 & 37 Bancroft Avenue, Roseville

CLIENT: Anglican Schools Corporation

PROJECT: 85310.02

PLATE No: 2

REV: A

DATE: 16 July 2019



Photo 5 – Grassed batter along Recreation Avenue



Photo 6 – Timber sleeper retaining wall

Appendix C

Site History Documentation



LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 21 Mar 2019 14:49:44

Reference: LS005497 EP

Address: 29 & 37 Bancroft Avenue, Roseville, NSW 2069

Disclaimer:

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

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Location Confidences

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

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

Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Finance, Services & Innovation	21/03/2019	21/03/2019	Daily	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	11/01/2019	11/01/2019	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	14/03/2019	20/02/2019	Monthly	1000	0	0	2
Contaminated Land Records of Notice	Environment Protection Authority	11/03/2019	11/03/2019	Monthly	1000	0	0	0
Former Gasworks	Environment Protection Authority	04/03/2019	11/10/2017	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	05/02/2019	07/03/2017	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	04/03/2019	04/03/2019	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program	Department of Defence	14/03/2019	14/03/2019	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	11/03/2019	16/11/2018	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	13/12/2018	13/12/2018	Annually	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	28/02/2019	28/02/2019	Monthly	1000	0	0	1
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	28/02/2019	28/02/2019	Monthly	1000	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	28/02/2019	28/02/2019	Monthly	1000	0	0	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	-	0	0
UBD Business to Business Directory 1986 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	1	1
UBD Business to Business Directory 1986 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1978 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
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	0	0
UBD Business Directory 1975 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1970 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	1
UBD Business Directory 1970 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1965 (Premise & Intersection Matches)	Hardie Grant			Not required	150	1	1	3
UBD Business Directory 1965 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	1
UBD Business Directory 1961 (Premise & Intersection Matches)	Hardie Grant			Not required	150	1	2	3
UBD Business Directory 1961 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	1

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 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	1	3	5
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	3
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	0	65
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	0	18
Points of Interest	NSW Department of Finance, Services & Innovation	11/01/2019	11/01/2019	Quarterly	1000	0	5	47
Tanks (Areas)	NSW Department of Finance, Services & Innovation	11/01/2019	11/01/2019	Quarterly	1000	0	0	0
Tanks (Points)	NSW Department of Finance, Services & Innovation	11/01/2019	11/01/2019	Quarterly	1000	0	0	0
Major Easements	NSW Department of Finance, Services & Innovation	11/01/2019	11/01/2019	Quarterly	1000	0	1	6
State Forest	NSW Department of Finance, Services & Innovation	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	16/01/2019	14/11/2018	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Botany Groundwater Management Zones	NSW Department of Primary Industries	15/03/2018	01/10/2005	As required	1000	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	0	27
Geological Units 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	1	-	2
Geological Structures 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	0	-	0
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Soil Landscapes	NSW Office of Environment & Heritage	12/08/2014		None planned	1000	2	-	4
Atlas of Australian Soils	CSIRO	19/05/2017	17/02/2011	As required	1000	1	1	1
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning and Environment	19/03/2019	09/11/2018	Weekly	500	1		
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	1	1
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	-	-	-
Mining Subsidence Districts	NSW Department of Finance, Services & Innovation	13/07/2017	01/07/2017	As required	1000	0	0	0
SEPP State Significant Precincts	NSW Department of Planning and Environment	19/03/2019	04/07/2104	Weekly	1000	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning and Environment	19/03/2019	08/02/2019	Weekly	1000	2	5	61
Commonwealth Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	31/07/2018	Unknown	1000	0	0	0
National Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	28/09/2018	Unknown	1000	0	0	0
State Heritage Register - Curtilages	NSW Office of Environment & Heritage	16/01/2019	09/11/2018	Quarterly	1000	0	0	0
Environmental Planning Instrument Heritage	NSW Department of Planning and Environment	19/03/2019	18/01/2019	Weekly	1000	1	6	117
Bush Fire Prone Land	NSW Rural Fire Service	26/02/2019	01/11/2018	Quarterly	1000	0	0	3
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment & Heritage	01/03/2017	16/12/2016	As required	1000	1	2	6

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Ramsar Wetlands of Australia	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	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	21/03/2019	21/03/2019	Weekly	10000	-	-	-

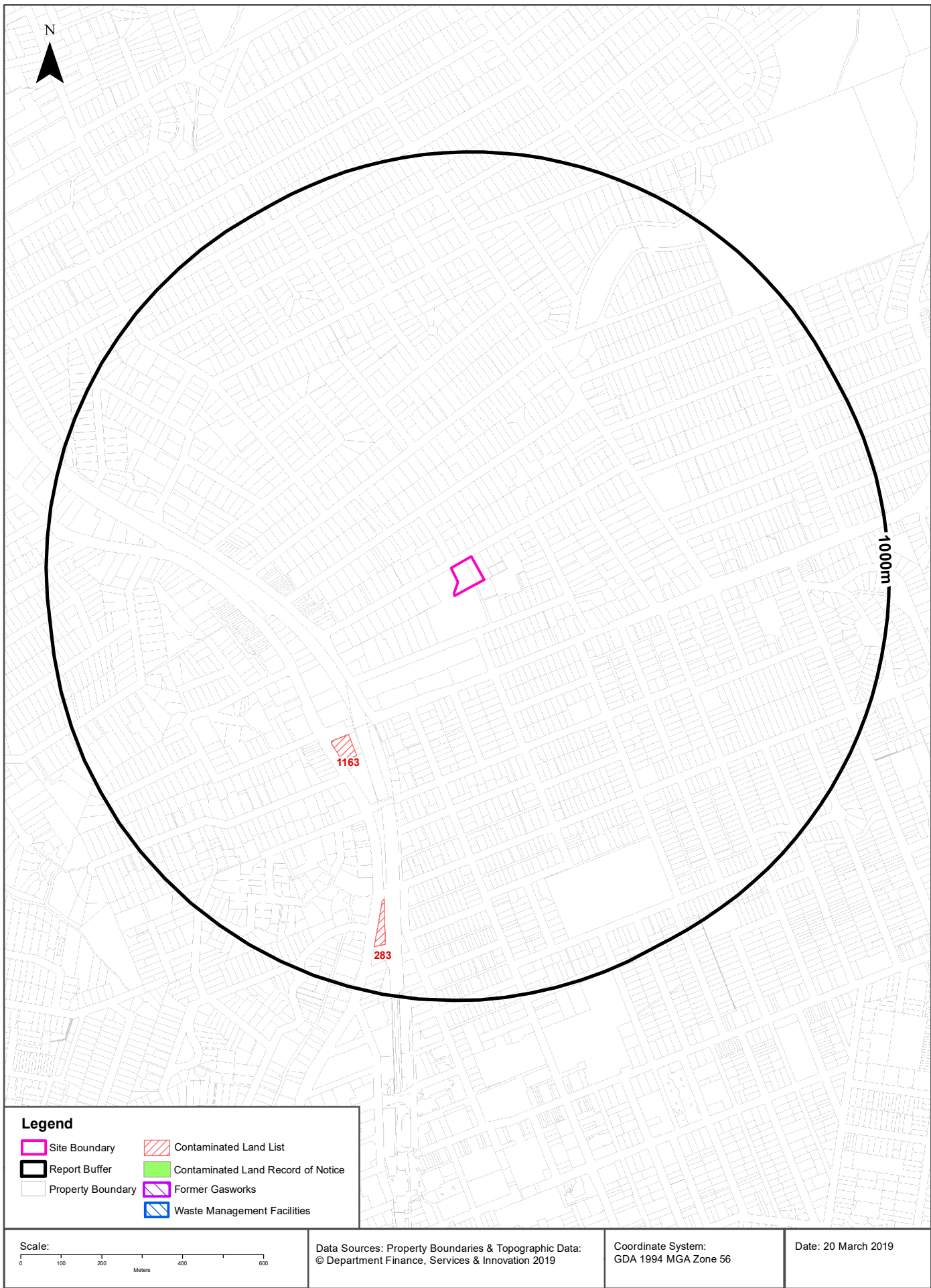
Aerial Imagery 2018

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Contaminated Land & Waste Management Facilities

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Contaminated Land & Waste Management Facilities

29 & 37 Bancroft Avenue, Roseville, NSW 2069

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
1163	Mobil Service Station	2 Boundary Street	Roseville	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	431m	South West
283	Coles Express Service Station Chatswood	877-879 Pacific Highway	Chatswood	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	769m	South

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

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

NSW EPA Contaminated Land List Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Contaminated Land & Waste Management Facilities

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

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

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

Former Gasworks

Former Gasworks within the dataset buffer:

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

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

National Waste Management Site Database

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

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

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

PFAS Investigation Sites

29 & 37 Bancroft Avenue, Roseville, NSW 2069

EPA PFAS Investigation Program

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

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

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

Defence PFAS Investigation & Management Program

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

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

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

Airservices Australia National PFAS Management Program

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

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

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

EPA Other Sites with Contamination Issues

29 & 37 Bancroft Avenue, Roseville, NSW 2069

EPA Other Sites with Contamination Issues

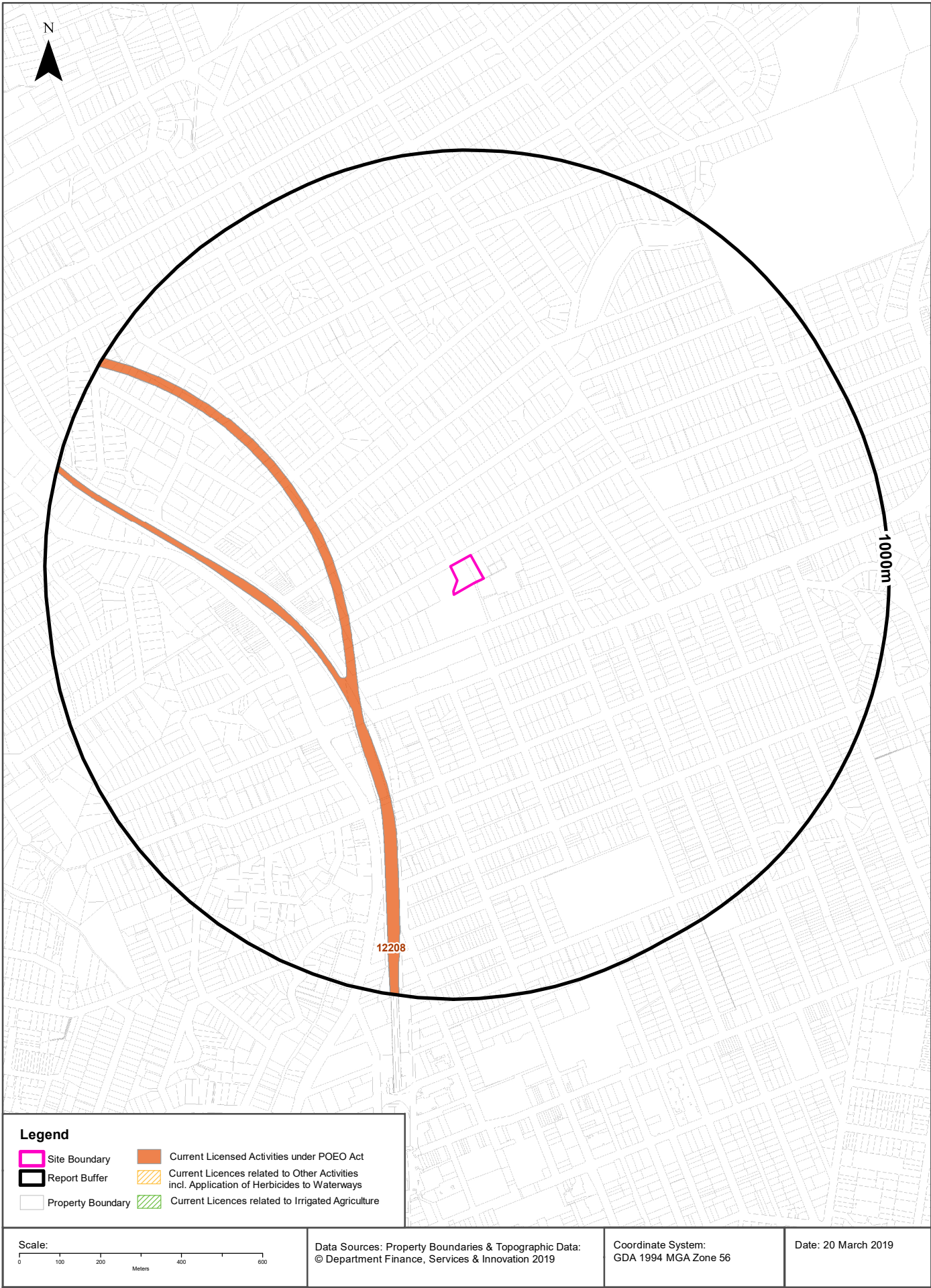
This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

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

Sites within the dataset buffer:

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

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



EPA Activities

29 & 37 Bancroft Avenue, Roseville, NSW 2069

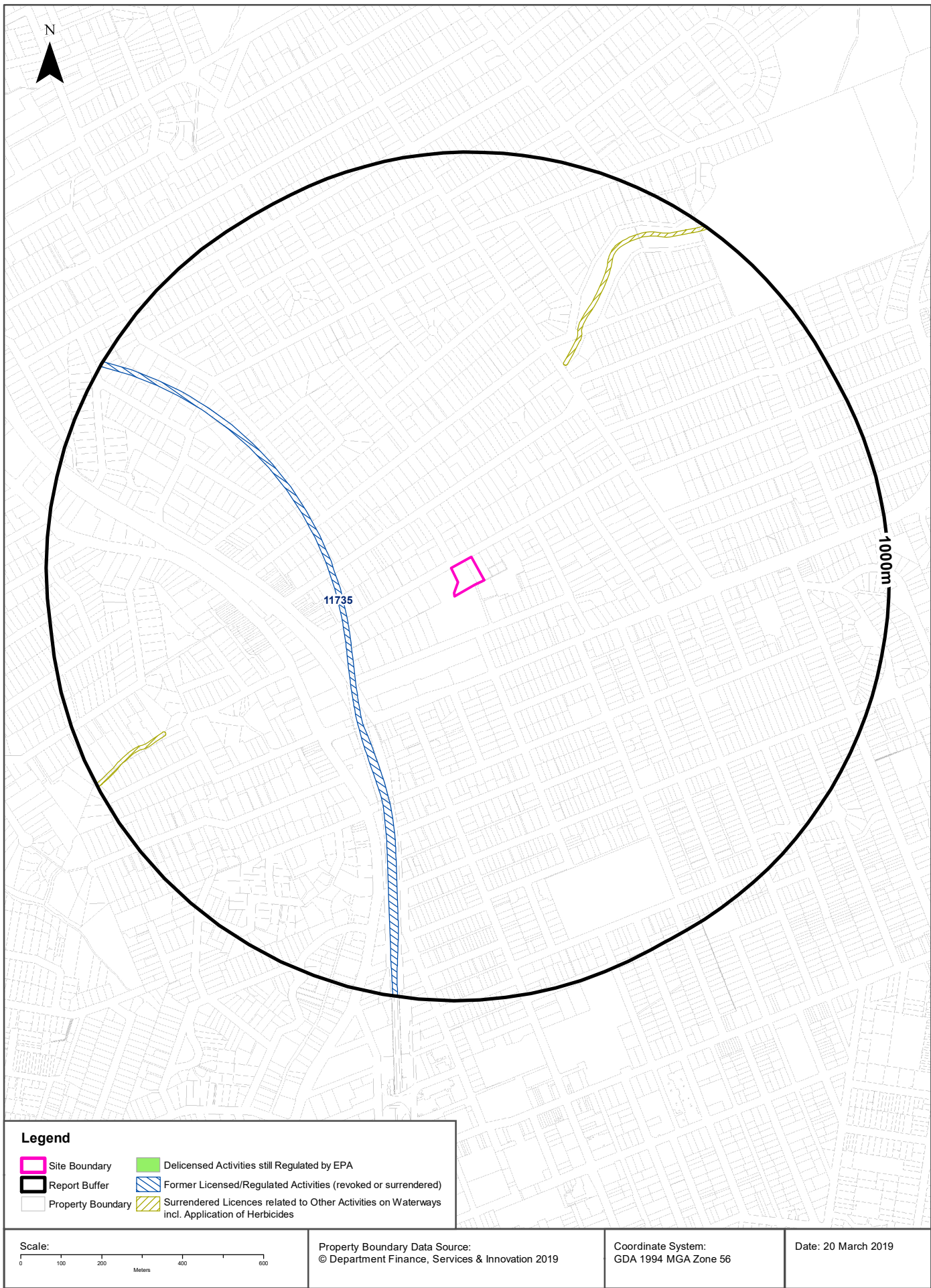
Licensed Activities under the POEO Act 1997

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

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
12208	SYDNEY TRAINS		PO BOX K349, HAYMARKET, NSW 1238		Railway systems activities	Network of Features	266m	West

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority



EPA Activities

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Delicensed Activities still regulated by the EPA

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

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

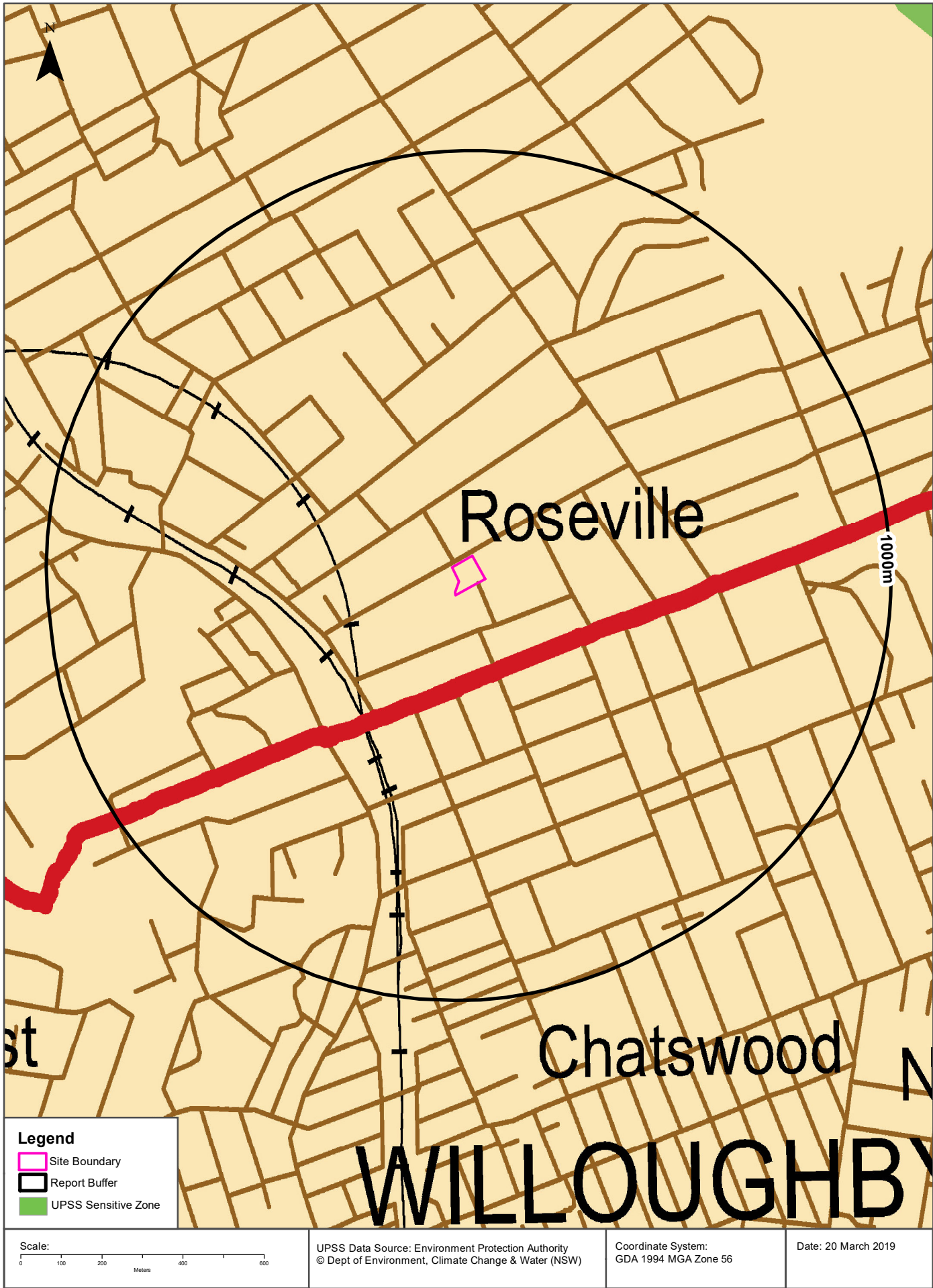
Delicensed Activities Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

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

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

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
11735	HOCHTIEF AG	-, MACQUARIE PARK, NSW 2113	Surrendered	04/09/2002	Railway systems activities	Road Match	271m	South West
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	526m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	526m	-
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	526m	-

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

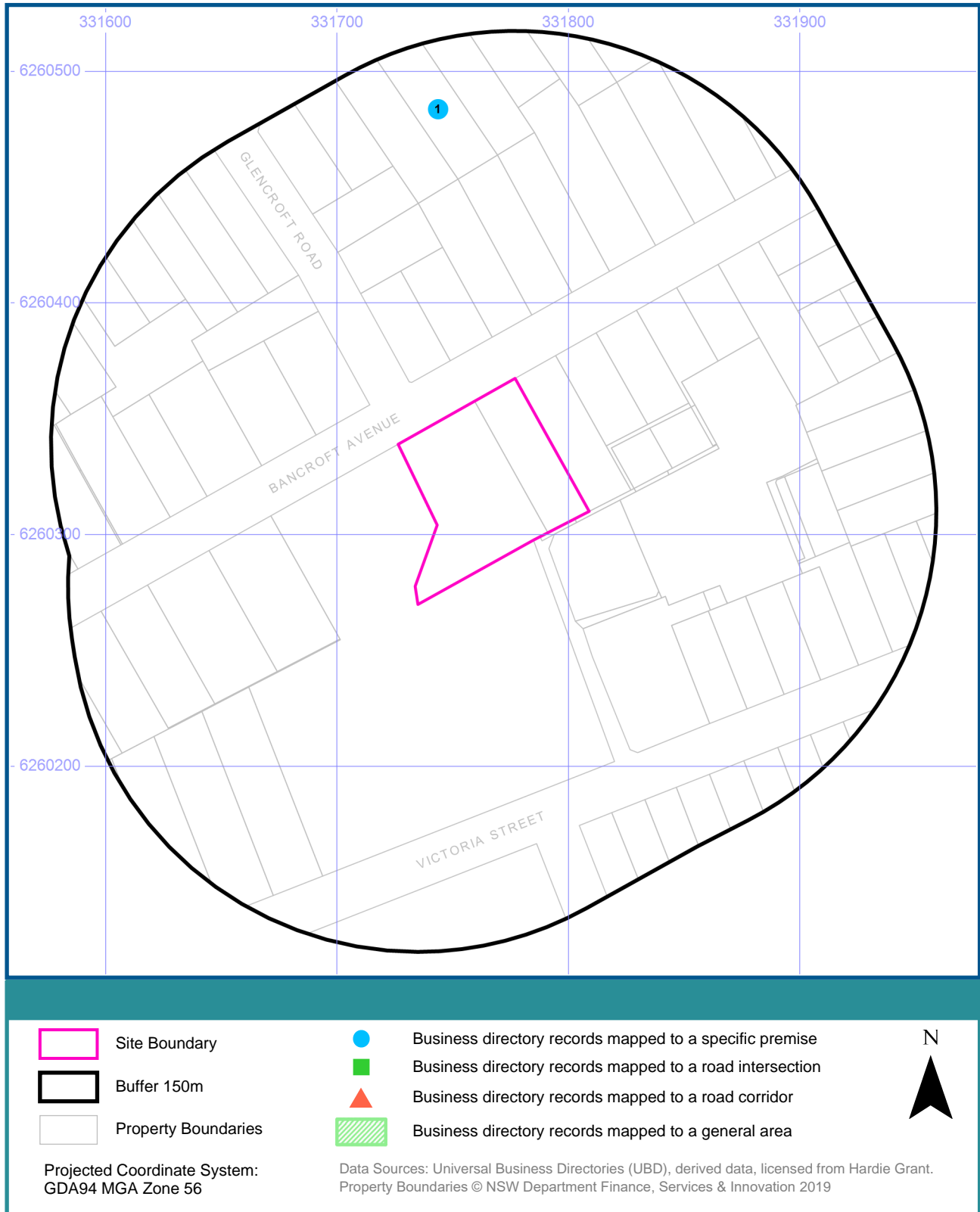


Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069



1991 Business to Business Directory Records



Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1991 Business to Business Directory Records Premise or Road Intersection Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	Instrument Industrial Mfrs &/or Imps &/or Dists	J.W. Industrial Instruments Pty Ltd, 45 Lord St., Roseville .2069	49210	Premise Match	89m	North

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1991 Business to Business Directory Records Road or Area Matches

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

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

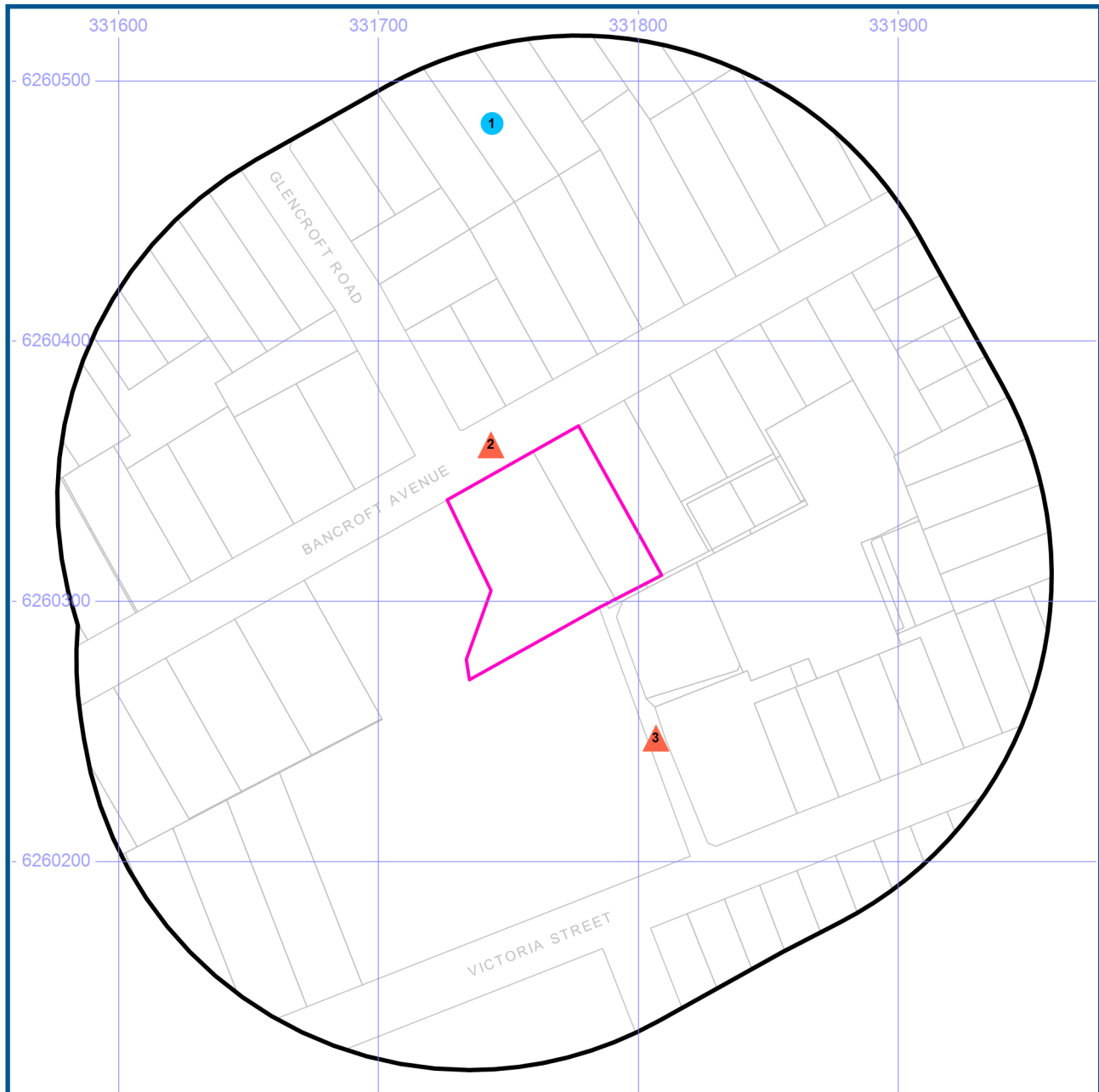
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Historical Business Directories





29 & 37 Bancroft Avenue, Roseville, NSW 2069



1986 Business to Business Directory Records



-  Site Boundary
-  Buffer 150m
-  Property Boundaries

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



Projected Coordinate System:
GDA94 MGA Zone 56

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Property Boundaries © NSW Department Finance, Services & Innovation 2019

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1986 Business to Business Directory Records Premise or Road Intersection Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	INSTRUMENT-INDUSTRIAL-MFRS. &/OR IMPS. &/OR DISTS.	J.W. Industrial Instruments Pty. Ltd., 45 Lord St., Roseville. 2069	48282	Premise Match	89m	North

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1986 Business to Business Directory Records Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
2	CLUBS &/OR SPORTING BODIES.	Roseville Bowling Club, Off Bancroft Ave., Roseville. 2069	18976	Road Match	0m
3	CLUBS &/OR SPORTING BODIES.	Roseville Tennis Club Ltd., Recreation Ave., Roseville. 2069	18978	Road Match	0m

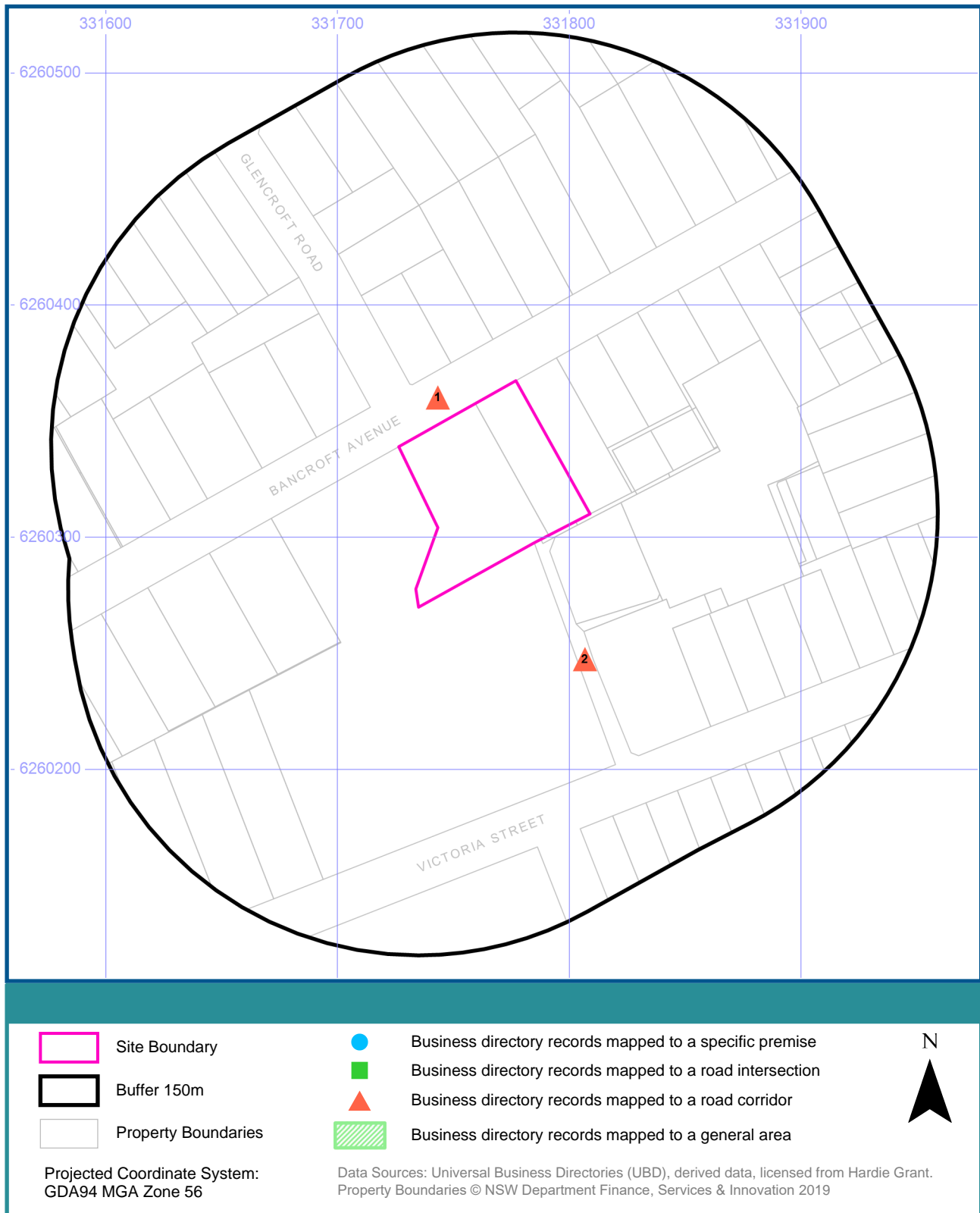
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Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069



1982 Business Directory Records



Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1982 Business Directory Records Premise or Road Intersection Matches

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

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

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1982 Business Directory Records Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	CLUBS &/OR SPORTING BODIES.(C5730)	Roseville Bowling Club, Off Bancroft Ave., Roseville. 2069.	17304	Road Match	0m
2	CLUBS &/OR SPORTING BODIES.(C5730)	Roseville Tennis Club Ltd., Recreation Ave., Roseville. 2069.	17306	Road Match	0m

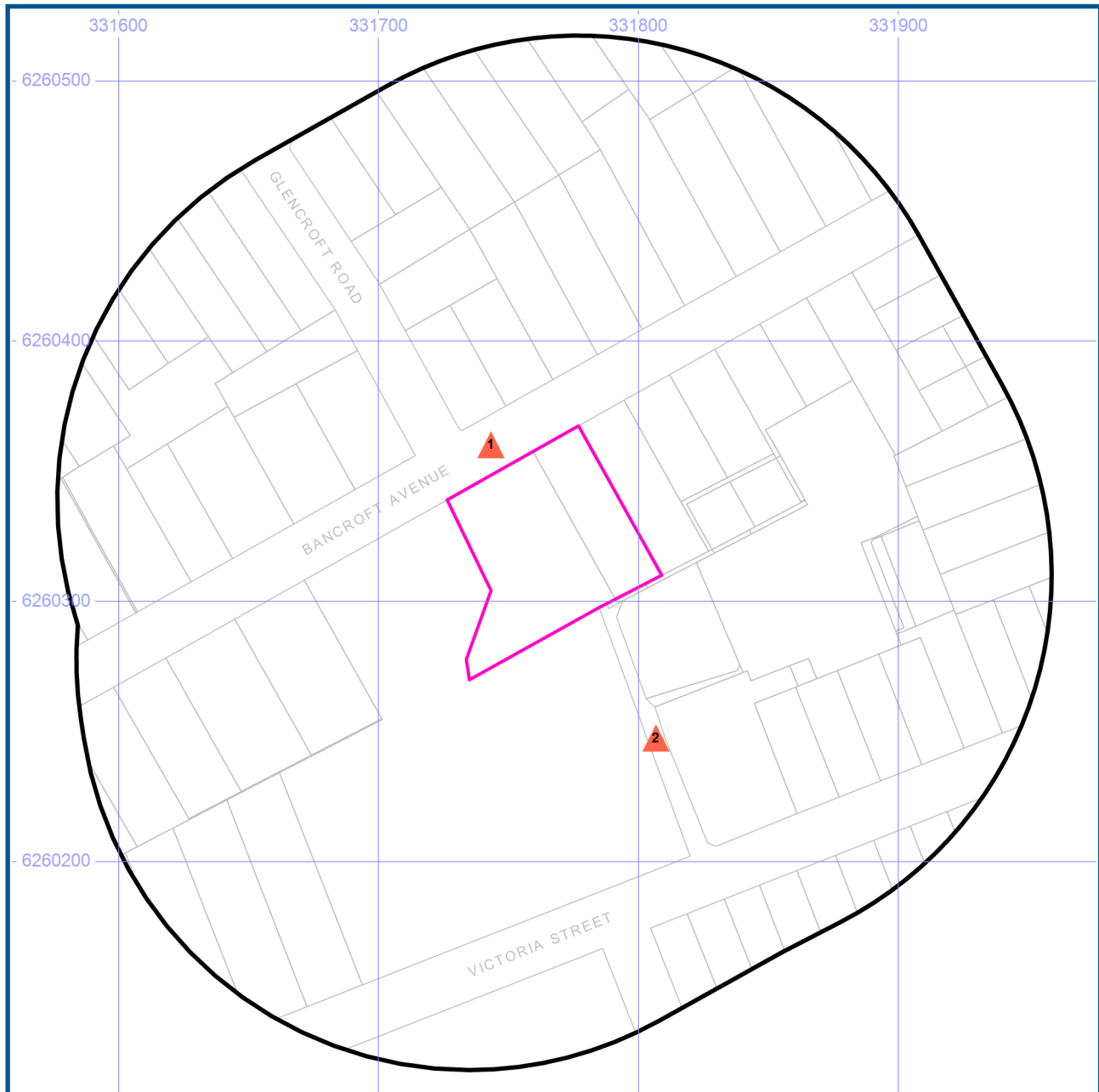
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Historical Business Directories





29 & 37 Bancroft Avenue, Roseville, NSW 2069



1978 Business Directory Records



-  Site Boundary
-  Buffer 150m
-  Property Boundaries

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



Projected Coordinate System:
GDA94 MGA Zone 56

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Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

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:

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

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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:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	CLUBS &/OR SPORTING BODIES.	Roseville Bowling Club. Off Bancroft Ave., Roseville.	15642	Road Match	0m
2	CLUBS &/OR SPORTING BODIES.	Roseville Tennis Club Ltd., Recreation Ave., Roseville.	15644	Road Match	0m

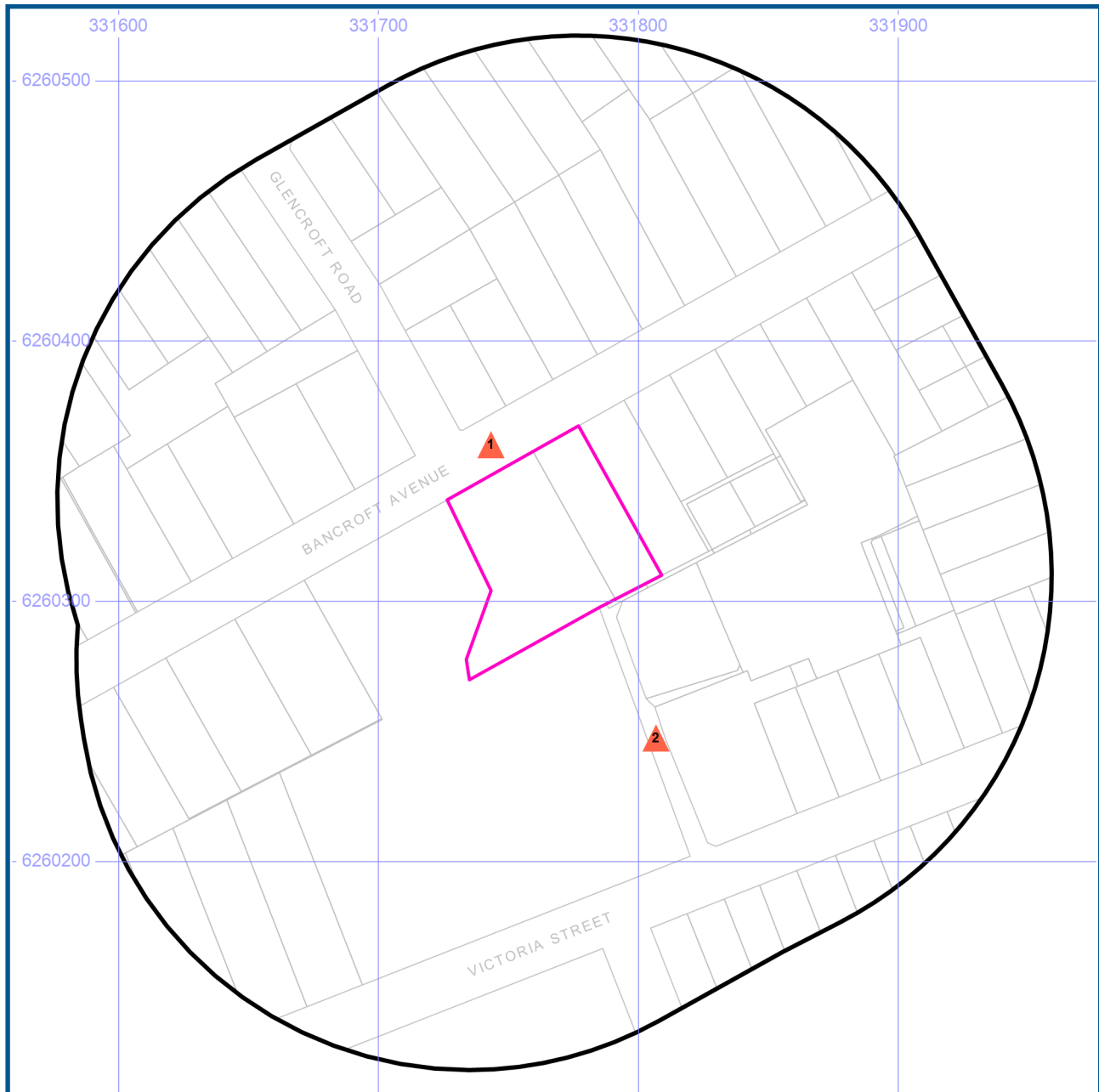
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Historical Business Directories





29 & 37 Bancroft Avenue, Roseville, NSW 2069



1975 Business Directory Records



-  Site Boundary
-  Buffer 150m
-  Property Boundaries

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



Projected Coordinate System:
GDA94 MGA Zone 56

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Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

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:

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

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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:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	CLUBS & /OR SPORTING BODIES	Roseville Bowling Club, Off Bancroft Ave., Roseville.	18113	Road Match	0m
2	CLUBS & /OR SPORTING BODIES	Roseville Tennis Club Ltd., Recreation Ave., Roseville.	18115	Road Match	0m

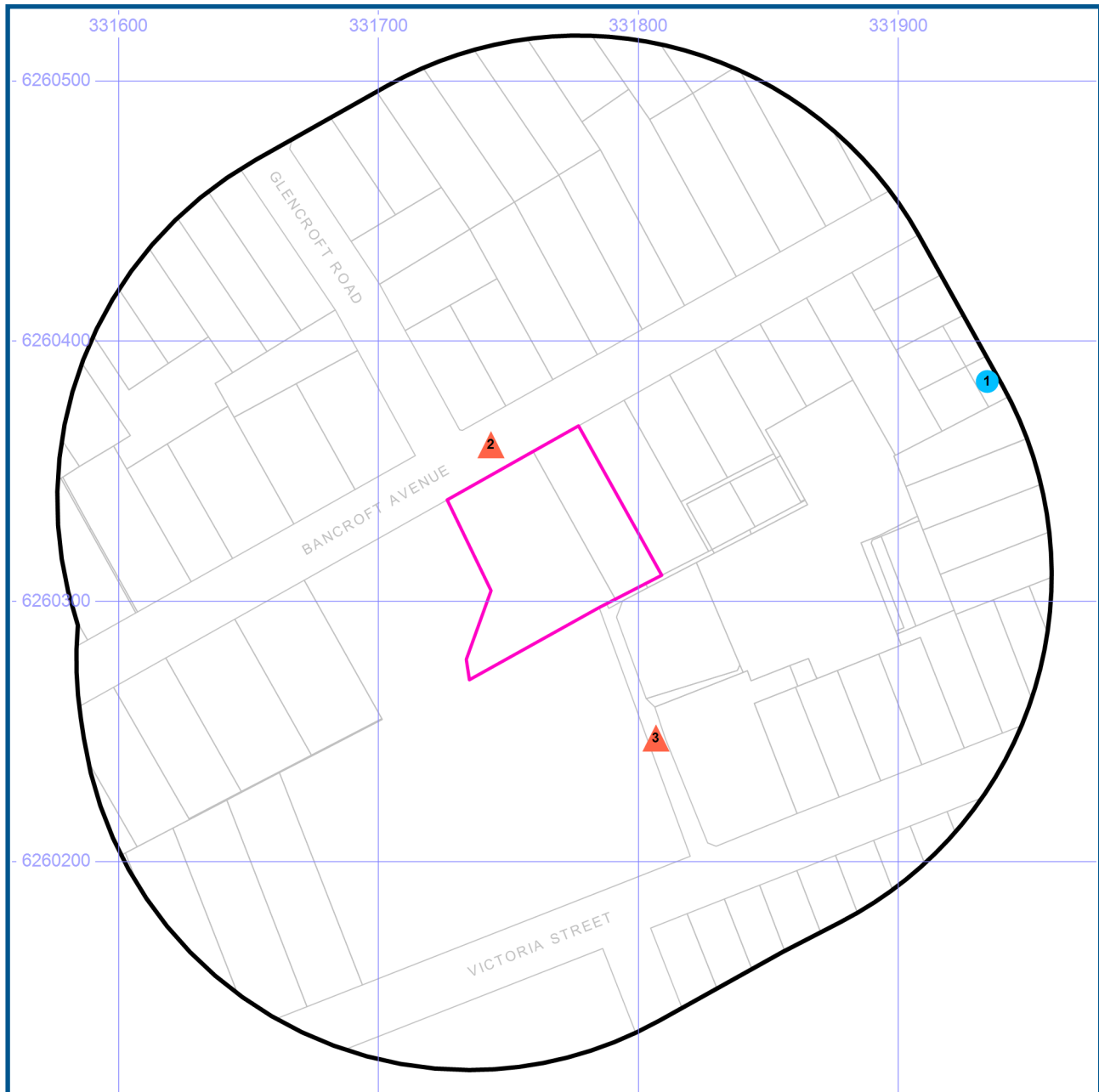
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Historical Business Directories





29 & 37 Bancroft Avenue, Roseville, NSW 2069



1970 Business Directory Records



-  Site Boundary
-  Buffer 150m
-  Property Boundaries

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



Projected Coordinate System:
GDA94 MGA Zone 56

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Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1970 Business Directory Records Premise or Road Intersection Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	ARCHITECTS (A440)	Perry, AS., 10 Wandella Ave., Roseville	262114	Premise Match	141m	East

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1970 Business Directory Records Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
2	CLUBS & SPORTING BODIES (C487)	Roseville Bowling Club Ltd., Bancroft Ave., Roseville	284618	Road Match	0m
3	CLUBS & SPORTING BODIES (C487)	Roseville Tennis Club Ltd., Recreation Ave., Roseville	284622	Road Match	0m

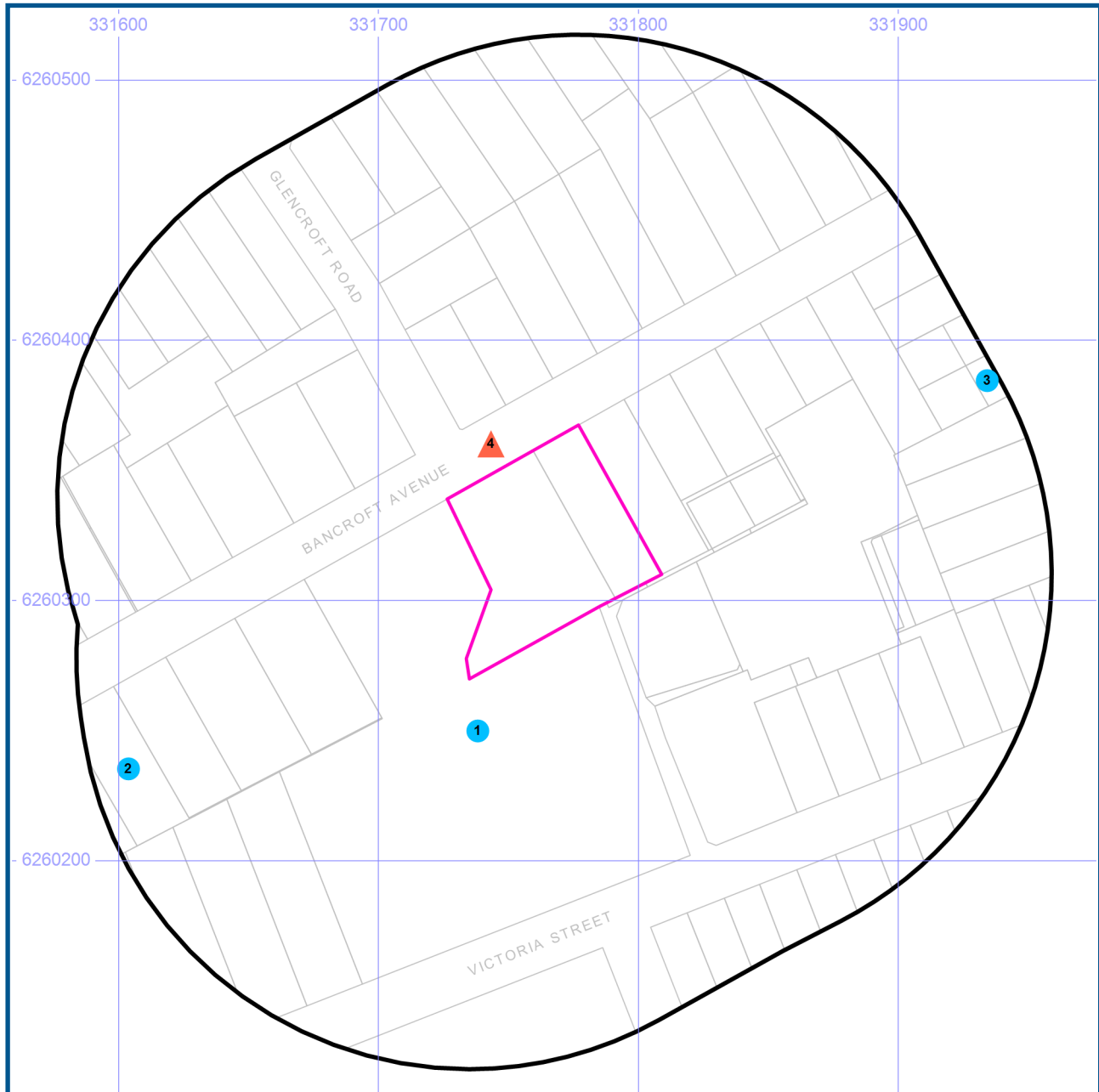
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Historical Business Directories





29 & 37 Bancroft Avenue, Roseville, NSW 2069



1965 Business Directory Records



-  Site Boundary
-  Buffer 150m
-  Property Boundaries

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



Projected Coordinate System:
GDA94 MGA Zone 56

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Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

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:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	Schools/Colleges - Private/Public	Roseville Girls' College., 29 Bancroft Ave., Roseville	142884	Premise Match	0m	On-site
2	Herbalists	Raine, Henry B. (Botanic Therapist), 15 Bancroft Ave., Roseville	100260	Premise Match	120m	South West
3	Architects	Perry, A. S. , 10 Wandella Ave., Roseville	46766	Premise Match	141m	East

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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:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
4	Clubs & Sporting Bodies	Roseville Bowling Club Ltd., Bancroft Ave., Roseville	69276	Road Match	0m

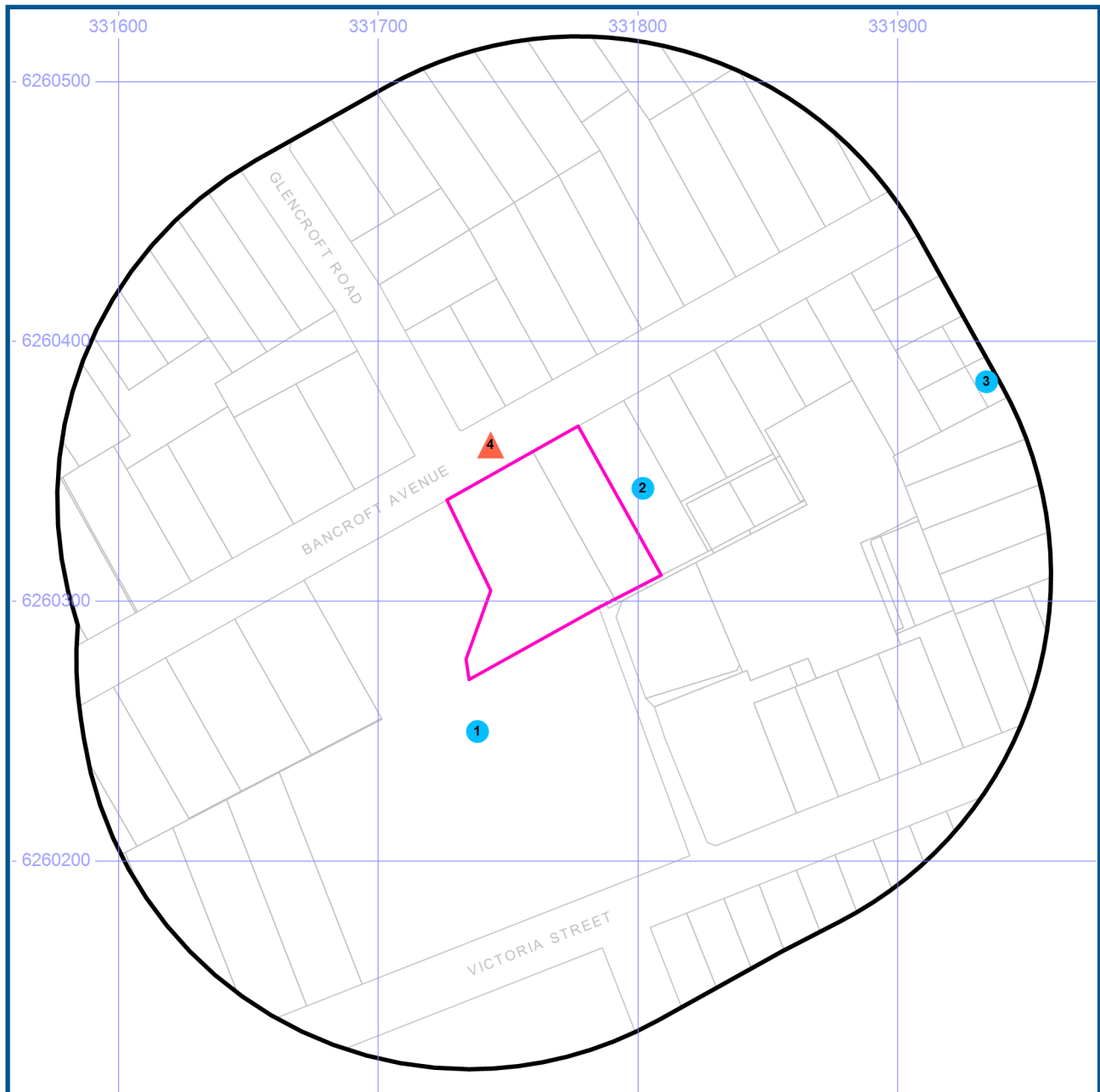
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Historical Business Directories





29 & 37 Bancroft Avenue, Roseville, NSW 2069



1961 Business Directory Records



-  Site Boundary
-  Buffer 150m
-  Property Boundaries

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



Projected Coordinate System:
GDA94 MGA Zone 56

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Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1961 Business Directory Records Premise or Road Intersection Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	SCHOOLS/COLLEGES-PRIVATE/PUBLIC	Roseville Girls' College, 29 Bancroft Ave., Roseville	248365	Premise Match	0m	On-site
2	FLORISTS-RETAIL	Primrose, Misses D. M., 39 Bancroft Ave., Roseville	312018	Premise Match	0m	North East
3	ARCHITECTS	Perry, A. S., 10 Wandella Ave., Roseville	268449	Premise Match	141m	East

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1961 Business Directory Records Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
4	CLUBS & SPORTS BODIES	Roseville Bowling Club Ltd., Bancroft Ave., Roseville	291759	Road Match	0m

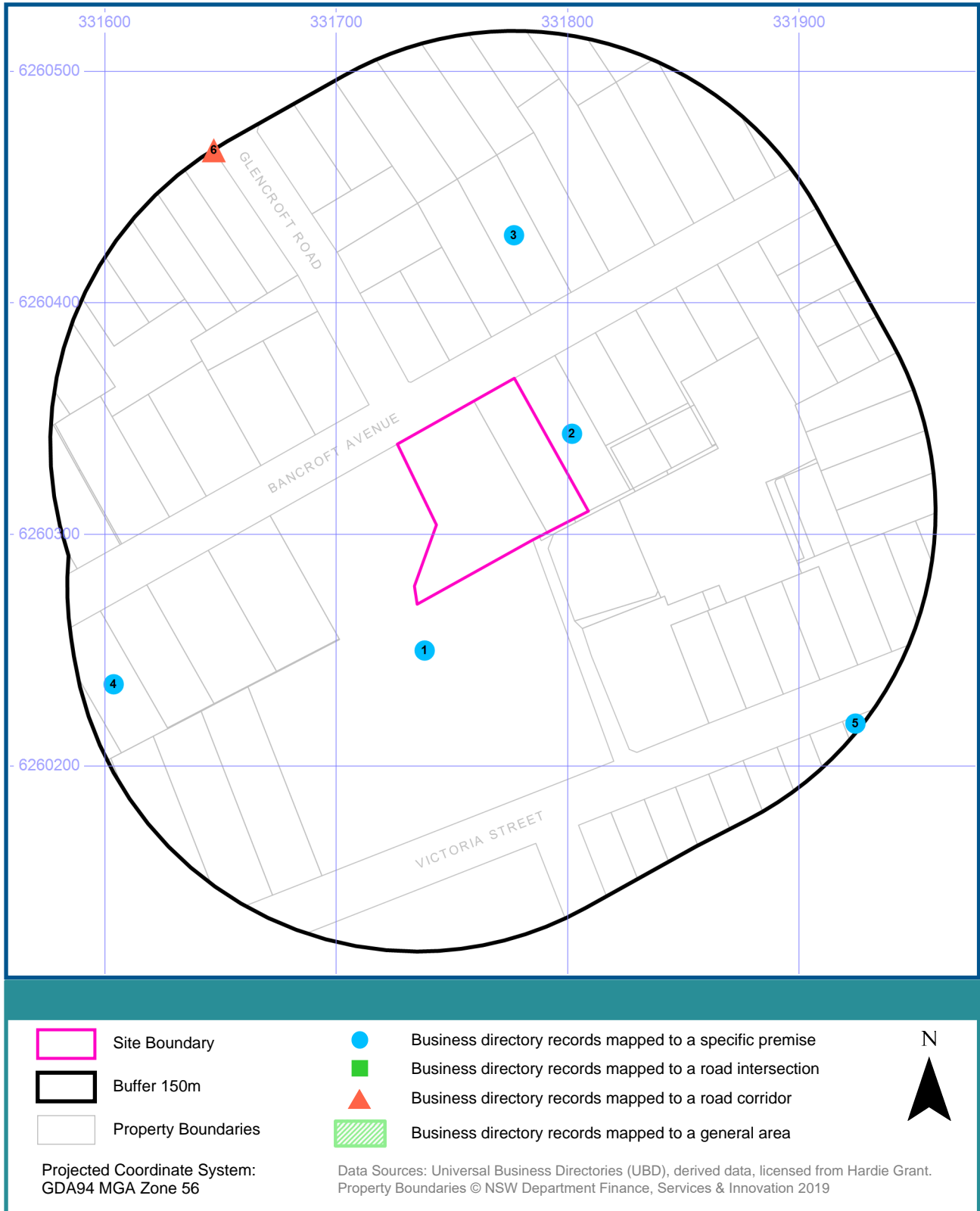
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Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069



1950 Business Directory Records



Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1950 Business Directory Records Premise or Road Intersection Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MUSIC TEACHERS	Roberts, Miss.Dagmar, 35 Bancroft Ave., Roseville	87530	Premise Match	0m	On-site
2	FLORISTS-RETAIL	Primrose, Misses D. M., 39 Bancroft Ave., Roseville	46122	Premise Match	0m	North East
3	MEDICAL PRACTITIONERS	Laver, E. G., 36 Bancroft Ave., Roseville	73253	Premise Match	28m	North
4	HERBALISTS	Ralne and Groves, 15 Bancroft Ave., Roseville	62079	Premise Match	120m	South West
5	MEDICAL PRACTITIONERS	Chandler, R. P., 49 Victoria St., Roseville	72610	Premise Match	142m	South East

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1950 Business Directory Records Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
6	ELECTRICAL SUPPLIES & APPLIANCES RETAILERS	Farrell, H. J. and G. E., Lord St., Roseville	38515	Road Match	149m
	RADIO SALES &/OR SERVICEMEN	Farrell, H. J. and G. E., Lord St., Roseville	97189	Road Match	149m
	TAXIS	Roseville Taxi Service, Lord St., Roseville	107477	Road Match	149m

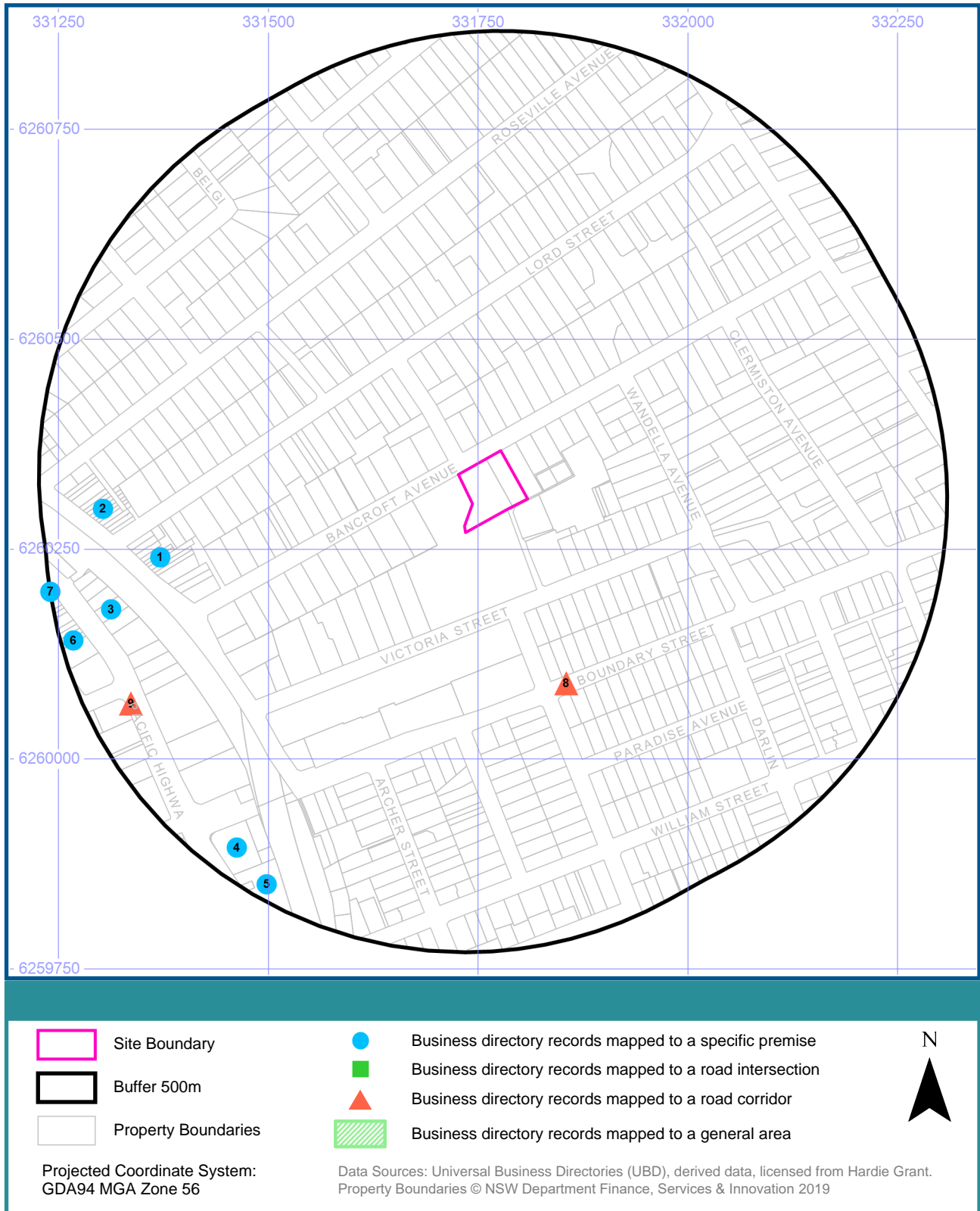
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Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069



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



Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

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

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

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	DRY CLEANERS, PRESSERS & DYERS	Lyke-Nu Dry Cleaning Co. Ltd. 25 Hill St., Roseville	35475	1950	Premise Match	347m	West
	DRY CLEANERS, PRESSERS & DYERS.	Lyke-Nu Dry Cleaning Co. Ltd., 25 Hill St Roseville	17312	1948-49	Premise Match	347m	West
2	DRY CLEANERS & PRESSERS.	Roseville Valet Service., 49 Hill St Roseville	53270	1988	Premise Match	409m	West
	DRY CLEANERS & PRESSERS.	Roseville Valet Service, 49 Hill St., Roseville. 2069	25498	1986	Premise Match	409m	West
	DRY CLEANERS & PRESSERS.	Roseville Valet Service., 49 Hill St Roseville	38774	1985	Premise Match	409m	West
	DRY CLEANERS & PRESSERS.	Roseville Valet Service., 49 Hill St_ Roseville	22166	1984	Premise Match	409m	West
	DRY CLEANERS & PRESSERS.	Roseville Valet Service, 49 Hill St., Roseville	8760	1983	Premise Match	409m	West
	DRY CLEANERS & PRESSERS.(D8500)	Roseville Valet Service, 49 Hill St., Roseville. 2069.	24030	1982	Premise Match	409m	West
	DRY CLEANERS & PRESSERS.	Roseville Valet Service., 49 Hill St Roseville	63520	1981	Premise Match	409m	West
	DRY CLEANERS, PRESSERS &/OR DYERS.	Roseville Valet Service., 49 Hill St Roseville	50002	1980	Premise Match	409m	West
	DRY CLEANERS, PRESSERS &/OR DYERS.	Roseville Valet Service., 49 Hill St Roseville	35540	1979	Premise Match	409m	West
	DRY CLEANERS, PRESSERS &/OR DYERS	Roseville Valet Service, 49 Hill St., Roseville.	20940	1978	Premise Match	409m	West
	DRY CLEANERS, PRESSERS &/OR DYERS.	Roseville Valet Service., 49 Hill St Roseville	23789	1976	Premise Match	409m	West
	DRY CLEANERS, PRESSERS&/OR DYERS.	Roseville Valet Service, 49 Hill St., Roseville.	24313	1975	Premise Match	409m	West
	DRY CLEANERS, PRESSERS &/OR DYERS.	Roseville Valet Service., 49 Hill St Roseville	7224	1972	Premise Match	409m	West
3	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Auto Centre., 75 Pacific Highway Roseville	46273	1979	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Auto Centre, 75 Pacific Hwy, Roseville.	50773	1978	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Auto Centre., 75 Pacific Highway Roseville	34840	1976	Premise Match	411m	West

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
3	MOTOR GARAGES &/OR ENGINEERS.	Roseville Auto Centre, 73 Pacific H'way, Roseville.	59487	1975	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Auto Centre., 75 Pacific Highway Roseville	12992	1972	Premise Match	411m	West
	MOTOR GARAGES & ENGINEERS	Roseville Auto Repairs.,75 Pacific Highway Roseville	48611	1964	Premise Match	411m	West
	MOTOR GARAGES & ENGINEERS.	Roseville Auto Repairs.,75 Pacific Highway Roseville	33360	1962	Premise Match	411m	West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Roseville Auto Repairs.,75 Pacific Highway Roseville	38649	1962	Premise Match	411m	West
	MOTOR GARAGES & ENGINEERS	Roseville Auto Repairs, 75 Pacific Highway. ROSEVILLE	348061	1961	Premise Match	411m	West
	MOTOR GARAGES & ENGINEERS.	Roseville Auto Repairs., 75 Pacific Highway Roseville	19924	1959	Premise Match	411m	West
	MOTOR GARAGE/ENGINEERS.	Roseville Auto Repairs., 75 Pacific Highway Roseville	4895	1958	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Auto Repairs., 75 Pacific Highway Roseville	61421	1956	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Auto Repairs., 75 Pacific Highway Rose Ville	54037	1954	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Auto Repairs., -75 Pacific Highway Roseville	40617	1953	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Auto Repairs., 75 Pacific Highway Roseville	32185	1952	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS	Roseville Auto Repairs, 75 Pacific Highway., Roseville	84316	1950	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS	Roseville Auto Repairs, 75 Pacific Highway., Roseville	84317	1950	Premise Match	411m	West
	MOTOR SERVICE STATIONS-PETROL, Etc.	Roseville Auto Repairs, 75 Pacific Highway., Roseville	86359	1950	Premise Match	411m	West
4	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Service Centre Boundary St., Roseville	34843	1976	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre Pty. Ltd., Cnr. Pacific H'way & Boundary St.,	58303	1975	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre, Boundary St, Roseville.	59490	1975	Premise Match	431m	South West
	MOTOR SERVICE STATIONS - PETROL, OIL	Roseville Service Centre, Boundary St., Roseville.	61925	1975	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre., Boundary St Rosebery	12986	1972	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre., Boundary St Roseville	12994	1972	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre., Cnr Pacific Highway & Boundary St Roseville	12988	1972	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre., Boundary St Rosebery	62651	1971	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre., Boundary St Roseville	62657	1971	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre., Cnr Pacific Highway & Boundary St Roseville	62653	1971	Premise Match	431m	South West
	MOTOR GARAGES & ENGINEERS(M6S6)	Roseville Service Centre, Boundary St. Roseville	338545	1970	Premise Match	431m	South West
	MOTOR GARAGES & ENGINEERS.	Roseville Service Centre., Boundary St Rosebery	47092	1969	Premise Match	431m	South West
	MOTOR GARAGES & ENGINEERS.	Roseville Service Centre., Boundary St Roseville	47097	1969	Premise Match	431m	South West
	MOTOR GARAGES & ENGINEERS.	Roseville Service Centre., Cnr Pacific Highway & Boundary St Roseville	47094	1969	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Roseville Service Centre., Cnr Pacific Highway & Boundary St Roseville	1773	1966	Premise Match	431m	South West

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
4	Motor Service Stations - Petrol, Oil, Etc.	Roseville Service Centre, Cnr. Pacific Highway. & Boundary St. Roseville	126120	1965	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Roseville Service Centre.,Cnr Pacific Highway & Boundary St Roseville	52373	1964	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Roseville Service Centre.,Cnr Pacific Highway & Boundary St Roseville	52374	1964	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Roseville Service Centre.,Cnr Pacific Highway & Boundary St Roseville	38646	1962	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Roseville Service Centre.,Cnr Pacific Highway & Boundary Sts Roseville	38650	1962	Premise Match	431m	South West
	MOTOR GARAGES & ENGINEERS	McGill Motor Co., Boundary St. & Pacific Highway. ROSEVILLE	347675	1961	Premise Match	431m	South West
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Roseville Service Centre Cnr. Pacific Highway. & Boundary St. ROSEVILLE	351041	1961	Premise Match	431m	South West
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Roseville Service Centre, Cnr. Pacific Highway. & Boundary Sts. ROSEVILLE	351042	1961	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL,. OIL, ETC.	Roseville Service Centre., Cnr Pacific Highway & Boundary St Roseville	24534	1959	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL,. OIL, ETC.	Roseville Service Centre., Cnr Pacific Highway & Boundary Sts Roseville	24537	1959	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	McGill Motor Co., Boundary St. & Pacific Hghwy., Rsvle	40302	1953	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS	McGill Motor-Co., Boundary St. and Pacific Highway., Roseville	84061	1950	Premise Match	431m	South West
5	MOTOR SERVICE STATIONS-PETROL, Etc.	Seymours Service Station Pty. Ltd., 991 Pacific Highway., Chatswood	86385	1950	Premise Match	450m	South West
6	DRY CLEANERS, PRESSERS & DYERS	London Dry Cleaners, 66a Pacific Highway., Roseville	35436	1950	Premise Match	469m	West
	DRY CLEANERS, PRESSERS & DYERS.	London Dry Cleaners, 66A Pacific Highway Roseville	17291	1948-49	Premise Match	469m	West
7	DRY CLEANERS, PRESSERS & DYERS	Lindfield Laundry and Dry Cleaners Pty. Ltd. 88 Pacific Highway., Roseville	35416	1950	Premise Match	499m	West
	DRY CLEANERS, PRESSERS & DYERS.	Lindfield Laundry And Dry Cleaners Pty. Ltd., 88 Pacific Highway Roseville	17279	1948-49	Premise Match	499m	West

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

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

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

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
8	MOTOR GARAGES &/OR ENGINEERS.	Jackson's Garage & Service Station., Boundary St Rsvle	31797	1952	Road Match	203m
	MOTOR GARAGES &/OR ENGINEERS	Jackson's Garage and Service Station, Boundary St., Roseville	83919	1950	Road Match	203m
	MOTOR GARAGES &/OR ENGINEERS.	Jackson's Garage And Service Station., Boundary St Roseville	22497	1948-49	Road Match	203m
9	MOTOR GARAGES & SERVICE STATIONS.	Roseville Self Service Station Pty Ltd. (Mobil), Boundary St Roseville	20294	1993	Road Match	428m
	Motor Garages & Service Stations	Roseville Self Service Station Pty. Ltd. (Mobil), Boundary St., Roseville 2069	97774	1991	Road Match	428m
	MOTOR GARAGES & SERVICE STATIONS.	Roseville Self Service Station Pty. Ltd. (Mobil), Boundary St Roseville	12061	1990	Road Match	428m
	MOTOR GARAGE & SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd (Mobil), Boundary St Roseville	5483	1989	Road Match	428m
	MOTOR GARAGES & SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd (Mobil), Boundary St Roseville	59871	1988	Road Match	428m
	MOTOR GARAGES & SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd., (Mobil), Boundary St., Roseville. 2069	65370	1986	Road Match	428m
	MOTOR GARAGES & SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd (Mobil), Boundary St Roseville	45487	1985	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd (Mobil), Boundary St Roseville	34056	1984	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd (Mobil), Boundary St Roseville	21507	1983	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Roseville Self Service Centre Pty. Ltd., (Mobil), Boundary St., Roseville. 2069.	57498	1982	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd., Boundary St Roseville	58773	1980	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd., Boundary St., Roseville	46275	1979	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd., Boundary St, Roseville.	50775	1978	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS	"Waters Service Station", Pacific Highway., Roseville	83345	1950	Road Match	428m
	MOTOR SERVICE STATIONS-PETROL, Etc.	McGill Motor Co., Pacific Highway., Roseville	86189	1950	Road Match	428m

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

Aerial Imagery 2009

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Legend

- Site Boundary
- Buffer 150m

Scale:

0 25 50 100
Meters

Data Source Aerial Imagery: © 2019 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 19 March 2019

Aerial Imagery 2005

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Aerial Imagery 1991

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Aerial Imagery 1982

29 & 37 Bancroft Avenue, Roseville, NSW 2069



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

Coordinate System: GDA 1994 MGA Zone 56

Date: 20 March 2019

Aerial Imagery 1970

29 & 37 Bancroft Avenue, Roseville, NSW 2069



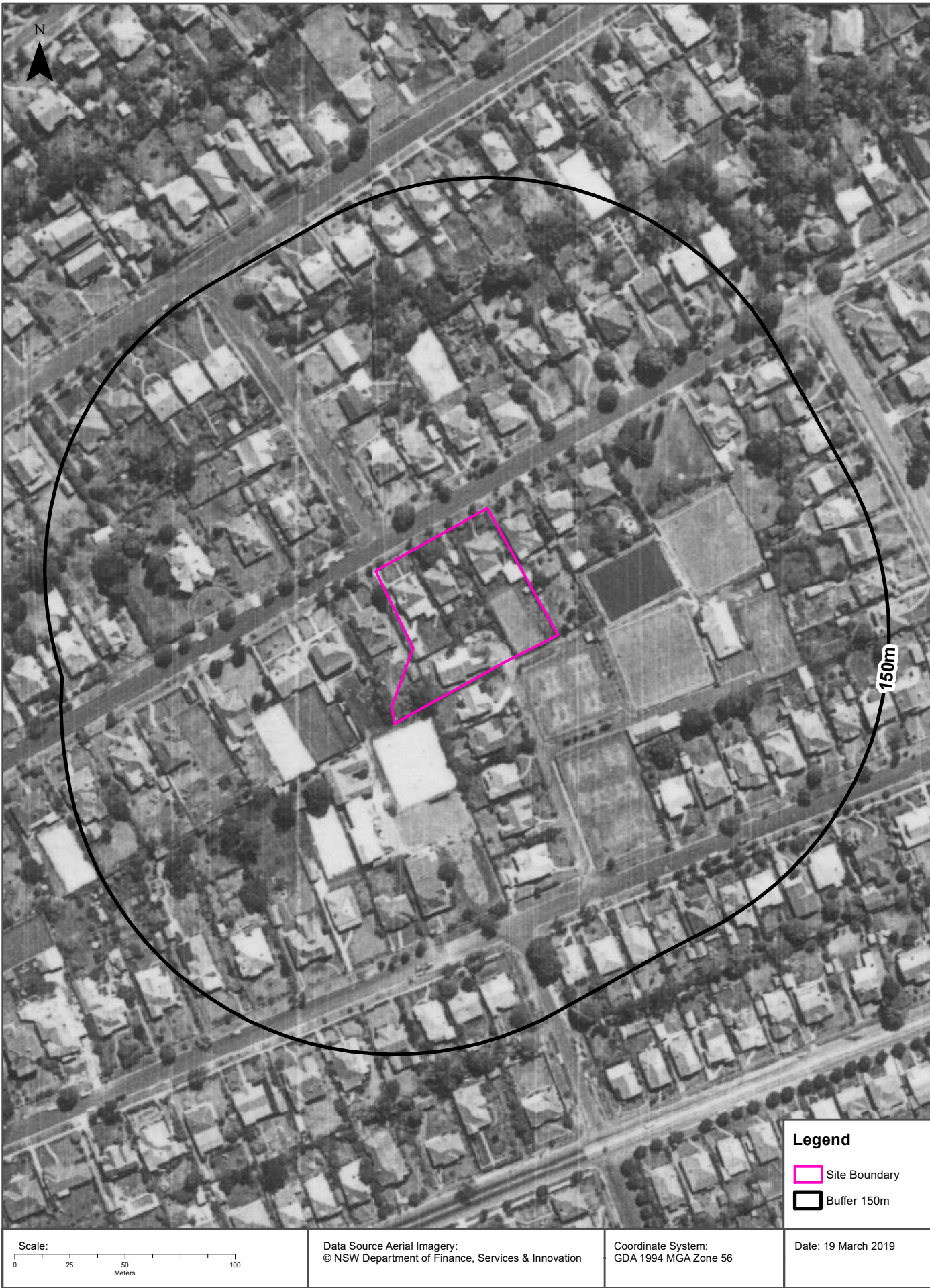
Data Sources: Aerial Imagery © Department of Finance, Services & Innovation

Coordinate System: GDA 1994 MGA Zone 56

Date: 20 March 2019

Aerial Imagery 1965

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Aerial Imagery 1961

29 & 37 Bancroft Avenue, Roseville, NSW 2069



<p>Scale:</p> <p>0 25 50 100</p> <p>Meters</p>	<p>Data Source Aerial Imagery:</p> <p>© NSW Department of Finance, Services & Innovation</p>	<p>Coordinate System:</p> <p>GDA 1994 MGA Zone 56</p>	<p>Date: 19 March 2019</p>
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Aerial Imagery 1956

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Legend

Site Boundary

Buffer 150m

Scale: 0 25 50 100 Meters	Data Source Aerial Imagery: © NSW Department of Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 19 March 2019
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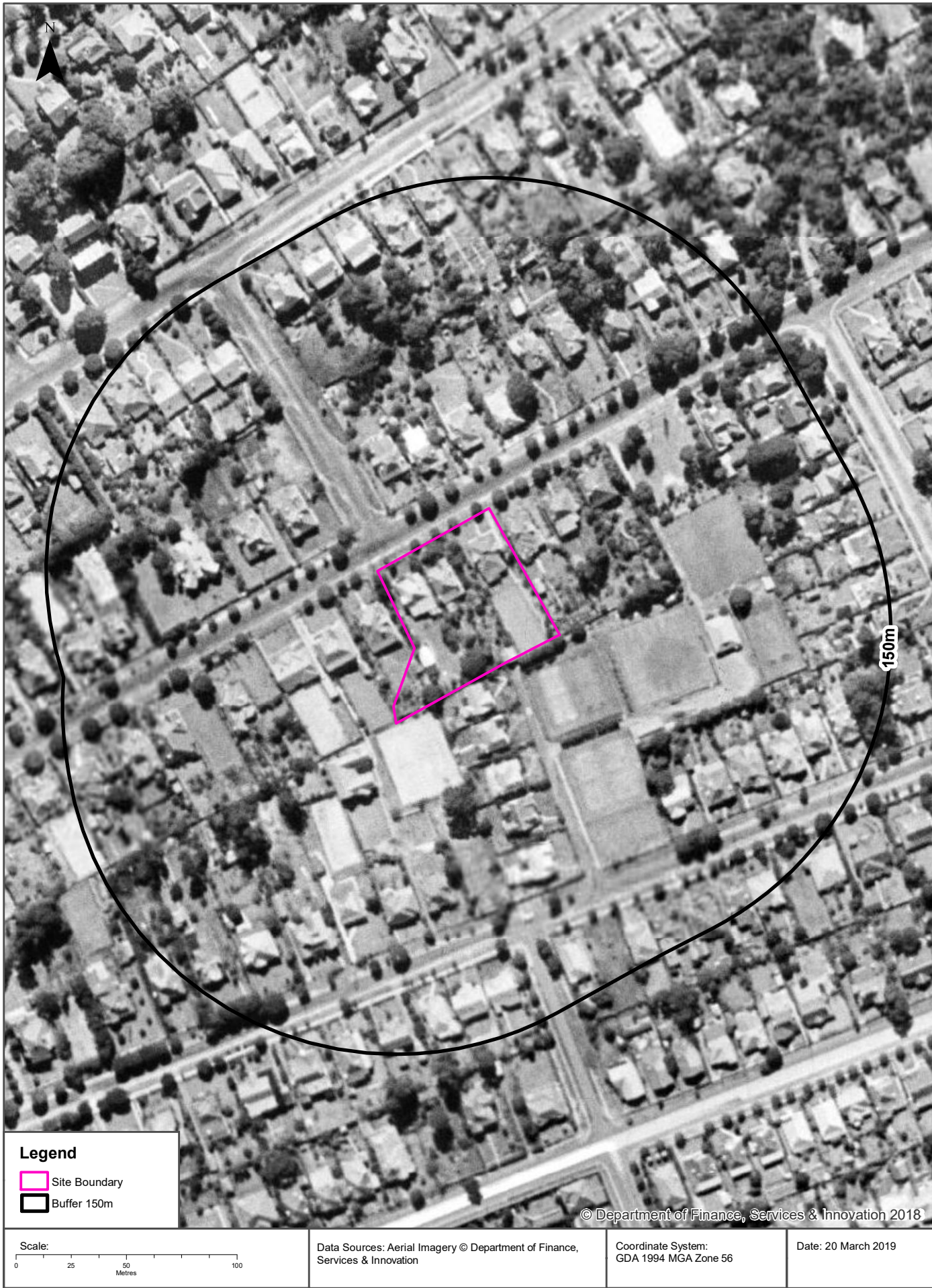
Aerial Imagery 1951

29 & 37 Bancroft Avenue, Roseville, NSW 2069



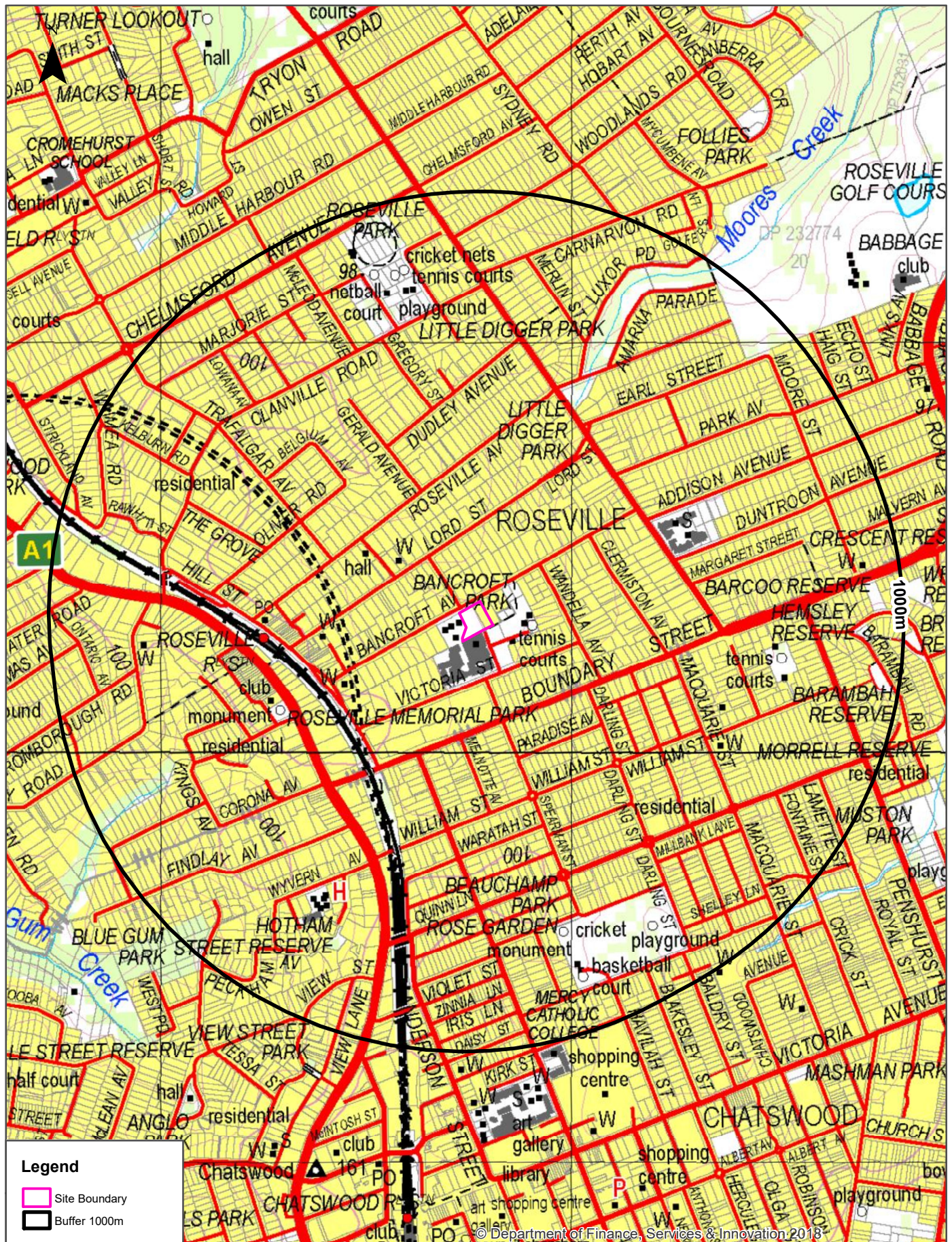
Aerial Imagery 1943

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Topographic Map 2015

29 & 37 Bancroft Avenue, Roseville, NSW 2069



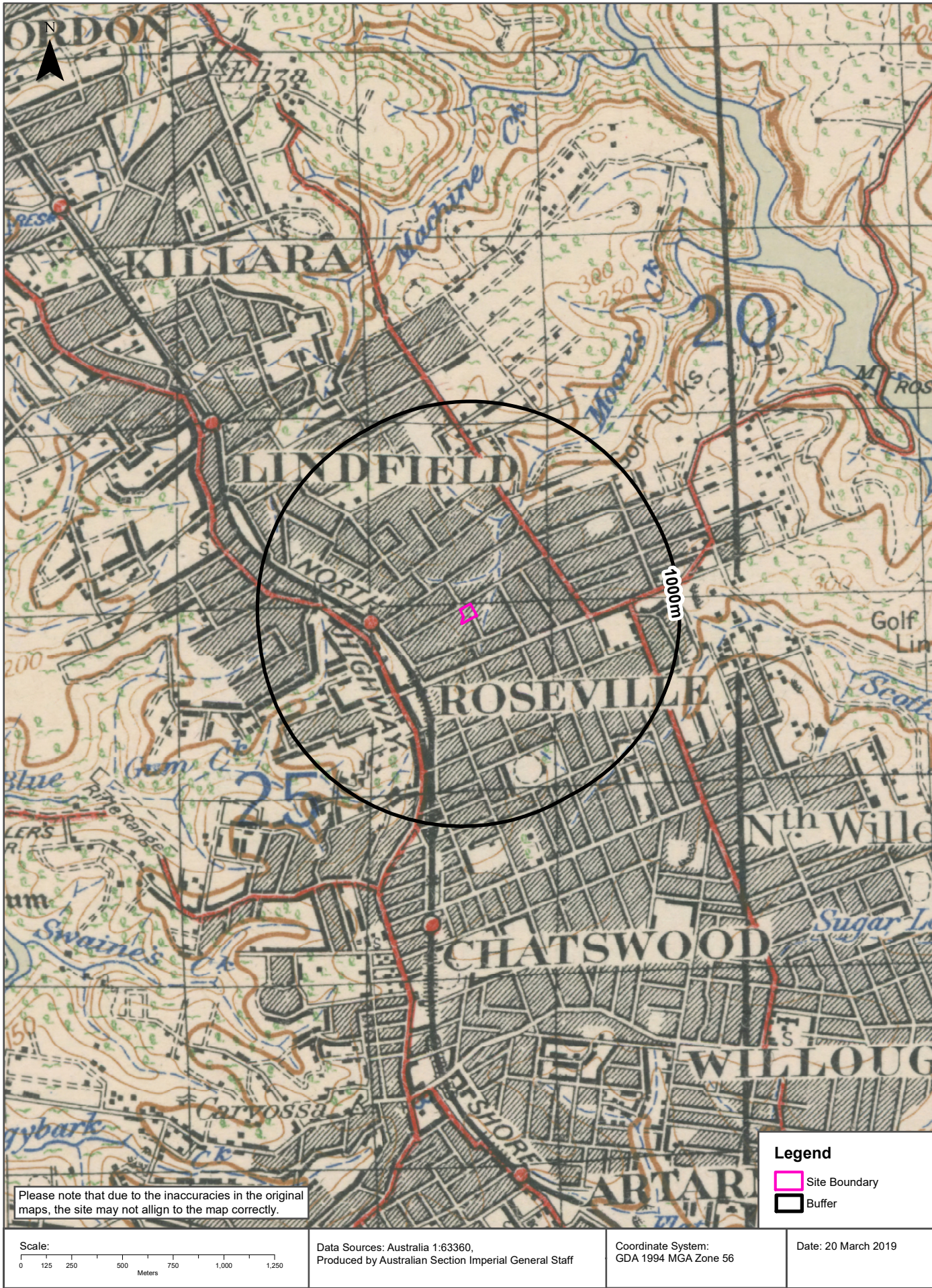
Historical Map 1975

29 & 37 Bancroft Avenue, Roseville, NSW 2069



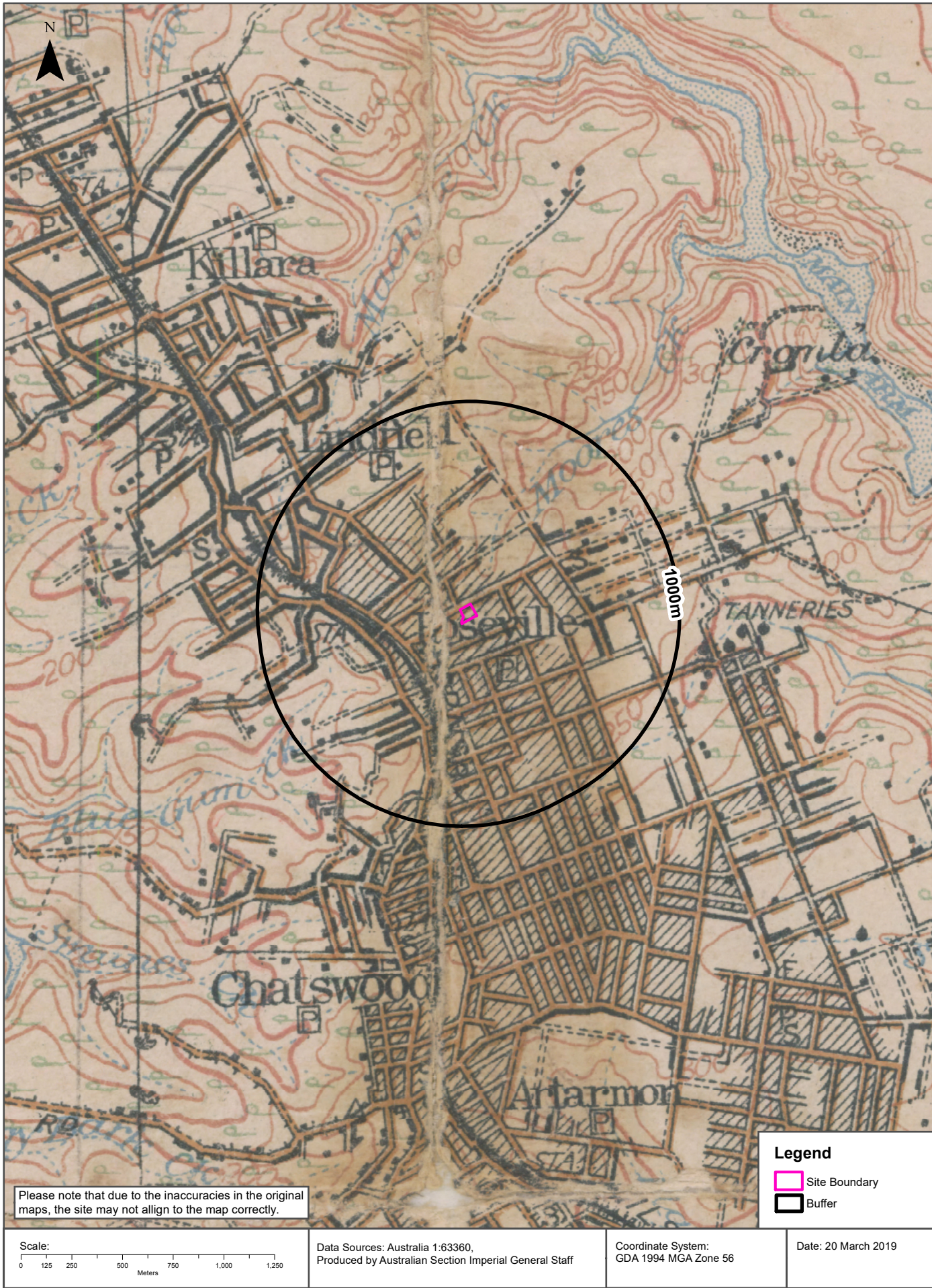
Historical Map c.1936

29 & 37 Bancroft Avenue, Roseville, NSW 2069



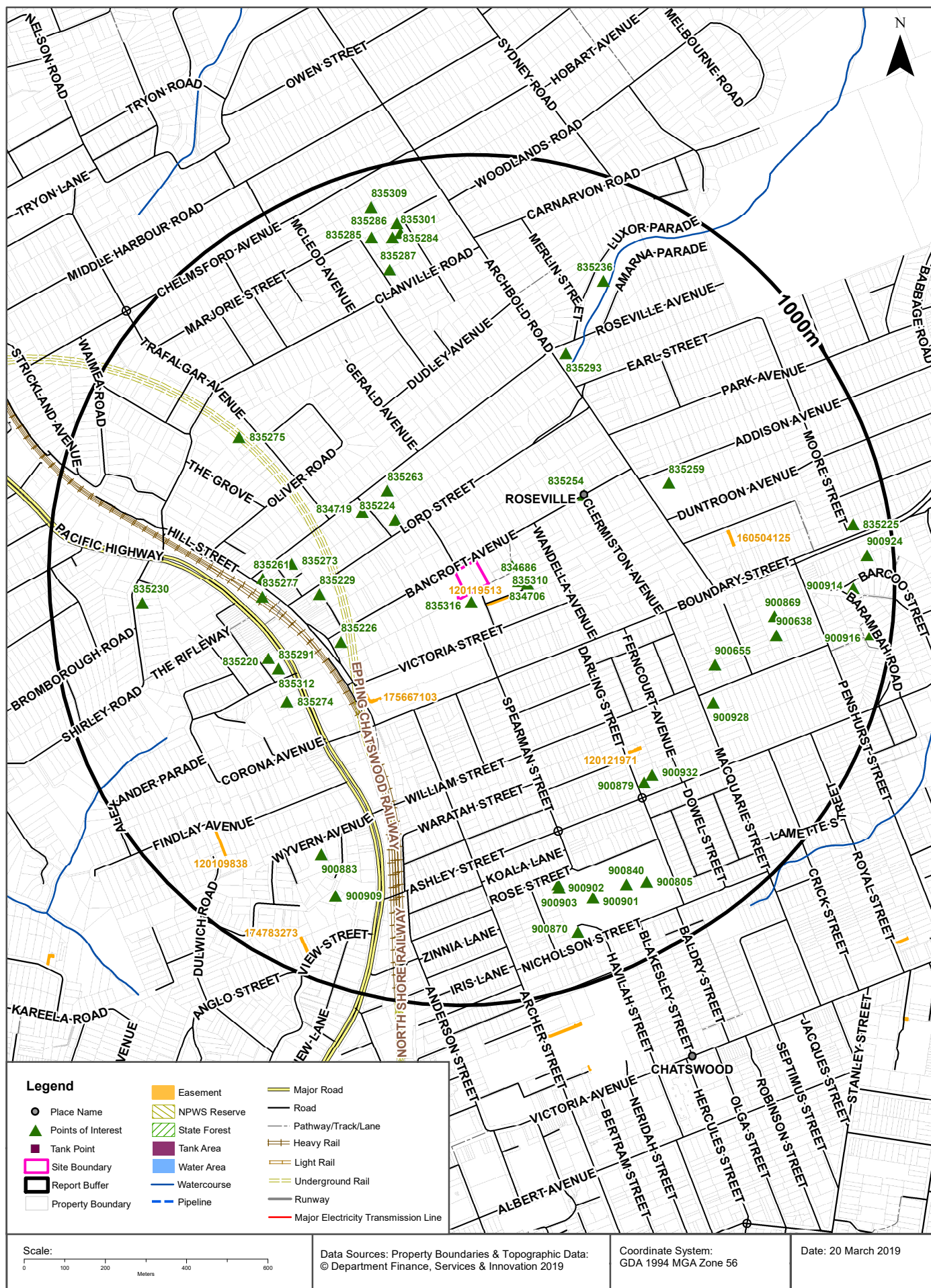
Historical Map c.1917

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Topographic Features

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Topographic Features

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
835316	Combined Primary-Secondary School	ROSEVILLE COLLEGE	20m	South
835310	Park	BANCROFT PARK	73m	East
834686	Community Facility	ROSEVILLE LAWN TENNIS CLUB	75m	East
834706	Community Facility	KU-RING-GAI ART CENTRE	75m	East
835292	Sports Court	TENNIS COURTS	96m	East
835224	Place Of Worship	PRESBYTERIAN CHURCH	195m	North West
835263	Retirement Village	HEATHER BRAE	260m	North West
834719	Community Facility	1ST ROSEVILLE SCOUT HALL	272m	North West
835226	Place Of Worship	ANGLICAN CHURCH	307m	South West
835254	Suburb	ROSEVILLE	312m	North East
835229	Place Of Worship	METHODIST CHURCH	338m	West
835273	Retirement Village	QUAMBIE SELF CARE UNITS KOPWA	402m	West
835261	Post Office	ROSEVILLE POST OFFICE	473m	West
835312	Park	ROSEVILLE MEMORIAL PARK	474m	South West
835291	Monument	ROSEVILLE WAR MEMORIAL	474m	South West
835277	Railway Station	ROSEVILLE RAILWAY STATION	478m	West
835220	Club	ROSEVILLE RETURNED SERVICEMENS MEMORIAL CLUB	489m	West
835274	Community Home	BUPA ROSEVILLE	491m	South West
835259	Primary School	ROSEVILLE PUBLIC SCHOOL	509m	North East
835293	Park	LITTLE DIGGER PARK	558m	North East
900655	Community Facility	CHATSWOOD HALL ROSEVILLE	592m	East
900932	Nursing Home	ASHLEY HOUSE PTY LTD	620m	South East
900879	Retirement Village	ASHLEY HOUSE APARTMENTS	622m	South East
900928	Place Of Worship	ANGLICAN CHURCH	626m	South East
835275	Community Home	ARCHBOLD HOUSE HOSTEL	627m	North West
900869	Sports Court	TENNIS COURTS	708m	East
900883	General Hospital	HIRONDELLE PRIVATE HOSPITAL	712m	South West
900638	Community Facility	KOOROORA TENNIS CLUB	720m	East
900902	Park	BEAUCHAMP PARK ROSE GARDEN	743m	South
835287	Park	PLAYGROUND	748m	North

Map Id	Feature Type	Label	Distance	Direction
900903	Monument	REG MCMAHON SUN DIAL MEMORIAL	752m	South
835236	Park	LITTLE DIGGER PARK	758m	North East
835230	Place Of Worship	Place Of Worship	773m	West
900909	Park	HOTHAM STREET RESERVE	789m	South West
900901	Sports Field	CRICKET	805m	South
900840	Park	BEAUCHAMP PARK	814m	South East
835284	Sports Court	MULTIPURPOSE COURT	822m	North
835301	Sports Court	TENNIS COURTS	828m	North
900805	Picnic Area	PLAYGROUND	832m	South East
835285	Sports Court	NETBALL COURT	836m	North
835286	Sports Field	CRICKET NETS	853m	North
900870	Sports Court	BASKETBALL COURT	870m	South
900914	Park	HEMSLEY RESERVE	898m	East
835309	Sports Field	ROSEVILLE PARK	909m	North
835225	Place Of Worship	Place Of Worship	909m	East
900924	Park	BARCOO RESERVE	935m	East
900916	Park	BARAMBAH RESERVE	950m	East

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

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Topographic Features

29 & 37 Bancroft Avenue, Roseville, NSW 2069

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					

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

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Major Easements

What Major Easements exist within the dataset buffer?

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

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120119513	Primary	Undefined		44m	South East
175667103	Primary	Right of way	Var	308m	South West
120121971	Primary	Undefined		539m	South East
160504125	Primary	Right of way	variable	602m	East
120109838	Primary	Undefined		823m	South West
174783273	Primary	Right of way	4m	915m	South West

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

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Topographic Features

29 & 37 Bancroft Avenue, Roseville, NSW 2069

State Forest

What State Forest exist within the dataset buffer?

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

State Forest Data Source: © NSW Department of Finance, Services & Innovation (2018)

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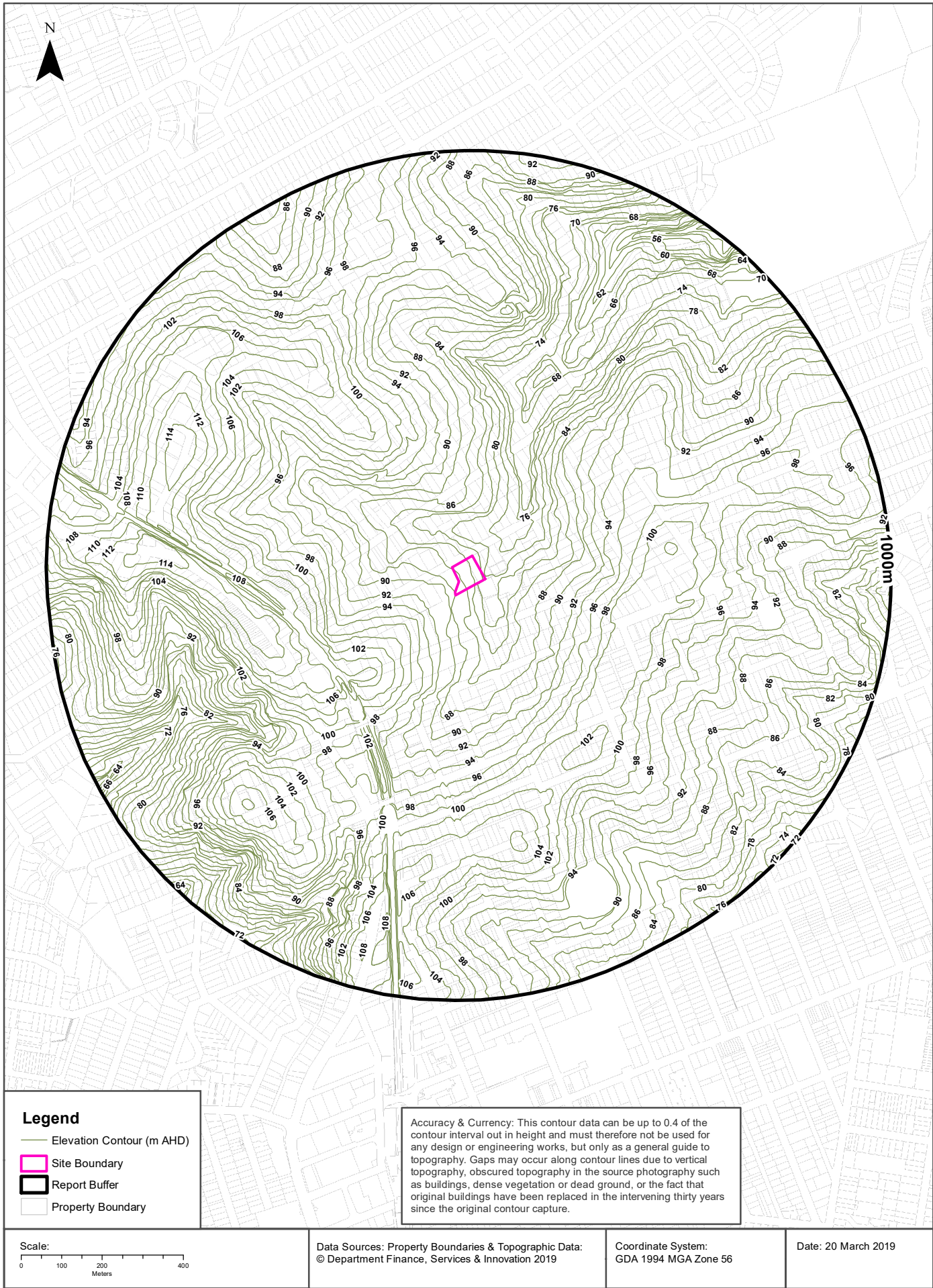
National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

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

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

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Hydrogeology & Groundwater

29 & 37 Bancroft Avenue, Roseville, NSW 2069

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)

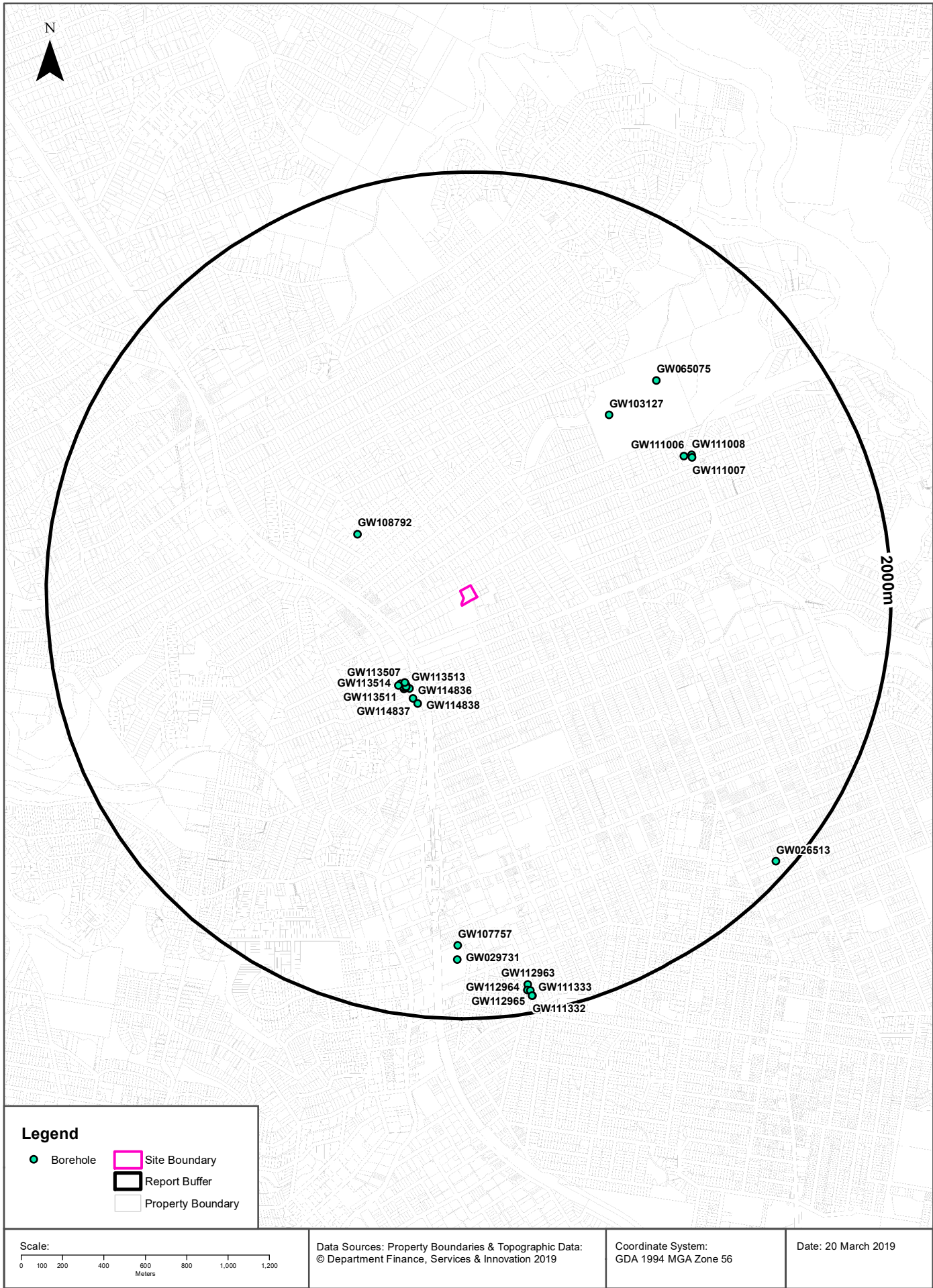
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Botany Groundwater Management Zones

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

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

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



Hydrogeology & Groundwater

29 & 37 Bancroft Avenue, Roseville, NSW 2069

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
GW113 510	10BL164 807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	31/08/2004	7.80	7.80					464m	South West
GW113 512	10BL164 807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	31/08/2004	8.00	8.00					471m	South West
GW113 513	10BL164 807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	01/09/2004	2.80	2.80					473m	South West
GW114 836	10BL604 596	Bore	Private	Monitoring Bore	Monitoring Bore		30/07/2011	15.00	15.00		8.80			475m	South West
GW113 509	10BL164 807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	01/09/2004	3.00	3.00					478m	South West
GW113 508	10BL164 807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	01/09/2004	7.50	7.50					479m	South West
GW113 507	10BL164 807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	31/08/2004	7.60	7.60					480m	South West
GW113 506	10BL164 807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	31/08/2004	3.10	3.10					485m	South West
GW113 505	10BL164 807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	31/08/2004	8.00	8.00					486m	South West
GW113 511	10BL164 807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	01/09/2004	8.00	8.00					491m	South West
GW113 514	10BL164 807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	06/09/2004	8.60	8.60					494m	South West
GW114 837	10BL604 596	Bore	Private	Monitoring Bore	Monitoring Bore		30/07/2011	5.00	5.00		2.60			509m	South West
GW114 838	10BL604 596	Bore	Private	Monitoring Bore	Monitoring Bore		30/07/2011	9.70	9.70		3.90			521m	South West
GW108 792	10BL601 685, 10WA10 9199	Bore	Private	Domestic	Domestic		25/05/2007	174.00	174.00	2800	65.0 0	0.300		564m	North West
GW103 127	10BL159 693, 10CA10 9365	Bore		Irrigation, Recreation (groundwater)	Recreation (groundwater)		31/07/2000	138.00	138.00	Fresh				1062m	North East
GW111 006	10BL603 947	Bore	Private	Monitoring Bore	Monitoring Bore		19/04/2010	7.50	7.50		3.80			1207m	North East
GW111 007	10BL603 947	Bore	Private	Monitoring Bore	Monitoring Bore		19/04/2010	7.50	7.50		3.80			1237m	North East
GW111 008	10BL603 947	Bore	Private	Monitoring Bore	Monitoring Bore		19/04/2010	7.50	7.50		3.80			1241m	North East
GW065 075	10BL154 122, 10CA10 9365	Bore	Private	Irrigation, Recreation (groundwater)	Irrigation, Recreation (groundwater)		15/02/1994	150.00	150.00	Fresh	44.0 0	6.000		1337m	North East
GW107 757	10BL165 399, 10BL602 036, 10WA10 9507	Bore		Recreation (groundwater), Test Bore	Recreation (groundwater)		29/07/2005	162.60	162.60	1360	25.6 0	0.300		1646m	South
GW029 731	10BL019 677	Bore open thru rock	Local Govt	Recreation (groundwater)	Recreation (groundwater)		01/04/1967	21.60	21.60					1715m	South
GW112 963	10BL605 047	Bore	Local Govt	Monitoring Bore	Monitoring Bore	Willoughby CC	15/03/2012	9.00	9.00					1863m	South

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
GW112 964	10BL605 047	Bore	Local Govt	Monitoring Bore	Monitoring Bore	Willoughby CC	15/03/2012	2.00	2.00					1890m	South
GW112 965	10BL605 047	Bore	Local Govt	Monitoring Bore	Monitoring Bore	Willoughby CC	15/03/2012	9.00	9.00					1894m	South
GW111 332	10BL604 464	Bore	Other Govt	Monitoring Bore	Monitoring Bore		24/01/2011	3.20	3.20					1920m	South
GW111 333	10BL604 464	Bore	Private	Monitoring Bore	Monitoring Bore		24/01/2011	9.00	9.00					1920m	South
GW026 513	10BL019 159	Bore open thru rock	Private	Recreation (groundwater)	Irrigation		01/12/1966	64.00	64.00	Fresh				1930m	South East

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

Hydrogeology & Groundwater

29 & 37 Bancroft Avenue, Roseville, NSW 2069

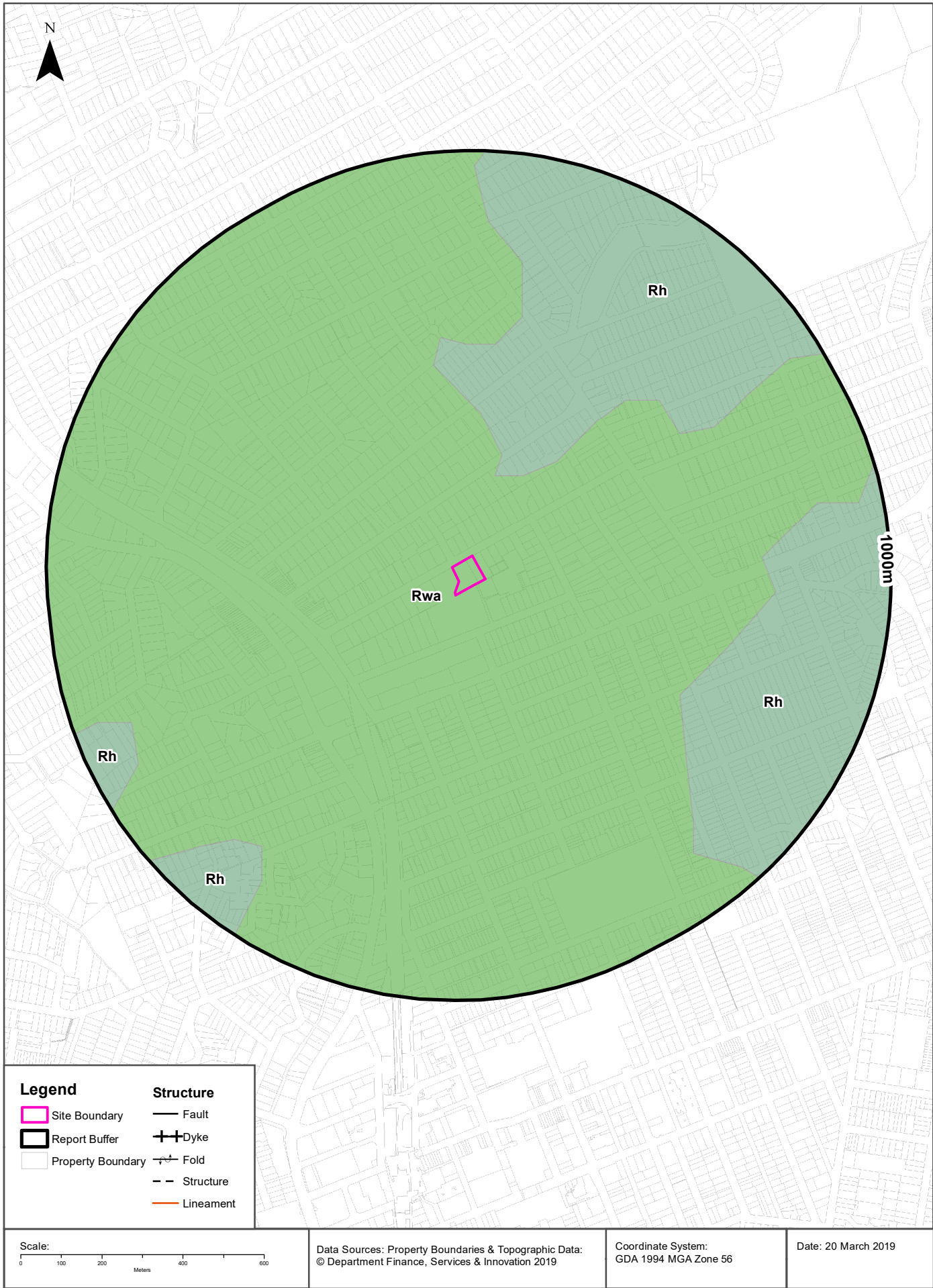
Driller's Logs

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

Groundwater No	Drillers Log	Distance	Direction
GW114836	0.00m-0.60m COMPACTED GRAVEL / BALLAST 0.60m-2.00m COMPACTED GRAVEL / BALLAST 2.00m-2.20m CLAY LIGHT RED BROWN 2.20m-3.00m CLAY WHITE RED 3.00m-4.50m CLAY GREY VERY HARD 4.50m-6.00m CLAY GREY 6.00m-9.00m SHALE GREY VERY HARD CLAY 9.00m-15.00m SHALE VERY WEATHERED GREY SHALE	475m	South West
GW114837	0.00m-0.20m GRAVEL COMPACTED 0.20m-1.40m NON DESTRUCTIVE EXCAVATIONS, GRAVEL 1.40m-2.50m CLAY YELLOW 2.50m-3.80m CLAY RED GREY 3.80m-5.00m CLAY RED, WEATHERED ROCK	509m	South West
GW114838	0.00m-0.20m SAND GRAVEL 0.20m-1.60m COMPACTED BALLAST, SAND GRAVEL 1.60m-2.80m CLAY RED YELLOW 2.80m-3.90m CLAY RED GREY 3.90m-6.00m CLAY RED/WHITE, SOME WET ROCKS 6.00m-7.00m ROCK AND CLAY RED WEATHERED 7.00m-7.50m ROCK WHITE WEATHERED 7.50m-8.00m SHALE ORANGE WEATHERED 8.00m-9.70m SHALE MUDDY WEATHERED	521m	South West
GW108792	0.00m-4.00m clay 4.00m-15.00m shale 15.00m-52.00m sandstone, grey 52.00m-54.00m sandstone, quartz 54.00m-70.00m sandstone, grey 70.00m-75.00m sandstone, quartz 75.00m-76.00m shale 76.00m-80.00m sandstone, shale bands 80.00m-89.00m sandstone, grey 89.00m-90.00m shale 90.00m-94.00m sandstone, siltstone band 94.00m-110.00m sandstone, grey 110.00m-112.00m sandstone, quartz 112.00m-130.00m sandstone, grey 130.00m-131.00m siltstone 131.00m-132.00m sandstone, grey 132.00m-135.50m sandstone, quartz 135.50m-145.00m sandstone, grey 145.00m-152.20m sandstone, quartz 152.20m-161.00m sandstone, grey 161.00m-168.00m sandstone, quartz 168.00m-174.00m sandstone, grey	564m	North West
GW103127	0.00m-0.50m TOPSOIL 0.50m-1.50m SANDY CLAY 1.50m-5.20m SANDSTONE YELLOW 5.20m-39.70m SANDSTONE GREY 39.70m-40.10m SANDSTONE GREY W.B. 40.10m-70.40m SANDSTONE GREY 70.40m-74.00m SANDSTONE GREY 74.00m-130.50m SANDSTONE GREY 130.50m-132.20m SANDSTONE GREY W.B. 132.20m-138.00m SANDSTONE GREY	1062m	North East
GW111006	0.00m-0.20m CONCRETE 0.20m-0.40m FILL, SILTY SANDY CLAY, TRACE OF IRONSTONE 0.40m-0.80m SILTY CLAY 0.80m-1.80m SHALE, / QUARTZ 1.80m-3.50m SANDSTONE, FINE TO MEDIUM GRAINED RED. 3.50m-6.20m SANDSTONE YELLOW 6.20m-7.50m SANDSTONE, FINE TO MED. GRAINED, GREY	1207m	North East

Groundwater No	Drillers Log	Distance	Direction
GW111007	0.00m-0.20m CONCRETE SLAB:0.2m 0.20m-0.60m FILL,SILTY SAND,FINE TO MED.GRAINED,YELLOW 0.60m-0.70m CONCRETE SLAB:0.1m 0.70m-1.60m FILL,SILTY SAND,CLAY,IRONSTONE,GRAVEL 1.60m-3.00m SHALE,GREY WITH CLAY BANDS,GREY AND ORANGE 3.00m-4.40m SANDSTONE FINE TO MED. GRAINED,GREY AND ORANGE 4.40m-5.40m SANDSTONE WITH SHALE BANDS 5.40m-7.50m SANDSTONE FINE TO MEDIUM GRAINED.ORANGE WITH CLAY BANDS	1237m	North East
GW111008	0.00m-0.20m CONCRETE SLAB:0.15m 0.20m-1.80m FILL,AS ABOVE,TRACE OF IRONSTONE AND IGNEOUS GRAVEL 1.80m-4.20m SANDSTONE FINE TO MEDIUM GRAINED,RED WITH GREY CLAY BANDS. 4.20m-6.40m SANDSTONE,FINE TO MEDIUM GRAINED,LIGHT YELLOW 6.40m-7.50m SANDSTONE FINE TO MEDIUM GRAINED,DARK BROWN WITH CLAY BANDS.	1241m	North East
GW065075	137.00m-147.00m SHALE DARK GREY 147.00m-150.00m SANDSTONE GREY DARK	1337m	North East
GW107757	0.00m-1.40m FILL 1.40m-4.30m CLAY:BROWN,RED, WHITE 4.30m-5.10m SHALE; BROWN,WEATHERED 5.10m-5.50m CLAY BROWN 5.50m-16.80m SHALE GREY 16.80m-18.50m SANDSTONE GREY,SHALE GREY 18.50m-28.70m SANDSTONE GREY 28.70m-29.00m SANDSTONE GREY,FRACTURED 29.00m-42.40m SANDSTONE L/GREY 42.40m-42.80m SILTSTONE D/GREY 42.80m-51.10m SANDSTONE L/GREY 51.10m-65.70m SANDSTONE L/GREY,QUARTZ 65.70m-66.70m SHALE,GREY,SILTY 66.70m-74.60m SANDSTONE L/GREY 74.60m-76.10m SANDSTONE L/GREY 76.10m-76.30m SHALE L/GREY,SOFT 76.30m-88.00m SANDSTONE L/GREY 88.00m-88.60m SHALE,SILTY,D/GREY 88.60m-162.60m SANDSTONE L/GREY,GREY	1646m	South
GW029731	0.00m-3.45m Clay Red Sandy 0.00m-3.45m Gravel 0.00m-3.45m Boulders Large 3.45m-6.70m Ironstone Gravel 3.45m-6.70m Clay Red Yellow Puggy Sandy 6.70m-17.98m Shale Grey Black Hard 17.98m-21.64m Sandstone Grey Very Fractured Medium-coarse 17.98m-21.64m Clay Bands	1715m	South
GW111332	0.00m-0.18m CONCRETE 0.18m-2.80m FILL,SILTY SANDY CLAY,ORANGE BROWN 2.80m-3.00m SILTY CLAY,LIGHT GREY MOTTLED RED/BROWN 3.00m-3.20m SHALE GREY WEATHERED	1920m	South
GW111333	0.00m-0.17m CONCRETE 0.17m-2.80m FILL,SILTY SANDY CLAY,ORANGE BROWN 2.80m-3.00m SILTY CLAY,LIGHT GREY MOTTLED RED.BROWN 3.00m-9.00m SHALE,GREY WEATHERED	1920m	South
GW026513	0.00m-9.14m Clay Soil 9.14m-12.19m Sandstone White Soft 12.19m-13.71m Shale Water Supply 13.71m-22.86m Sandstone White Soft 22.86m-31.08m Sandstone 31.08m-35.05m Sandstone White 35.05m-36.57m Shale 36.57m-39.01m Sandstone White 39.01m-39.62m Shale 39.62m-57.91m Sandstone White 57.91m-59.43m Sandstone White Soft Water Supply 59.43m-60.35m Shale Sandy 60.35m-64.00m Driller	1930m	South East

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

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Rwa7	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	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
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	1:100,000
Rwa	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	1:100,000

Geological Structures

What are the Geological Structures onsite?

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

What are the Geological Structures within the dataset buffer?

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

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

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Naturally Occurring Asbestos Potential

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Naturally Occurring Asbestos Potential

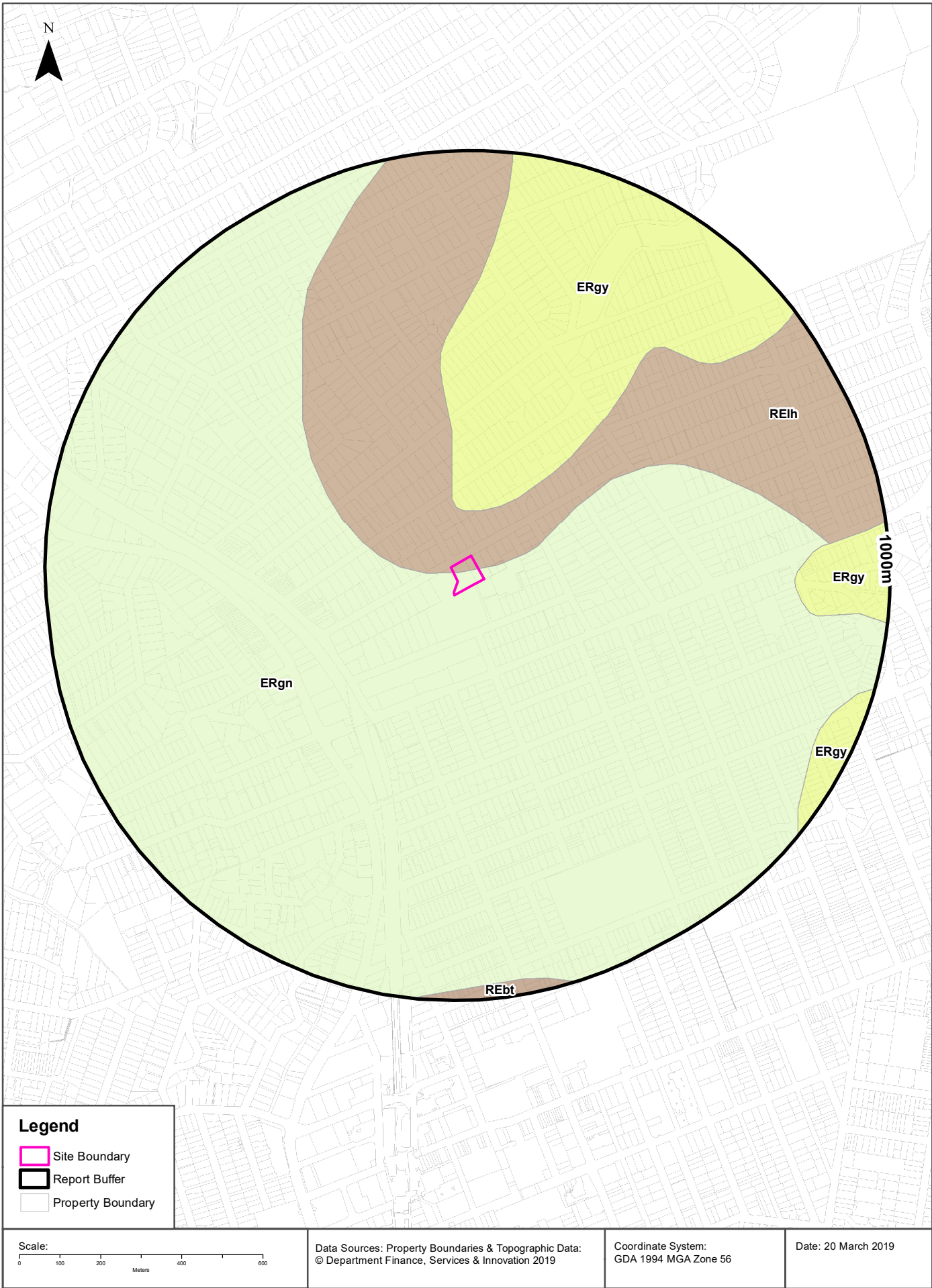
Naturally Occurring Asbestos Potential within the dataset buffer:

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

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Soils

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Soil Landscapes

What are the onsite Soil Landscapes?

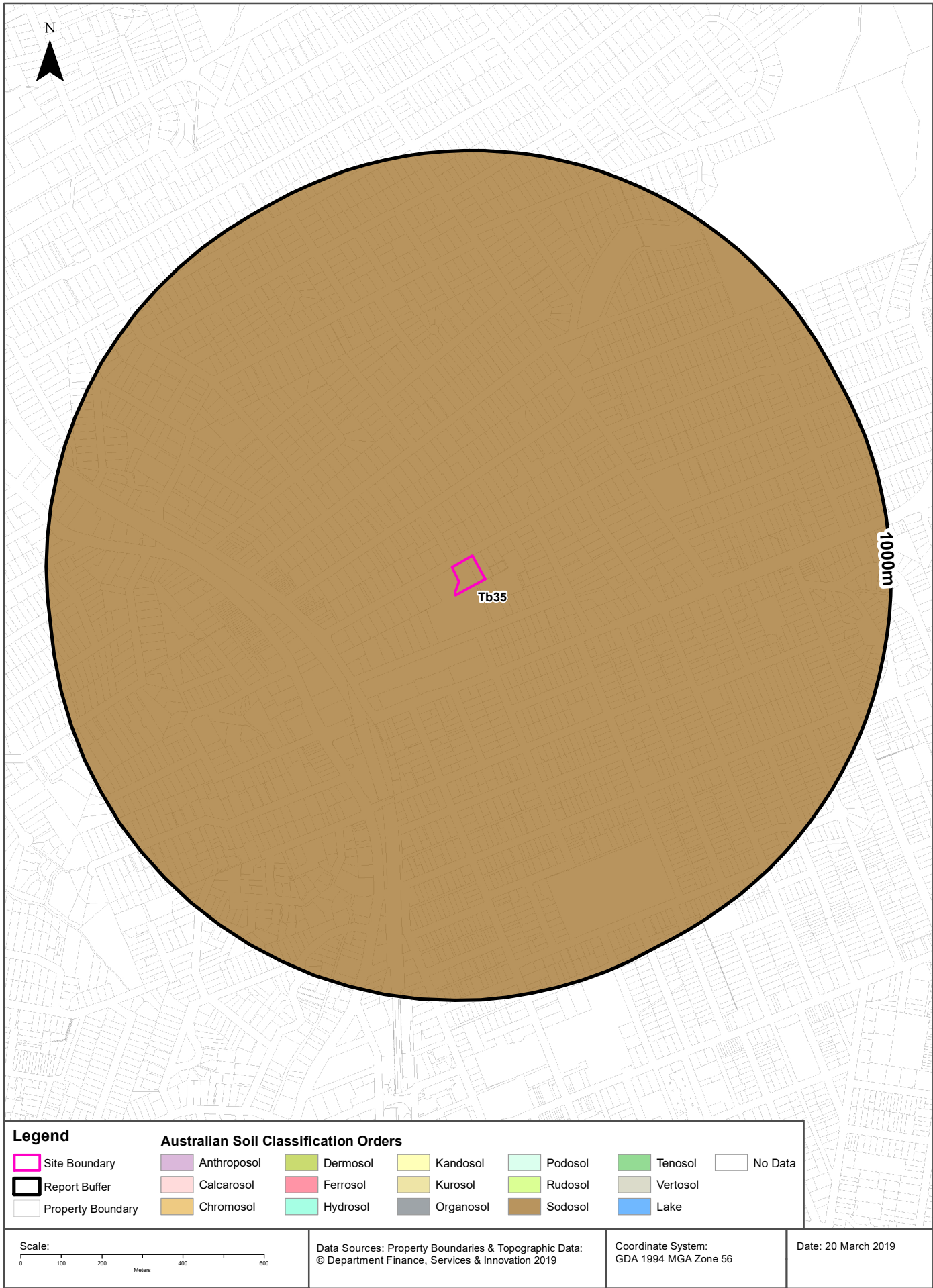
Soil Code	Name	Group	Process	Map Sheet	Scale
ERgn	GLENORIE		EROSIONAL	Sydney	1:100,000
RElh	LUCAS HEIGHTS		RESIDUAL	Sydney	1:100,000

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
ERgn	GLENORIE		EROSIONAL	Sydney	1:100,000
ERgy	GYMEA		EROSIONAL	Sydney	1:100,000
REbt	BLACKTOWN		RESIDUAL	Sydney	1:100,000
RElh	LUCAS HEIGHTS		RESIDUAL	Sydney	1:100,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage

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Soils

29 & 37 Bancroft Avenue, Roseville, NSW 2069

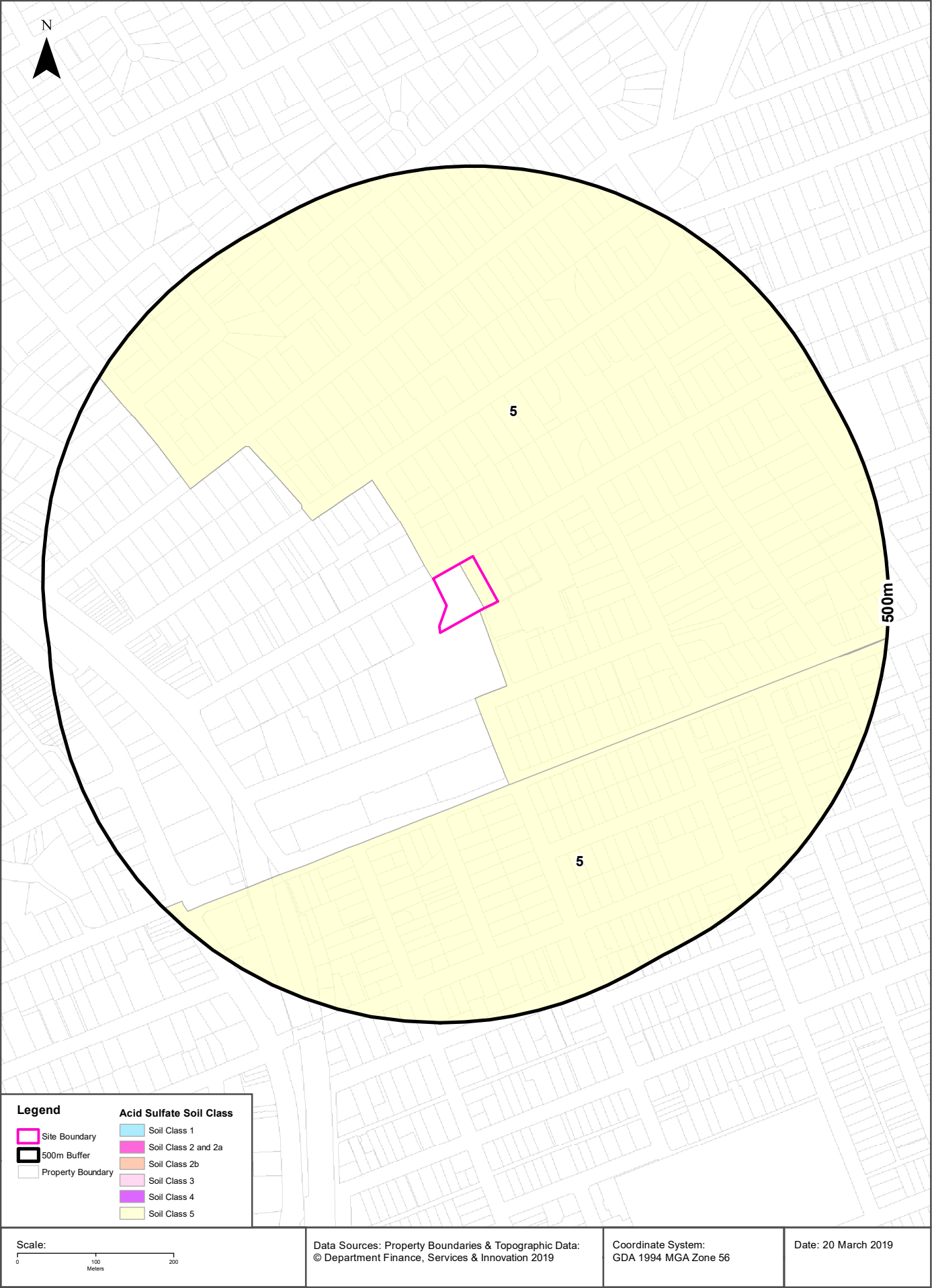
Atlas of Australian Soils

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

Map Unit Code	Soil Order	Map Unit Description	Distance
Tb35	Sodosol	Dissected plateau remnants--flat to undulating ridge tops with moderate to steep side slopes: chief soils are hard acidic yellow and yellow mottled soils (Dy3.41), (Dy2.21), and (Dy2.41) and hard acidic red soils (Dr2.21); many shallow profiles occur and profile thickness varies considerably over short distances. Associated are: (Gn3.54), (Gn3.14), and possibly other (Gn3) soils; (Db1.2) soils on some ridges; (Dy5.81) soils in areas transitional to unit Mb2; soils common to unit Mb2; and eroded lateritic remnants. Small areas of other soils are likely. Flat ferruginous shale or sandstone fragments are common on and/or in and/or below the soils of this unit.	0m

Atlas of Australian Soils Data Source: CSIRO

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Acid Sulfate Soils

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Environmental Planning Instrument - Acid Sulfate Soils

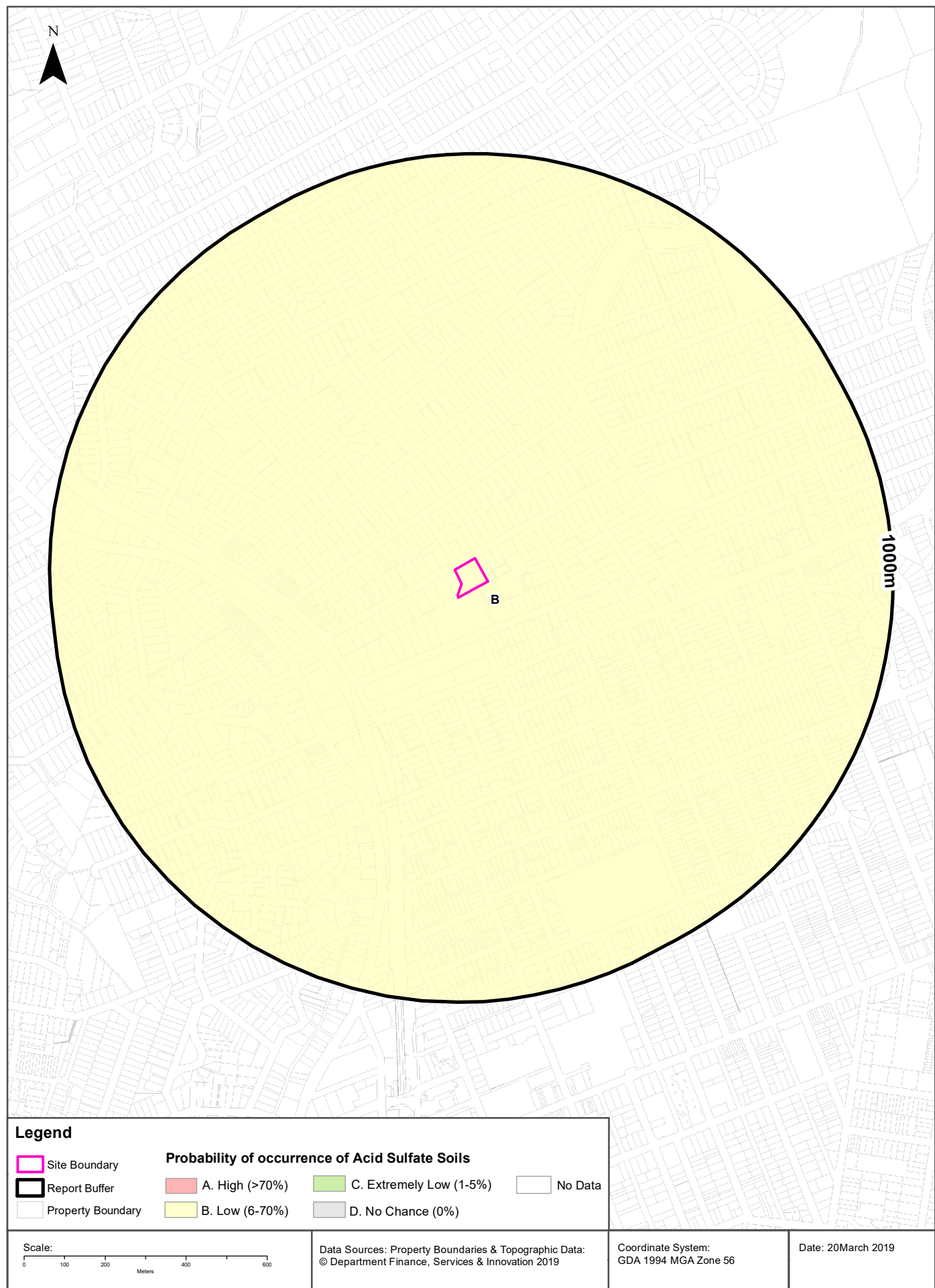
What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

Soil Class	Description	EPI Name
5	Works within 500 metres of adjacent Class 1, 2, 3, or 4 land that is below 5 metres AHD and by which the watertable is likely to be lowered below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk	Ku-ring-gai Local Environmental Plan 2015

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

Soil Class	Description	EPI Name	Distance	Direction
None				

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

29 & 37 Bancroft Avenue, Roseville, NSW 2069

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

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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Dryland Salinity

29 & 37 Bancroft Avenue, Roseville, NSW 2069

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
N/A	Outside Data Coverage			

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

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Mining Subsidence Districts

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

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

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

29 & 37 Bancroft Avenue, Roseville, NSW 2069

State Significant Precincts

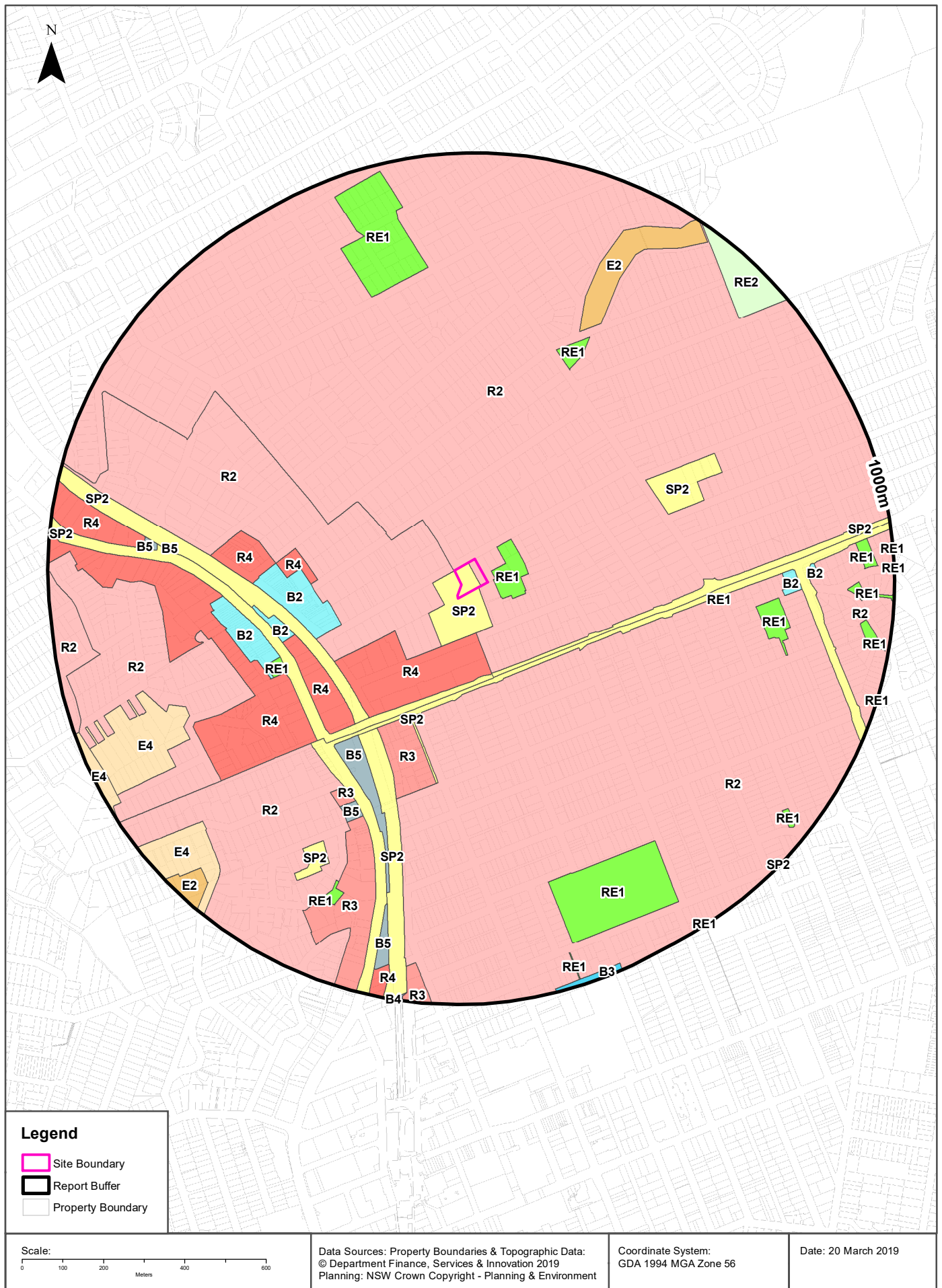
What SEPP State Significant Precincts exist within the dataset buffer?

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

State Environment Planning Policy Data Source: NSW Crown Copyright - Planning & Environment
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EPI Planning Zones

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Environmental Planning Instrument

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Land Zoning

What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
SP2	Infrastructure	Educational Establishment	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		0m	Onsite
R2	Low Density Residential		Ku-ring-gai Local Environmental Plan 2015	19/01/2018	19/01/2018	19/01/2018	Amendment No 14	0m	Onsite
R2	Low Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		2m	West
RE1	Public Recreation		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		14m	East
R4	High Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		94m	South West
SP2	Infrastructure	Classified Road	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		200m	West
SP2	Infrastructure	Classified Road	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		201m	North East
SP2	Infrastructure	Classified Road	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		213m	South East
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		224m	South East
B2	Local Centre		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		294m	West
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		314m	South
R4	High Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		338m	West
SP2	Infrastructure	Railway	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		339m	West
R4	High Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		369m	South West
SP2	Infrastructure	Railway	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		376m	South
B2	Local Centre		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		411m	West
B5	Business Development		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		416m	South West
R4	High Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		440m	West
R4	High Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		458m	West
RE1	Public Recreation		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		458m	South West
B2	Local Centre		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		460m	West
SP2	Infrastructure	Educational Establishment	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		460m	North East

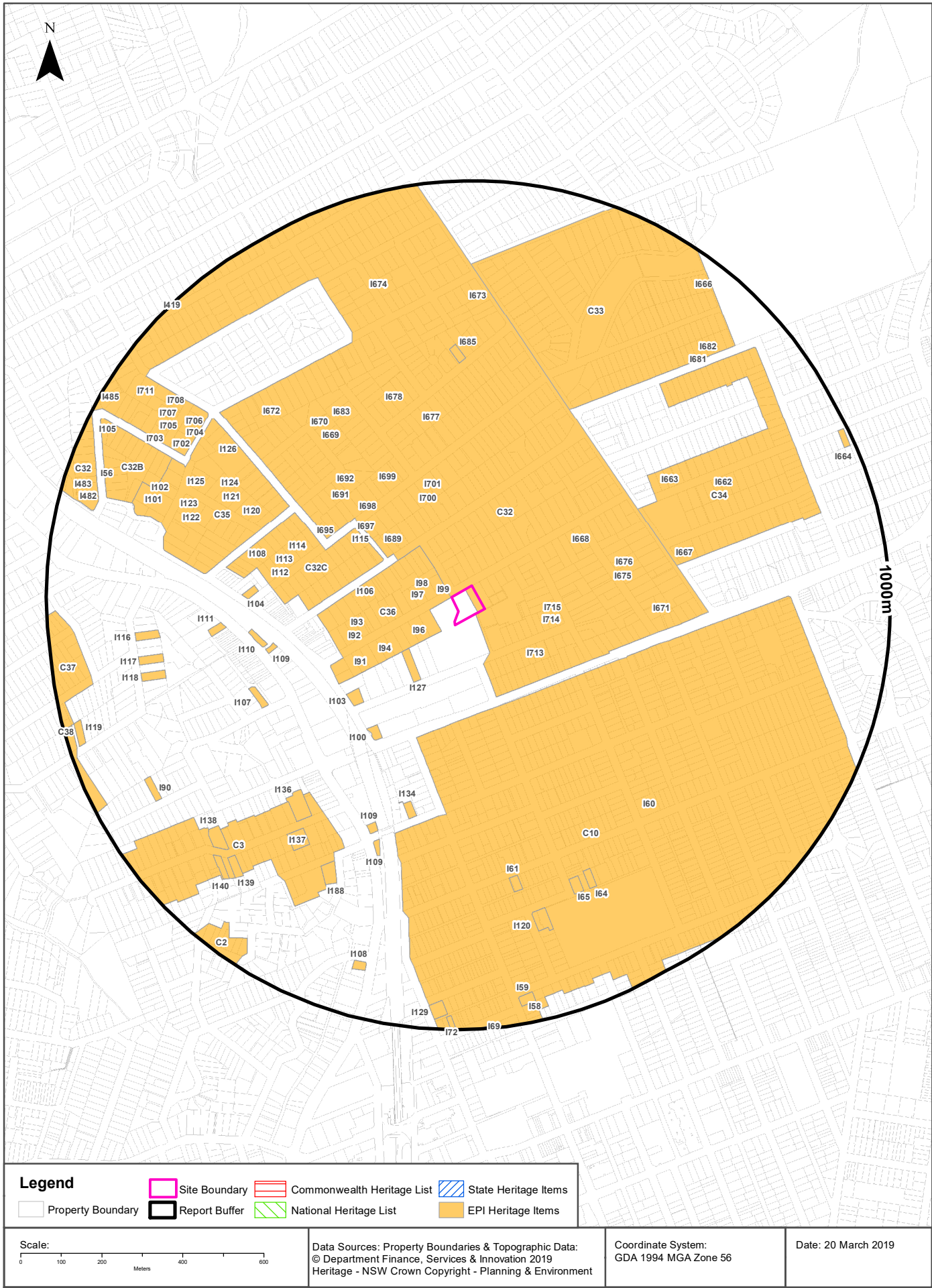
Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		508m	South West
RE1	Public Recreation		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		520m	North East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		541m	South West
R2	Low Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		553m	West
B5	Business Development		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		557m	South West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		562m	East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		582m	South
E2	Environmental Conservation		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		615m	North East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		661m	East
SP2	Infrastructure	Hospital	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		681m	South West
B5	Business Development		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		694m	West
RE1	Public Recreation		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		694m	North
E4	Environmental Living		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		720m	South West
B2	Local Centre		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		723m	East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		730m	South East
B5	Business Development		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		733m	West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		754m	South West
R4	High Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		766m	West
B5	Business Development		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		769m	South
B2	Local Centre		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		785m	East
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		789m	South East
E4	Environmental Living		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		833m	South West
RE2	Private Recreation		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		879m	North East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		884m	East
R2	Low Density Residential		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		890m	West
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		903m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		908m	East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		914m	South
E2	Environmental Conservation		Willoughby Local Environmental Plan 2012	13/06/2014	13/06/2014	20/10/2017	Amendment No 1	915m	South West
R4	High Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		916m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		916m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		920m	East

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
E4	Environmental Living		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		966m	South West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		974m	East
B4	Mixed Use		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		978m	South
B3	Commercial Core		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		981m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		986m	South East
SP2	Infrastructure	Stormwater Management	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		994m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		998m	East

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Heritage Items

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Heritage

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Commonwealth Heritage List

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

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

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

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

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

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

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

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

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

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

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

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
C32	Clanville Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	0m	Onsite
C36	Lord Street/Bancroft Avenue Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	2m	West
I99	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	21m	North West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I98	Dwelling House "Westover"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	36m	West
I97	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	60m	West
I96	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	67m	South West
I127	Dwelling House "Walthamstow"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	128m	South West
I714	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	141m	East
I713	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	142m	South East
I715	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	160m	East
I94	Dwelling House "Leightonlyn"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	166m	South West
I689	St. Luke's Hall	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	169m	North West
I106	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	187m	West
C32C	Clanville Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	192m	West
I95	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	199m	West
I93	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	213m	West
C10	North Chatswood	Conservation Area - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	224m	South East
I92	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	229m	West
I700	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	233m	North
I91	Dwelling House "Rochester"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	235m	South West
I701	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	238m	North
I697	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	238m	North West
I115	Roseville Scout Group Hall	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	242m	North West
I668	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	282m	North East
I103	Dwelling House "Beresford"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	284m	South West
I698	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	302m	North West
I699	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	304m	North West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I100	Residential Flat Building "Ku-ring-gai Court"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	312m	South West
I676	Dwelling house "Chilcote"	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	330m	East
I695	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	331m	North West
I675	Dwelling house "Taylor"	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	336m	East
I692	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	359m	North West
I691	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	360m	North West
I114	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	372m	West
I671	Dwelling house "Clermiston"	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	390m	East
I113	Dwelling House "Lawarra"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	397m	West
I677	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	408m	North
I112	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	410m	West
I109	Former Commonwealth Bank Building	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	441m	West
I134	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	448m	South
C34	Archbold Farms Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	449m	North East
C35	The Grove Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	460m	West
I108	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	460m	West
I110	Former Station Masters Residence	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	465m	West
I678	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	466m	North
I104	Former Westpac Bank Building	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	476m	West
I667	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	484m	East
I669	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	489m	North West
C33	Earl of Canarvon Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	497m	North East
I107	"Killiecrankie" Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	501m	South West
I120	Dwelling House "Colmar"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	518m	North West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I683	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	520m	North West
I109	Commercial buildings	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	523m	South West
I670	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	533m	North West
I663	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	543m	North East
C3	Findlay and Wyvem Avenues	Conservation Area - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	547m	South West
I685	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	25/11/2016	25/11/2016	10/08/2018	551m	North
I136	House (including original interiors and grounds)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	557m	South West
I109	Commercial buildings	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	561m	South
I111	Roseville Cinema	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	561m	West
I121	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	576m	North West
I124	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	599m	North West
I60	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	603m	South East
I672	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	613m	North West
I137	House (including original interiors and grounds)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	626m	South West
I61	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	636m	South
I126	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	642m	North West
I122	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	648m	West
I188	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	655m	South West
I662	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	655m	North East
I123	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	671m	West
I125	Residential Flat Building	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	673m	North West
I673	Dwelling house "Bryn-Mawr"	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	681m	North
I64	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	684m	South East
I65	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	687m	South

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I674	The Firs Estate Cottage	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	694m	North
I117	Dwelling House "Rose Haven"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	724m	West
I118	Dwelling House "Netherwood"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	724m	West
I102	Dwelling House "Luton"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	725m	West
I116	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	726m	West
I101	Dwelling House "Gooyong"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	728m	West
I120	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	731m	South
I702	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	745m	North West
I704	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	745m	North West
I706	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	746m	North West
I138	House (including original interiors and circular driveway)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	765m	South West
C32B	Clanville Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	770m	North West
I139	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	786m	South West
I681	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	786m	North East
I707	Dwelling house "Cerne Abbas"	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	811m	North West
I703	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	811m	North West
I705	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	811m	North West
I708	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	813m	North West
I140	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	813m	South West
I682	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	814m	North East
I90	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	840m	South West
I56	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	857m	West
I108	Boarding house (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	862m	South
I711	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	891m	North West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I482	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	903m	West
C37	Garden of Roseville Estate Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	905m	West
I483	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	912m	West
C2	Blue Gum	Conservation Area - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	921m	South West
I666	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	925m	North East
I59	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	926m	South
I129	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	927m	South
I105	Dwelling House "Doralyn"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	933m	North West
I58	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	945m	South
I119	Dwelling House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	953m	West
I485	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	955m	North West
I72	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	964m	South
C38	Shirley Road Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	966m	West
I664	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	971m	North East
I69	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	986m	South
I70	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	990m	South
I71	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	994m	South
I419	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	997m	North West

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Natural Hazards

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Bush Fire Prone Land

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

Bush Fire Prone Land Category	Distance	Direction
Vegetation Buffer	586m	North
Vegetation Category 2	616m	North East
Vegetation Category 1	724m	South West

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

Ecological Constraints - Native Vegetation & RAMSAR Wetlands

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Legend

Site Boundary	Rainforest	Forested Wetlands	Grasslands	Artificial Wetlands	RAMSAR Wetlands
Report Buffer	Wet Sclerophyll Forests	Grassy Woodlands	Freshwater Wetlands	Water	
Property Boundary	Dry Sclerophyll Forests	Heathlands	Saline Wetlands	Other	

Scale:
0 100 200 400 600
Meters

Proport Boundary Data Source:
© Department Finance, Services & Innovation 2019

Coordinate System:
GDA 1994 MGA Zone 56

Date: 20 March 2019

Ecological Constraints

29 & 37 Bancroft Avenue, Roseville, NSW 2069

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
S_WSF09	S_WSF09: Sydney Turpentine-Ironbark Forest	Sydney Turpentine Ironbark Forest	Turpentine Ironbark Forest (possible)	24: Urban and hard surface	24: Urban mixed use	4: Very high	E.paniculata/S.glomuliferaE.resinifera/E.punctata	51m	South West
S_WSF01	S_WSF01: Blue Gum High Forest	Blue Gum High Forest	Blue Gum High Forest (possible)	11: Semi sheltered dry/mesic	24: Urban mixed use	4: Very high	E.salignaE.pilularis/S.glomulifera/E.paniculata/A.costata	109m	South
S_WSF06	S_WSF06: Coastal Shale-Sandstone Forest			13: Dry shrubs and grasses	24: Urban mixed use	4: Very high	E.resinifera/E.pilularis/A.costata/S.glomulifera	491m	North
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			10: Mesic/rainforest	13: Weeds	3: High	E.piperita/A.costataE.pilularis	627m	North East
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			11: Semi sheltered dry/mesic	13: Weeds	3: High	E.piperita/A.costataE.pilularis	947m	North East

Native Vegetation of the Sydney Metropolitan Area : NSW Office of Environment and Heritage

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Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

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

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

Ecological Constraints

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Groundwater Dependent Ecosystems Atlas

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

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology
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Ecological Constraints

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Inflow Dependent Ecosystems Likelihood

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

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

29 & 37 Bancroft Avenue, Roseville, NSW 2069

NSW BioNet Atlas

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

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Heleioporus australiacus	Giant Burrowing Frog	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Amphibia	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Amphibia	Pseudophryne australis	Red-crowned Toadlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Anous stolidus	Common Noddy	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Anseranas semipalmata	Magpie Goose	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardea ibis	Cattle Egret	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Ardenna carneipes	Flesh-footed Shearwater	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Ardenna pacificus	Wedge-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna tenuirostris	Short-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	ROKAMBA;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 ruficollis	Red-necked Stint	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Endangered Population, Vulnerable	Category 3	Not Listed	
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptorhynchus banksii banksii	Red-tailed Black-Cockatoo (coastal subspecies)	Critically Endangered	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Cecropis daurica	Red-rumped Swallow	Not Listed	Not Sensitive	Not Listed	ROKAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Diomedea exulans	Wandering Albatross	Endangered	Not Sensitive	Endangered	JAMBA
Animalia	Aves	Egretta sacra	Eastern Reef Egret	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Ephippiorhynchus asiaticus	Black-necked Stork	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Erythrorhynchus radiatus	Red Goshawk	Critically Endangered	Category 2	Vulnerable	
Animalia	Aves	Esacus magnirostris	Beach Stone-curlew	Critically Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Eudyptula minor	Little Penguin	Endangered Population	Not Sensitive	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus fuliginosus	Sooty Oystercatcher	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus longirostris	Pied Oystercatcher	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Hieraetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
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	Lophochroa leadbeateri	Major Mitchell's Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Merops ornatus	Rainbow Bee-eater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Neophema pulchella	Turquoise Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Nettapus coromandelianus	Cotton Pygmy-Goose	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Numenius madagascariensis	Eastern Curlew	Not Listed	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Numenius minutus	Little Curlew	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Onychoprion fuscata	Sooty Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pachycephala olivacea	Olive Whistler	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Phaethon lepturus	White-tailed Tropicbird	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Plegadis falcinellus	Glossy Ibis	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Pluvialis 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	Pterodroma leucopetra leucopetra	Gould's Petrel	Vulnerable	Not Sensitive	Endangered	
Animalia	Aves	Ptilinopus superbus	Superb Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stercorarius longicaudus	Long-tailed Jaeger	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Stercorarius parasiticus	Arctic Jaeger	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Stercorarius pomarinus	Pomarine Jaeger	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
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	Sula dactylatra	Masked Booby	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Tringa brevipes	Grey-tailed Tattler	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa incana	Wandering Tattler	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Insecta	Petalura gigantea	Giant Dragonfly	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus forsteri	New Zealand Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus pusillus doriferus	Australian Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Dugong dugon	Dugong	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Eubalaena australis	Southern Right Whale	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Isodon obesulus obesulus	Southern Brown Bandicoot (eastern)	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Megaptera novaeangliae	Humpback Whale	Vulnerable	Not Sensitive	Vulnerable	
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	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Perameles nasuta	Long-nosed Bandicoot	Endangered Population	Not Sensitive	Not Listed	
Animalia	Mammalia	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Petaurus australis	Yellow-bellied Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascogale carolinensis	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pseudomys novaehollandiae	New Holland Mouse	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheath-tail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Dermochelys coriacea	Leatherback Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Myuchelys bellii	Western Sawshelled Turtle, Bell's Turtle	Endangered	Not Sensitive	Vulnerable	
Animalia	Reptilia	Varanus rosenbergi	Rosenberg's Goanna	Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Camarophyllopsis kearneyi		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe anomala var. ianthinomarginata		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe aurantipes		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe austropratensis		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe collucera		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe griseoramosa		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe lanecovensensis		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe reesiae		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe rubronivea		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia bynoeana	Bynoe's Wattle	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia clunies-rossiae	Kanangra Wattle	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia gordonii		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Acacia pubescens	Downy Wattle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia terminalis subsp. terminalis	Sunshine Wattle	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Allocasuarina portuensis	Nielsen Park She-oak	Endangered	Category 3	Endangered	
Plantae	Flora	Caladenia tessellata	Thick Lip Spider Orchid	Endangered	Category 2	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Chamaesyce psammogeton	Sand Spurge	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Cryptostylis hunteriana	Leafless Tongue Orchid	Vulnerable	Category 2	Vulnerable	
Plantae	Flora	Darwinia biflora		Vulnerable	Not Sensitive	Vulnerable	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Darwinia peduncularis		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Deyeuxia appressa		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Epacris purpurascens var. purpurascens		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus camfieldii	Camfield's Stringybark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Genoplesium baueri	Bauer's Midge Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Genoplesium plumosum	Tallong Midge Orchid	Critically Endangered	Category 2	Endangered	
Plantae	Flora	Grammitis stenophylla	Narrow-leaf Finger Fern	Endangered	Category 3	Not Listed	
Plantae	Flora	Grevillea caleyi	Caley's Grevillea	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Grevillea hilliana	White Yiel Yiel	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Grevillea juniperina subsp. juniperina	Juniper-leaved Grevillea	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Haloragodendron lucasii		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Hibbertia puberula		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Hibbertia spanantha	Julian's Hibbertia	Critically Endangered	Category 2	Critically Endangered	
Plantae	Flora	Hibbertia superans		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Isotoma fluviatilis subsp. fluviatilis		Not Listed	Not Sensitive	Extinct	
Plantae	Flora	Lasiopetalum joyceae		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Leptospermum deanei		Vulnerable	Not Sensitive	Vulnerable	
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	Melaleuca biconvexa	Biconvex Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Microtis angusii	Angus's Onion Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Persoonia laxa		Presumed Extinct	Not Sensitive	Extinct	
Plantae	Flora	Pimelea curviflora var. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Prostanthera junonis	Somersby Mintbush	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Prostanthera marifolia	Seaforth Mintbush	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Sarcocylus hartmannii	Hartman's Sarcocylus	Vulnerable	Category 2	Vulnerable	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetralathea glandulosa		Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Tetralthea juncea	Black-eyed Susan	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Thesium australe	Austral Toadflax	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Wilsonia backhousei	Narrow-leafed Wilsonia	Vulnerable	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

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Data obtained 19/03/2019

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Summary of Owners Report

LRS NSW

Sydney

Address: - 29 & 37 Bancroft Road, Roseville

Description: - Lot 18 Section C D.P. 5035 and part of Lot 2003 D.P. 1084428

As regards Lot 18 Section C D.P. 5035

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
05.08.1911 (1911 to 1949)	Herbert Stanley Tebbutt (Journalist)	Vol 2145 Fol 14
04.03.1949 (1949 to 1958)	William Antony Whitlock (Journalist)	Vol 2145 Fol 14
13.05.1958 (1958 to 1964)	Nancy Wilmore Atkin (Married Woman)	Vol 2145 Fol 14
12.10.1964 (1964 to 1985)	Joan Colban Roberts (Barrister – at – Law) (& Deceased Estate)	Vol 2145 Fol 14
15.10.1985 (1985 to 1993)	Michael John Kean Jennifer Anne Kean	Vol 2145 Fol 14 Now 18/C/5035
14.12.1993 (1993 to 2016)	Kun Yu Hou Yin Shen Chiu Hou	18/C/5035
21.05.2016 (2016 to date)	# Anglican Schools Corporation	18/C/5035

Denotes current registered proprietor

Leases & Easements: - NIL

As regards the part of Lot 2003 D.P. 1084428 tinted yellow on the attached Cadastral Records enquiry Report

As regards that part numbered (1) on the attached Cadastral Records enquiry Report

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
10.06.1908 (1908 to 1959)	Selina Roberts (Married Woman)	Vol 1859 Fol 117
16.03.1959 (1959 to 1996)	Selina Eleanor Roberts (Spinster) (Section 94 Application not investigated)	Vol 1859 Fol 117 Now 2/205691
15.02.1996 (1996 to 1997)	Penelope Jane Hunstead Richard Waller Hunstead	2/205691
27.06.1997 (1997 to 1999)	The Roseville Girls College Limited	2/205691



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Continued as regards that part numbered (1) on the attached Cadastral Records enquiry Report

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
08.03.1999 (1999 to date)	# Sydney Anglican Schools Corporation Now # Anglican Schools Corporation	2/205691 Now 5003/1084428

Denotes current registered proprietor

As regards that part numbered (2) on the attached Cadastral Records enquiry Report

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
15.02.1908 (1908 to 1939)	Alexander Willoughby Button (Civil Servant)	Vol 1853 Fol 81
27.02.1939 (1939 to 1939)	Alexander Theodore Britton (Civil Engineer) Harold William Britton (Civil Engineer) Jessie Rosalind Bucknell (Married Woman) (Transmission Application not investigated)	Vol 1853 Fol 81
03.04.1939 (1939 to 1992)	Jessie Rosalind Bucknell (Married Woman)	Vol 1853 Fol 81 Now 1/205691
31.07.1992 (1992 to 1999)	The Roseville Girls College Limited	1/205691
08.03.1999 (1999 to date)	# Sydney Anglican Schools Corporation Now # Anglican Schools Corporation	1/205691 Now 5003/1084428

Denotes current registered proprietor

As regards the part numbered (3) on the attached Cadastral Records Enquiry Report

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
10.06.1908 (1908 to 1959)	Selina Roberts (Married Woman)	Vol 1859 Fol 117
16.03.1959 (1959 to 1961)	Selina Eleanor Roberts (Spinster) (Section 94 Application not investigated)	Vol 1859 Fol 117 Now Vol 9075 Fol 243
12.10.1961 (1961 to 1983)	Marjorie Joyce Ramsay (Married Woman)	Vol 9075 Fol 243
04.03.1983 (1983 to 1999)	The Roseville Girls College Limited	Vol 9075 Fol 243 Now 32/791493 (title not investigated)
08.03.1999 (1999 to date)	# Sydney Anglican Schools Corporation Now # Anglican Schools Corporation	32/791493 Now 5003/1084428

Denotes current registered proprietor



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As regards that part numbered (4) on the attached Cadastral Records enquiry Report

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
15.02.1908 (1908 to 1939)	Alexander Willoughby Button (Civil Servant)	Vol 1853 Fol 81
27.02.1939 (1939 to 1939)	Alexander Theodore Britton (Civil Engineer) Harold William Britton (Civil Engineer) Jessie Rosalind Bucknell (Married Woman) (Transmission Application not investigated)	Vol 1853 Fol 81
03.04.1939 (1939 to 1983)	Jessie Rosalind Bucknell (Married Woman)	Vol 1853 Fol 81 Now Vol 9075 Fol 243
04.03.1983 (1983 to 1999)	The Roseville Girls College Limited	Vol 9075 Fol 243 Now 32/791493 (titles not investigated)
08.03.1999 (1999 to date)	# Sydney Anglican Schools Corporation Now # Anglican Schools Corporation	32/791493 Now 5003/1084428

Denotes current registered proprietor

As regards that part numbered (5) on the attached Cadastral Records enquiry Report

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
02.06.1927 (1927 to 1956)	Arthur Henry Blanche (Stock Salesman)	Vol 2651 Fol 31
20.09.1956 (1956 to 1956)	Thomas Edward Blanche (Grazier) (Section 94 Application not investigated)	Vol 2651 Fol 31
20.09.1956 (1956 to 1957)	Allan William Quinn (Clerk) Estelle Marie Quinn (Married Woman)	Vol 2651 Fol 31
25.03.1957 (1957 to 1982)	Roland George Murphy (Chartered Engineer)	Vol 2651 Fol 31 Now Vol 12274 Fol 139
05.08.1982 (1982 to 1994)	Sylvia Beatrice Murphy (Transmission Application not investigated)	Vol 12274 Fol 139 Now 31/791493
14.07.1994 (1994 to 1999)	The Roseville Girls College Limited	31/791493
08.03.1999 (1999 to date)	# Sydney Anglican Schools Corporation Now # Anglican Schools Corporation	31/791493 Now 5003/1084428

Denotes current registered proprietor



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

As regards that part numbered (5B) on the attached Cadastral Records enquiry Report

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
02.06.1927 (1927 to 1956)	Arthur Henry Blanche (Stock Salesman)	Vol 2651 Fol 31
20.09.1956 (1956 to 1956)	Thomas Edward Blanche (Grazier) (Section 94 Application not investigated)	Vol 2651 Fol 31
20.09.1956 (1956 to 1957)	Allan William Quinn (Clerk) Estelle Marie Quinn (Married Woman)	Vol 2651 Fol 31
25.03.1957 (1957 to 1982)	Roland George Murphy (Chartered Engineer)	Vol 2651 Fol 31 Now Vol 12274 Fol 139
05.08.1982 (1982 to 1989)	Sylvia Beatrice Murphy (Transmission Application not investigated)	Vol 12274 Fol 139 Now 32/791493
20.10.1989 (1989 to 1996)	The Roseville Girls College Limited	32/791493
08.03.1999 (1999 to date)	# Sydney Anglican Schools Corporation Now # Anglican Schools Corporation	32/791493 Now 5003/1084428

Denotes current registered proprietor

As regards the thin strip tinted pink on the attached Cadastral Records enquiry Report

This part was formerly a strip of land 0.3 metres wide – this has not been investigated at this stage

Leases: - NIL

Easements: -

- 06.03.2003 (9418936) Easement for Electricity Substation purposes 3.34 metres wide (? Affecting)

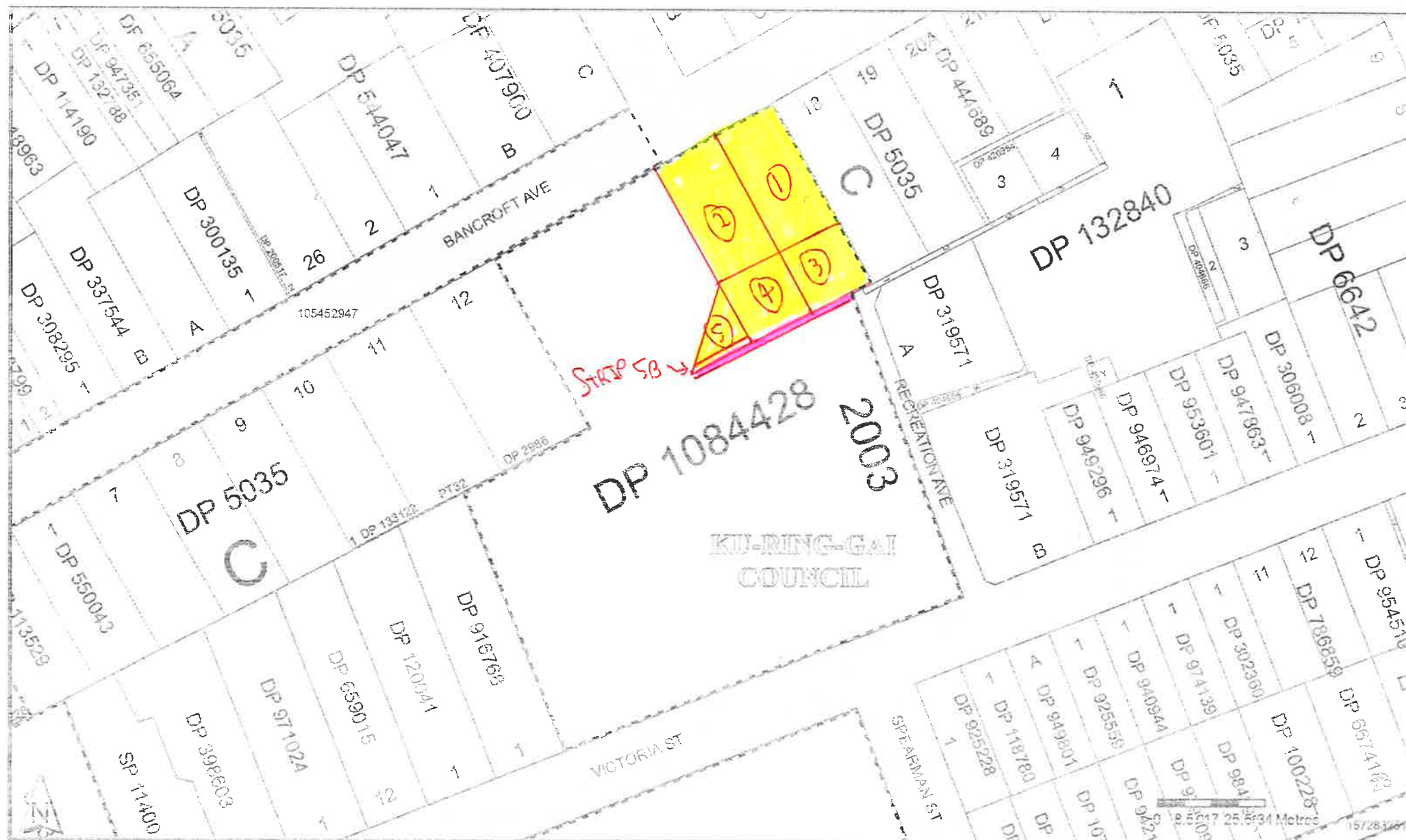
Yours Sincerely,
Mark Groll
25 March 2019

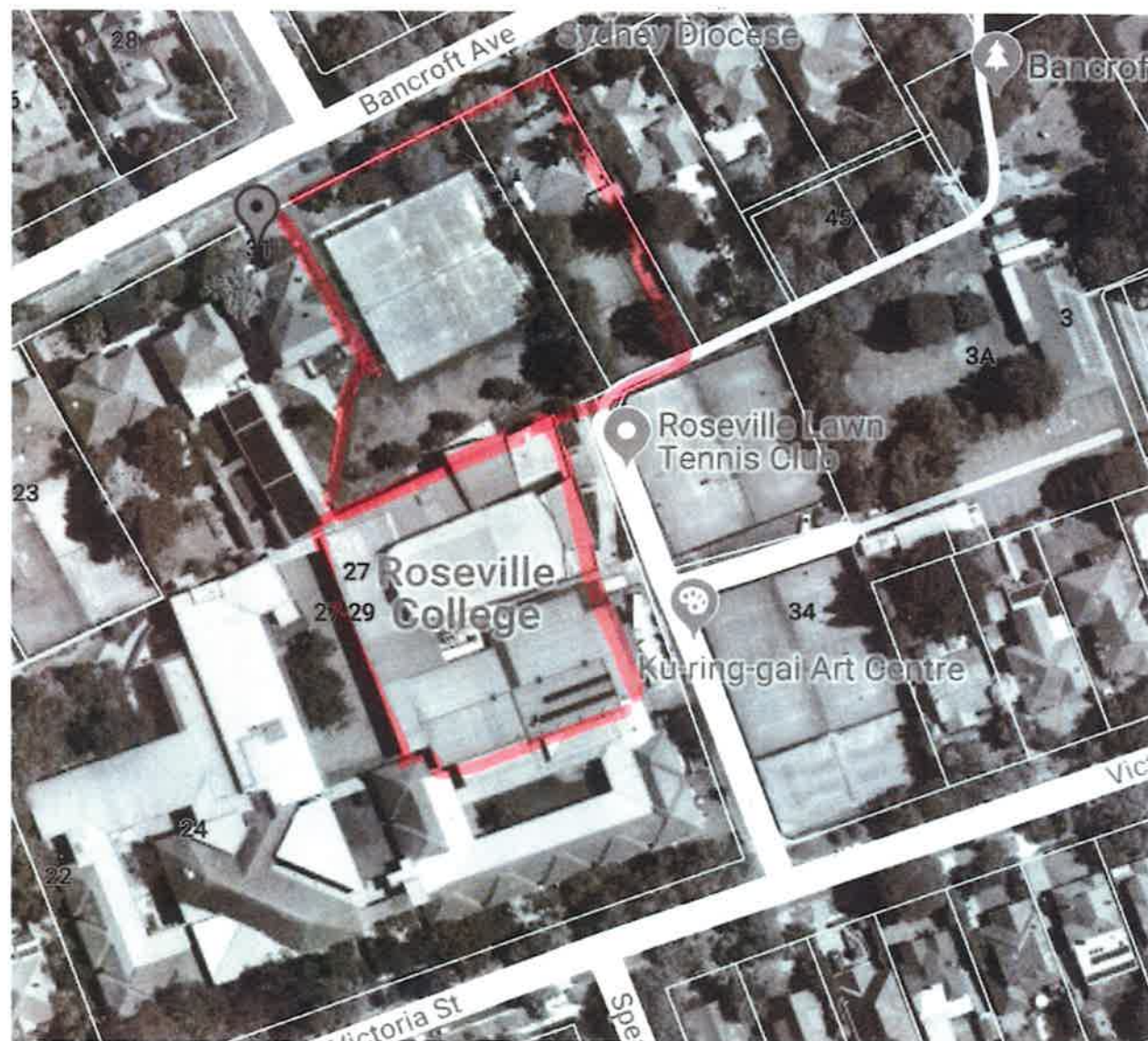
Locality : ROSEVILLE

Parish : GORDON

LGA : KILLING-GAI

County : CUMBERLAND





NEW SOUTH WALES

CERTIFICATE OF TITLE
PROPERTY ACT, 1900



15463025

First Title Old System

Vol. **15463** Fol. **25**

Prior Title Vol.2145 Fol.14



SEE AUTO FOLIO

EDITION **26** 9 1986
ISSUED

I certify that the person named in the First Schedule is the registered proprietor of an estate in fee simple (or such other estate or interest as is set out below) in the land described subject to the recordings appearing in the Second Schedule and to the provisions of the Real Property Act, 1900.

[Signature]

Registrar General.



LAND REFERRED TO

Lot 18 of Section C in DP5035 at Roseville in the Municipality of Ku-ring-gai Parish of Gordon County of Cumberland.

Title Diagram: DP5035

FIRST SCHEDULE

MICHAEL JOHN KEAN and JENNIFER ANNE KEAN, as Joint Tenants.

V981453

SECOND SCHEDULE

- 34
1. Reservations and conditions in the Crown Grant.
 2. V981454P Mortgage to Sussex Beheermaatschappij B.V.
 3. W451251 Mortgage to Commonwealth Bank of Australia X204154

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

L.O. 55

FIRST SCHEDULE (continued)
REGISTERED PROPRIETOR

Registrar General

SECOND SCHEDULE (continued)

PARTICULARS

Registrar General

CANCELLATION

~~X204155 Mortgage to Westpac Banking Corporation. Registered 17-11-1987.~~~~X91939 Cancelled by Alfred Moss Investments Pty. Limited Registered 11-1-1989.~~Y316127^P Mortgage to Alfred Moss Investments Pty. Limited Registered 1-5-1989**CANCELLED****SEE AUTO FOLIO**

NOTATIONS AND UNREGISTERED DEALINGS

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL AFM

Ref: roseville / Src: MAF / Reg: R156016 / Doc: CT 15463-025 CT / Rev: 20-Dec-2010 / Sts: OK.SC / Pgs: ATL / Pft: 25-Mar-2019 19:00

Y91939xL
Y316126xL
— 7M/R



LAND
REGISTRY
SERVICES

Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

25/3/2019 7:07PM

FOLIO: 18/C/5035

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 15463 FOL 25

Recorded	Number	Type of Instrument	C.T. Issue
9/8/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
29/9/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
20/2/1991	Z501118	DISCHARGE OF MORTGAGE	
20/2/1991	Z501119	DISCHARGE OF MORTGAGE	
20/2/1991	Z501120	MORTGAGE	EDITION 1
19/11/1993	I811157	CAVEAT	
14/12/1993	I874589	WITHDRAWAL OF CAVEAT	
14/12/1993	I874590	DISCHARGE OF MORTGAGE	
14/12/1993	I874591	TRANSFER	EDITION 2
20/5/2004	AA624162	MORTGAGE	EDITION 3
19/8/2005	AB707903	DISCHARGE OF MORTGAGE	
19/8/2005	AB707904	MORTGAGE	EDITION 4
23/8/2007	AD362807	DISCHARGE OF MORTGAGE	
23/8/2007	AD362808	MORTGAGE	EDITION 5
26/7/2014	AI770362	DISCHARGE OF MORTGAGE	
26/7/2014	AI770363	MORTGAGE	EDITION 6
21/5/2016	AK446817	DISCHARGE OF MORTGAGE	
21/5/2016	AK446818	TRANSFER	EDITION 7
2/1/2018	AM890340	MORTGAGE	EDITION 8 CORD ISSUED

*** END OF SEARCH ***

roseville

PRINTED ON 25/3/2019

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Received: 25/03/2019 19:07:29

97-01T



B

00*2*

TRANSFER

Real Property Act, 1900



I
874591 S

Office of the Registrar of Titles

①

\$2

10/265965100 70 501E 262140

(A) LAND TRANSFERRED

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

18/C/5035

(B) LODGED BY

L.T.O. Box

Name, Address or DX and Telephone

JENNIFER DARIN
DX 29609 CHATSWOOD
LTO BOX 590X

REFERENCE (max. 15 characters):

L- HOU

(C) TRANSFEROR

MICHAEL JOHN KEAN & JENNIFER ANNE KEAN

(D) acknowledges receipt of the consideration of \$805,000.00

and as regards the land specified above transfers to the Transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES** 1. 2. 3.

(F) TRANSFEE

T

KUN YU HOU and YIN SHEN CHIU HOU of
6/18 Margaret St NORWOOD SA.

(G)

TENANCY: JOINT TENANTS

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. DATED

Signed in my presence by the Transferor who is personally known to me.

Signature of Witness

HOLLY JANE COLE

Name of Witness (BLOCK LETTERS)

30A WATLE ST KILLARA

Address of Witness

Signature of Transferor

Signed in my presence by the Transferee who is personally known to

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

TITLE

☒ HEREWITH
☐ PRODUCED

Signature of Transferee

JENNIFER E DARIN, Solicitor

CHECKED BY (office use only)

INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE



LAND
REGISTRY
SERVICES

Title Search



NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 18/C/5035

SEARCH DATE	TIME	EDITION NO	DATE
25/3/2019	7:08 PM	8	2/1/2018

NO CERTIFICATE OF TITLE HAS ISSUED FOR THE CURRENT EDITION OF THIS FOLIO.
CONTROL OF THE RIGHT TO DEAL IS HELD BY NATIONAL AUSTRALIA BANK LIMITED.

LAND

LOT 18 OF SECTION C IN DEPOSITED PLAN 5035
AT ROSEVILLE
LOCAL GOVERNMENT AREA KU-RING-GAI
PARISH OF GORDON COUNTY OF CUMBERLAND
TITLE DIAGRAM DP5035

FIRST SCHEDULE

ANGLICAN SCHOOLS CORPORATION

(T AK446818)

SECOND SCHEDULE (2 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 AM890340 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

roseville

PRINTED ON 25/3/2019

* 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.

(For Grant and title reference
prior to first edition see
Deposited Plan.)

09075242

Vol. 9075 Fol. 242

1st Edition issued 22-11-1961.

Fd. I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness

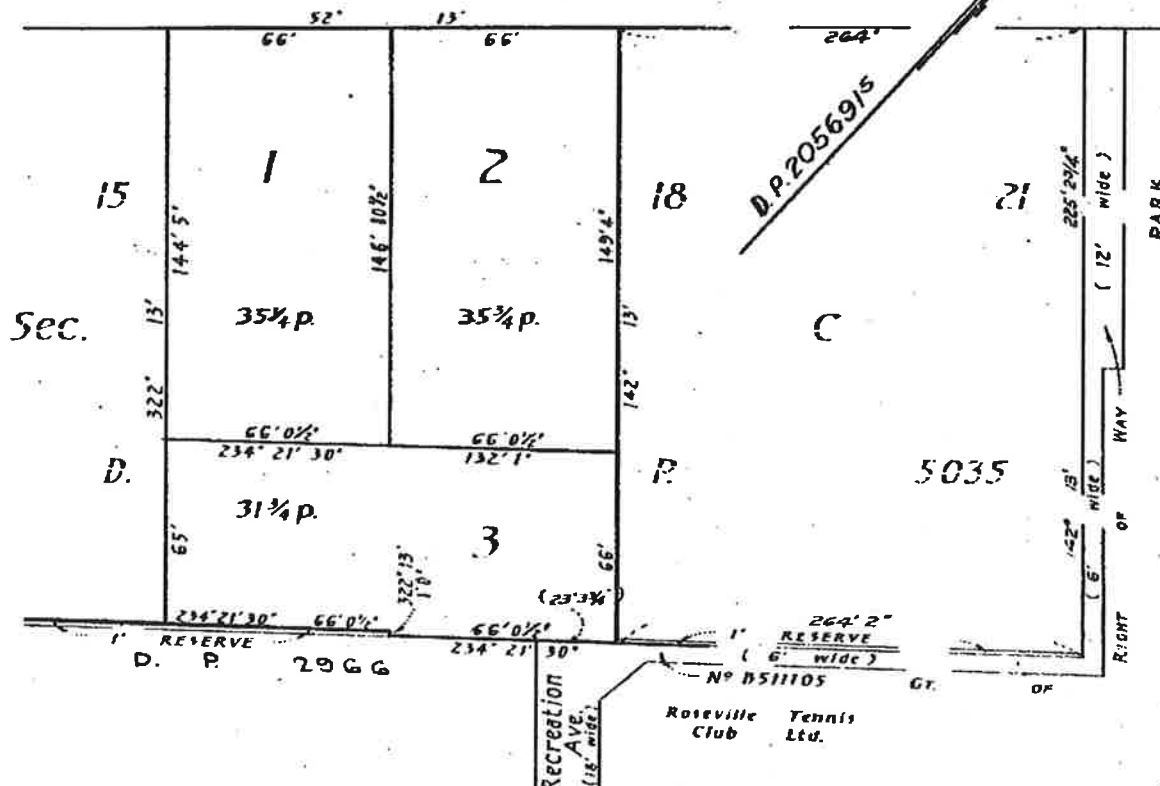
CANCELLED
Registrar-General



SEE AUTO FOLIO

(66' wide)

Ave.



Estate in Fee Simple in Lot 2 in Deposited Plan 205691s at Roseville in the Municipality of Ku-ring-gai Parish of Gordon and County of Cumberland.

SELINA ELEANOR ROBERTS, of Roseville, Spinster.


Registrar General

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.
2. Covenant created by Transfer No. 476948.^P

J. J. J.
Registrar General

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED.

SECOND SCHEDULE (continued)

CANCELLED



LAND
REGISTRY
SERVICES

Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

25/3/2019 7:31PM

FOLIO: 2/205691

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 9075 FOL 242

Recorded	Number	Type of Instrument	C.T. Issue
4/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
7/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
30/7/1993		AMENDMENT: LOCAL GOVT AREA	
12/8/1993		AMENDMENT: LOCAL GOVT AREA	
15/2/1996	0915163	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	
15/2/1996	0915164	TRANSMISSION APPLICATION	EDITION 1
27/2/1996	0942569	DEPARTMENTAL DEALING	EDITION 2
27/6/1997	3181063	TRANSFER	EDITION 3
8/3/1999	5652166	TRANSFER	EDITION 4
3/5/2001	DP1027386	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

roseville

PRINTED ON 25/3/2019

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Received: 25/03/2019 19:32:47

RP3



B

TRANSMISSION APPLICATION

Section 93 Real Property Act 1900



0
915164 P

00.01\$

Office of State Revenue use only

10/EE0406100 21 20+0 9620+1

N.S.W. STAMP DUTY

(A) **LAND**

Show no more than 20 References to Title.

FOLIO IDENTIFIER 2/205691

(B) **REGISTERED DEALING**

If applicable.

(C) **LODGED BY**

L.T.O. Box

4Q

Name, Address or DX and Telephone

ASHTON STEDMAN

SOLICITORS

155 CATHEDRAL STREET

WOOLLOOMOOLOO NSW 2011

REFERENCE (max. 15 characters): DX 879 SYDNEY

(D) **DECEASED REGISTERED
PROPRIETOR**

SELINA ELEANOR ROBERTS

(E) **APPLICANT**

TA

PENELOPE JANE HUNSTEAD & RICHARD WALLER HUNSTEAD

AS JOINT TENANTS

(F) I, the Applicant, being entitled as **BENEFICIARIES** of the will/~~estate~~ of the Deceased Registered Proprietor (who died on **16 AUGUST** 199**5**) pursuant to Probate/~~Letters of Administration~~ No. **118137/95** granted on **7 DECEMBER** 199**5** to **RICHARD WALLER HUNSTEAD**

apply to be registered as proprietor of the estate or interest of the Deceased Registered Proprietor in the Land/~~Registered Estate~~ specified above.

(G) Certified correct for the purposes of the Real property Act 1900.

Signed in my presence by the Applicant who is personally known to me.

DATE **10 FEBRUARY 1996**

Signature of Witness

John Ashton
Name of Witness (BLOCK LETTERS)

Address of Witness

**49 Angusdon Crn
Forestville**

EVIDENCE SIGHTED (office use only)

☒

Doc: 16/8/95

Prob: 118137/95.

Signature of Applicant

CHECKED BY (office use only)

0.013

CONSENT OF EXECUTOR OR ADMINISTRATOR

(H)

I, **RICHARD WALLER HUNSTEAD** Executor of the will / ~~ADMINISTRATOR OF ESTATE~~
of the Deceased Registered Proprietor, hereby consent to this application.



Signature of Witness

John Ashton
Name of Witness (BLOCK LETTERS)

49 Angophora Cres. Forestville
Address of Witness **NSW**


Signature of Executor/Administrator

INSTRUCTIONS FOR COMPLETION

STAMP DUTY: If the Applicant is a devisee, beneficiary, next-of-kin or otherwise beneficially entitled or if the Deceased Registered Proprietor died prior to 31 December 1981 the application must be presented to the Office of State Revenue prior to lodgment at the Land Titles Office.

1. The Application must be completed clearly and legibly in permanent, dense, black or dark blue non-copying ink. If using a dot-matrix printer the print must be letter-quality.
2. Do not use an eraser or correction fluid to make alterations: rule through rejected material. Initial each alteration in the lefthand margin.
3. If the space provided at any point is insufficient, you may annex additional pages. These must be the same size as the form; paper quality, colour, etc, must conform to the requirements set out in Land Titles Office Information Bulletin No. 19. All pages of any annexure must be signed by the person executing the Application and any attesting witness.
4. The following instructions relate to the marginal letters on the application.

(A) LAND

Show the relevant Reference to Title. If there are more than 20 show none in this panel. Place ALL of them on an annexure (see 3 above) with 20 per sheet.

(B) REGISTERED DEALING

Show the registration number of any lease, mortgage or charge in regard to which the Applicant is applying to be registered as a proprietor.

(C) LODGED BY

This section relates to the person or firm lodging the Application at the Land Titles Office.

Reference (max. 15 characters) This is optional. Any slashes, dots, blank spaces, etc, will be counted as characters.

(D) DECEASED REGISTERED PROPRIETOR

Show the name in full. Address and occupation need not be shown.

(E) APPLICANT

Show the name in full. Address and occupation need not be shown.

(F) WILL/ESTATE, etc

Amend "will/estate", "Probate/Letters of Administration" and "Land/Registered Dealing" as appropriate.

In the relevant spaces show the capacity (executor, devisee, etc) in which the Applicant is entitled to apply, the date of death of the Deceased Registered Proprietor, the number and date of grant of the Probate or Letters of Administration pursuant to which the Application is made, and the name of the person to whom the grant was made.

(G) EXECUTION

General The application must be executed by or on behalf of the Applicant.

By the Applicant Personally The application must be signed in the presence of an adult witness who is not an Applicant and who knows the party executing personally. The witness should complete the appropriate section of the application.

By the Applicant's Attorney The Power of Attorney must be registered in the General Register of Deeds at the Land Titles Office. The execution should take the form, "AB by her attorney XY [full name] pursuant to Power of Attorney Book 1234 Number 567".

Under Authority If the application is made pursuant to any statutory, judicial or other authority, except a Power of Attorney (see above), the nature of the authority should be disclosed.

By a Corporation under Seal The execution should include a statement that the seal has been properly affixed, for example, "... pursuant to a resolution of the board of directors ...". Alternatively, all those attesting the affixing of the seal must state their position in the corporation.

(H) CONSENT OF EXECUTOR OR ADMINISTRATOR

This is required only where the Applicant claims to be entitled other than as executor, administrator or trustee.

The completed Application must be lodged by hand at the LAND TITLES OFFICE, Queen's Square, Sydney, together with the Certificate of Title, the probate or letters of administration (or a copy thereof certified by a solicitor to be a true copy) and a completed Notice of Sale.

If you have any questions about filling out the form, please call 228-6666 and ask for our Customer Services Branch.



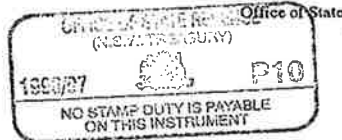
①

TRANSFER

Real Property Act, 1900



3181063 H



(A) **LAND TRANSFERRED**

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

FOLIO IDENTIFIER 2/205691

(B) **LODGED BY**

L.T.O. Box

378V

Name, Address or DX and Telephone

BARNETTS

DX 29619

CHATSWOOD

Tel: 9411 5555

REFERENCE (max. 15 characters):

J-35349



(C) **TRANSFEROR**

PENELOPE JANE HUNSTEAD and RICHARD WALLER HUNSTEAD

(D) acknowledges receipt of the consideration of\$637,500.....

and as regards the land specified above transfers to the Transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES** 1. 2. 3.

(F) **TRANSFeree**

T
TS
(s713 LGA)
TW
(Sheriff)

THE ROSEVILLE GIRLS COLLEGE LIMITED ACN 000 288 335

(G)

TENANCY:

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900.

DATED

23 JUNE 1997

Signed in my presence by the Transferor who is personally known to me.

Peter J Ashton

Signature of Witness

PETER J ASHTON

Name of Witness (BLOCK LETTERS) TO BOTH OF THE TRANSFERORS

SOLICITOR SYDNEY

Address of Witness

Richard Waller Hunstead
P. J. Hunstead

Signature of Transferor s

Signed in my presence by the Transferee who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Jann B. Y. Tan - Solicitor for Transferee

INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE

CHECKED BY (office use only)

Form: 97-01T

Licence: LAW/0526/98

TRANSFER

New South Wales
Real Property Act 1900

5652166X



Office of State Revenue use only



(A) **LAND TRANSFERRED**

If appropriate, specify the share or part transferred.



16/662121 B/974795 B/955109 A/955109 16/662120 32/791493 1/920049
B/339961 A/388083 B/388083 C/388083 AUTO CONSOL 2531-225,31/791493
1/205691 2/205691 Vol 7011 Folio 9

(B) **LODGED BY**

LTO Box	Name, Address or DX and Telephone
887X	R J WALSH MURPHY & ROSKOV, Solicitors, P.O. Box 505 HURSTVILLE B C 1481 Telephone 02 9579 6633 REFERENCE (optional): RJW.MA.298106

(C) **TRANSFEROR**

THE ROSEVILLE GIRLS COLLEGE LIMITED (ACN 000 288 335)
IN LIQUIDATION

(D) acknowledges receipt of the consideration of \$1.00

and as regards the land specified above transfers to the transferee an estate in fee simple.

(E) Encumbrances (if applicable) 1. Mortgage I540752 2. 3.

(F) **TRANSFEE**

T
TS
(s713 LGA)
TW
(Sheriff)

**SYDNEY ANGLICAN SCHOOLS CORPORATION a Corporation
incorporated under the Anglican Church of Australia (Bodies Corporate)
Act, 1938**

(G)

TENANCY:

(H) We certify this dealing correct for the purposes of the Real Property Act 1900.

DATE 29/3/99

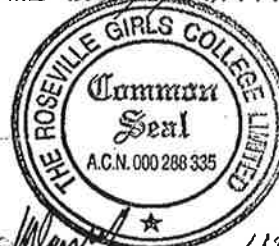
Signed in my presence by the transferor who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Vanda Russell
Gould.



Signature of Transferor

LIQUIDATOR

Signed in my presence by the transferee who is personally known to me.

Signature of Witness Secretary

Name of Witness (BLOCK LETTERS)

Address of Witness

The Common Seal of Sydney Anglican
Schools Corporation was hereunto
affixed by the Authority of the Board
of Directors in the presence of

Signature of Transferee Directors/Members



MDE prepared

val. 7011 - Folio 9

CT - 887X
7011-9-425P
CHECKED BY (LTO use) ...
Not for use 4/3/99

NEW SOUTH WALES

CERTIFICATE OF TITLE
PROPERTY ACT, 1900, as amended



09075241

(For Grant and title reference
prior to first edition see
Deposited Plan.)

Vol. **9075** Fol. **241**

1st Edition issued 22-11-1961.



I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness

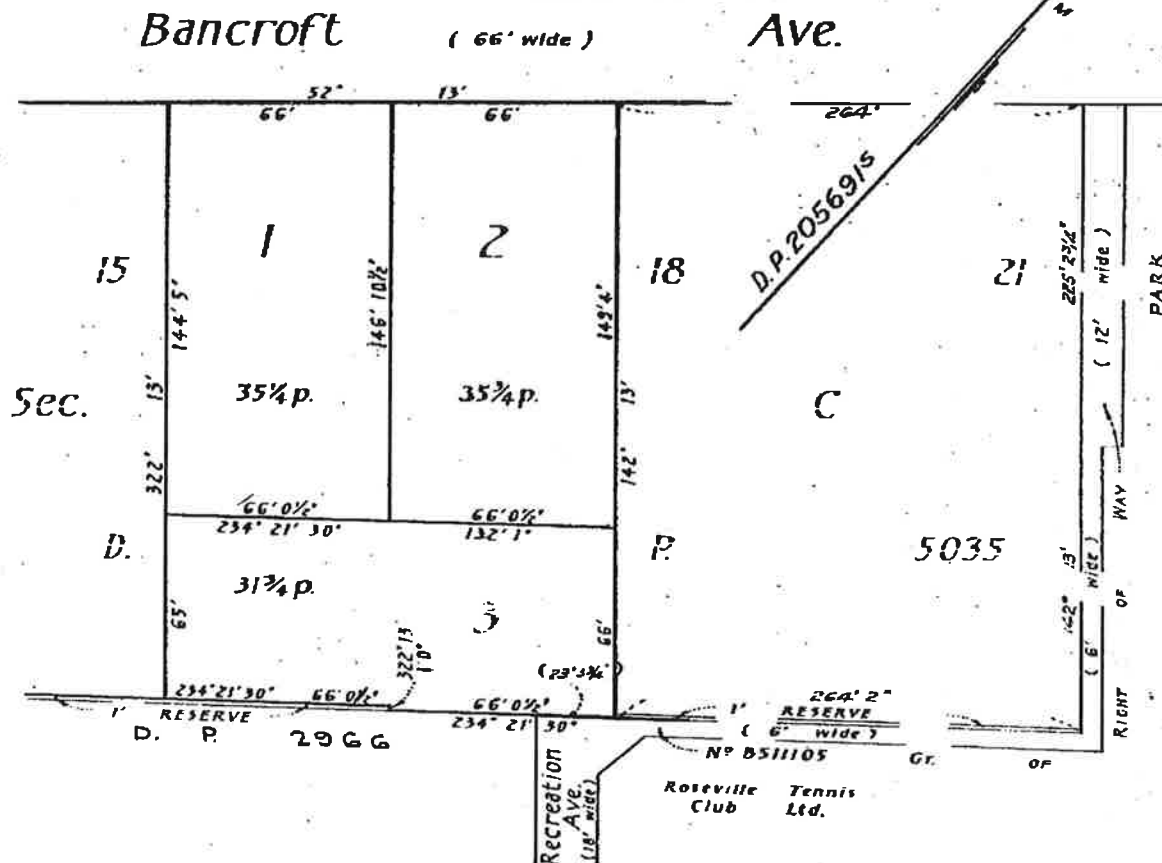
J. J. Jones

CANCELLED
J. J. Jones
Registrar-General.



SEE AUTO FOLIO

PLAN SHOWING LOCATION OF LAND.



ESTATE AND LAND REFERRED TO.

Estate in Fee Simple in Lot 1 in Deposited Plan 20569/15 at Roseville in the Municipality of Ku-ring-gai Parish of Gordon and County of Cumberland.

FIRST SCHEDULE (Continued overleaf)

JESSIE ROSALIND BUCKNELL, wife of Adrian Bucknell, of Roseville, Civil Servant.

J. J. Jones
Registrar-General.

SECOND SCHEDULE (Continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.
2. Covenant created by by Transfer No. 476948.

J. J. Jones
Registrar-General.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED.

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

Vol. 9075 Fol. 241

REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar-General
	NATURE	NUMBER	DATE		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1000	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1001	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1002	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1003	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1004	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1005	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1006	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1007	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1008	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1009	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1010	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1011	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1012	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1013	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1014	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1015	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1016	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1017	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1018	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1019	1900		
THE HONG KONG & SHANGHAI STEAMSHIP CO. (LIMITED) (INCORPORATED IN HONG KONG)	SALE OF SHIP	1020	1900		

(Page 2 of 2 pages)

[illegible]

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED



LAND
REGISTRY
SERVICES

Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

25/3/2019 7:44PM

FOLIO: 1/205691

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 9075 FOL 241

<u>Recorded</u>	<u>Number</u>	<u>Type of Instrument</u>	<u>C.T. Issue</u>
4/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
7/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
31/7/1992	E649652	TRANSFER	
31/7/1992	E649653	MORTGAGE	EDITION 1
30/7/1993		AMENDMENT: LOCAL GOVT AREA	
12/8/1993		AMENDMENT: LOCAL GOVT AREA	
4/3/1999	5652017	DISCHARGE OF MORTGAGE	EDITION 2
8/3/1999	5652166	TRANSFER	EDITION 3
3/5/2001	DP1027386	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

roseville

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Received: 25/03/2019 19:44:12

RP13



TRANSFER

Real Property Act, 1900



E
649652 G

Office of State Revenue use only

OFFICE OF STATE REVENUE
(IND. & TRANSFER)

10020 1000 P17

NO STAMP DUTY IS PAYABLE
ON THIS INSTRUMENT

(A) LAND TRANSFERRED

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

Folio Identifier 1/205691

(B) LODGED BY

L.T.O. Box

853R

Name, Address or DX and Telephone

THORNTONS
Solicitors

MANCHESTER UNITY BUILDING

J-03515 307 PITT STREET, SYDNEY
REFERENCE (max. 15 characters):

(C) TRANSFEROR

JESSIE ROSALIND BUCKNELL

(D) acknowledges receipt of the consideration of

FIVE HUNDRED AND TEN THOUSAND DOLLARS (\$510,000.00)

and as regards the land specified above transfers to the transferee an estate in fee simple

(E) subject to the following ENCUMBRANCES

1. 2. 3.

(F) TRANSFEE



THE ROSEVILLE GIRLS' COLLEGE LIMITED of
95 The Avenue, Hurstville in the State of New South Wales
(A.C.N. 000 288 335)

as joint tenants/tenants in common

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900.

DATE OF EXECUTION 15th July 1992

Signed in my presence by the transferor who is personally known to me.

K.L. Walker
Signature of Witness

K.L. WALKER
Name of Witness (BLOCK LETTERS)

Solicitor Sydney
Address of Witness

J.R. Bucknell
Signature of Transferor

Signed in my presence by the transferee who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Solicitor for the TRANSFEE
STEPHEN MARTIN FREEMAN

CHECKED BY (office use only)

28
A

INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE

(For Grant and title reference
prior to first edition see
Deposited Plan.)

Abstract

09075243

Vol. **9075** Fol. **243**


1st Edition issued 22-11-1961.

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witnesses

shown in the Second Schedule.

Jonathan
CANCELLED
Registrar-General.

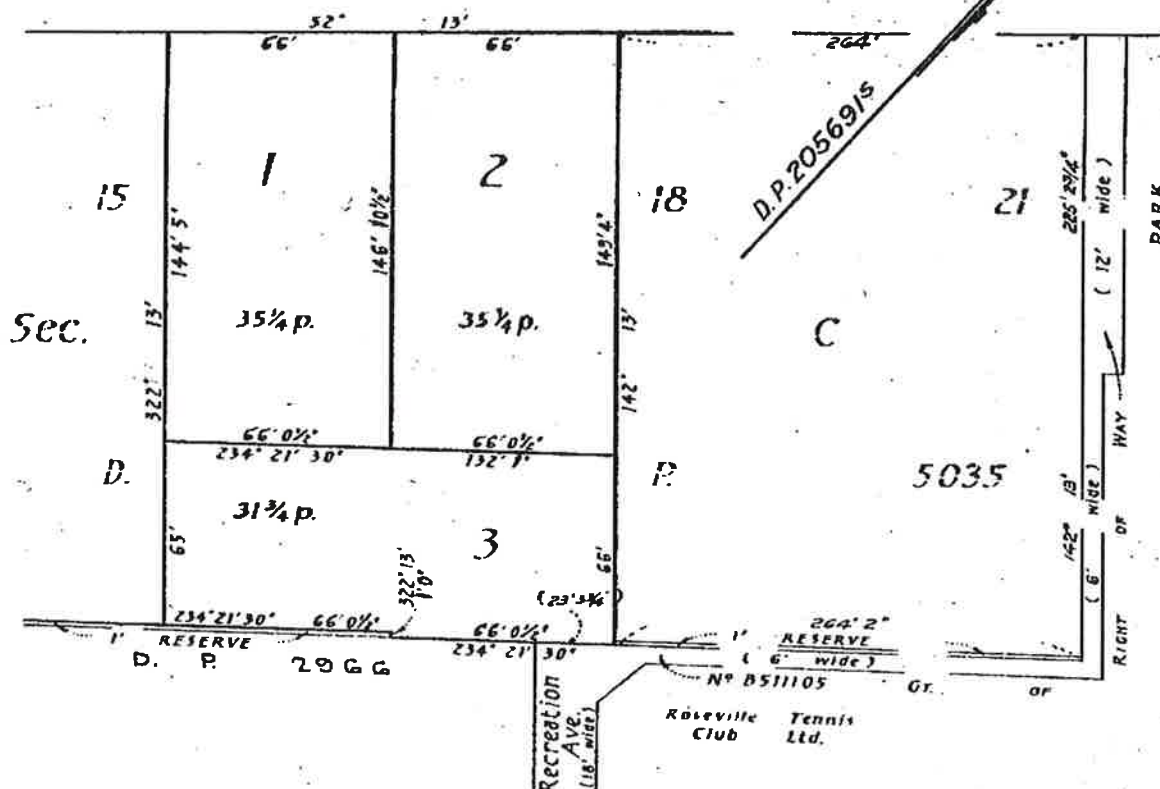


Bancroft

(66" wide)

Ave.

SEE AUTO FOLIO



Estate in Fee Simple in Lot 3 in Deposited Plan 205691s at Roseville in the Municipality of Ku-ring-gai Parish of Gordon and County of Cumberland.

~~JESSIE ROSALIND BUCKNELL, wife of Adrian Bucknell, of Roseville, Civil Servant, as to that part of the land above-described formerly comprised in Certificate of Title Volume 1853 Folio 81 and EVELINA ELEANOR ROBERTS, of Roseville, Spinster, as to that part formerly comprised in Certificate of Title Volume 1859 Folio 117.~~

Registrar General.

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.
2. Covenant created by Transfer No. 476948 affecting part.

Registrar General.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED.

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

GRY

CV

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar-General
	NATURE	NUMBER	DATE		
<i>Margaret Joyce Ramsey of Roseville, Married Woman</i> The Roseville Girls' College Limited by Transfer T437241. Registered 4-3-1983	<i>Transfer</i>	<i>H 920931</i>	<i>12-10-1961</i>	<i>19-12-1961</i>	<i>Jackson</i>

H920931

T 437241

- 42 81/

X41023009
1 M

SECOND SCHEDULE (continued)

NATURE	INSTRUMENT		PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION	
	NUMBER	DATE					
<i>Mortgage</i>	<i>T 249410</i>	<i>4-1-1963</i>	<i>to Commonwealth Savings Bank of Australia</i>	<i>1-2-1963</i>	<i>Jackson</i>	<i>Discharged</i>	<i>M 454118</i>
<i>T437242</i>			<i>Mortgage to The Mutual Life and Citizens' Assurance Company Limited. Registered 4-3-1983</i>		<i>Jackson</i>	<i>Discharged</i>	<i>X410230</i>
<i>X410231</i>			<i>Mortgage to Australia And New Zealand Banking Group Limited. Registered 9-3-1988.</i>				

SEE AUTO FOLIO

CANCELLED



LAND
REGISTRY
SERVICES

Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

25/3/2019 7:50PM

FOLIO: 3/205691

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 9075 FOL 243

Recorded	Number	Type of Instrument	C.T. Issue
4/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
7/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
1/9/1989	DP791493	DEPOSITED PLAN	FOLIO CANCELLED
30/7/1993		AMENDMENT: LOCAL GOVT AREA	
12/8/1993		AMENDMENT: LOCAL GOVT AREA	

*** END OF SEARCH ***

roseville

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Prior Title Vol.2651 Fol.31

PROPERTY ACT, 1900



Edition issued 13-11-1973.

N385797

CANCELLED

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Jarvis



Registrar General.



LENGTHS ARE IN METRES

BANCROFT AVE

D. P. 205691

63-83

8.29

PT 15

109-14

— 3 —

6303

ALLOT 14

SEC.C

5	10.29	RESERVE 0.305 WIDE
---	-------	--------------------

TOTAL AREA : 1353 m²

REDUCTION RATIO 1:800

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in the part of Lot 15 Section C in Deposited Plan 5035 and Lot 1 in Deposited Plan 951732 in the Municipality of Ku-ring-gai Parish of Gordon County of Cumberland being part of Portion 395 granted to Daniel Dering Mathew on 15-7-1819.

FIRST SCHEDULE

~~ROLAND GEORGE MURPHY of Roseville, Chartered Engineer.~~

SECOND SCHEDULE

GR4

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. ~~Governant created by Transfer No. 476948.~~
3. ~~Governant created by Transfer No. 23964 affecting the part of Lot 15, Section C, Deposited Plan 5035 shown in the plan hereto.~~
4. ~~Mortgage No. K105918 to Southern Districts Starr-Bowkett Co-operative Building Society (No. 6) Limited. Entered 17/2/1965. Discharged Y200127~~
5. ~~Mortgage No. K105918 to Southern Districts Starr-Bowkett Co-operative Building Society (No. 6) Limited. Entered 17/2/1965. Discharged Y200126~~

J. J. J. J.
Registrar General

Registrar General.

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WARNING THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TILES OFFICE

C.T. 13.7

7/699557

DP7914

4550243

DP/SP 791493 Registered 24/8/1989
This folio is cancelled as to whole/part upon creation
of computer folios for lots 31 in the
abovementioned plan.



Vol. 12274 Fol 139

(Page 2 of 2 pages)

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED



LAND
REGISTRY
SERVICES

Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

25/3/2019 8:05PM

FOLIO: 31/791493

First Title(s): OLD SYSTEM

Prior Title(s): VOL 12274 FOL 139

<u>Recorded</u>	<u>Number</u>	<u>Type of Instrument</u>	<u>C.T. Issue</u>
1/9/1989	DP791493	DEPOSITED PLAN	FOLIO CREATED EDITION 1
14/7/1994	U439317	TRANSFER	EDITION 2
8/3/1999	5652166	TRANSFER	EDITION 3
3/5/2001	DP1027386	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

roseville

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KP13



TRANSFER

Real Property Act, 1900



U
439317 T

GE 24(9)(11) Ref: F92/685

Office to which documents are sent

(A) **LAND TRANSFERRED**

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

FOLIO IDENTIFIER 31/791493

(B) **LODGED BY**

L.T.O. Box

467W

Name, Address or DX and Telephone

BERNEY & ASSOCIATES
Solicitors,
DX 577 SYDNEY
Tel: 416 4866

REFERENCE (max. 15 characters):

emb 7849

13099

(C) **TRANSFEROR**

SYLVIA BEATRICE MURPHY

(D) acknowledges receipt of the consideration of \$735,000.00

and as regards the land specified above transfers to the Transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES**

1. 2. 3.

(F) **TRANSFeree**

T

THE ROSEVILLE GIRLS COLLEGE LIMITED
(ACN 000 288 335)

(G)

TENANCY:

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900.

DATED 8 July 1994

Signed in my presence by the Transferor who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Signature of Transferor

Signed in my presence by the Transferee who is personally known to

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

R.M. Berney

Signature of Transferee's Solicitor

INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE

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LAND
REGISTRY
SERVICES

Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

25/3/2019 8:08PM

FOLIO: 32/791493

First Title(s): OLD SYSTEM

Prior Title(s): 3/205691

Recorded	Number	Type of Instrument	C.T. Issue
1/9/1989	DP791493	DEPOSITED PLAN	FOLIO CREATED EDITION 1
20/10/1989	Y550243	TRANSFER	
PRIOR TITLES(S) AS AMENDED: 3/205691, VOL 12274 FOL 139.			
20/10/1989	Y671211	DEPARTMENTAL DEALING	EDITION 2
10/4/1990	Y903106	DISCHARGE OF MORTGAGE	
10/4/1990	Y903107	MORTGAGE	EDITION 3
8/4/1993	I246387	DISCHARGE OF MORTGAGE	EDITION 4
6/8/1993	I540742	MORTGAGE	EDITION 5
8/3/1999	5652166	TRANSFER	EDITION 6
2/5/2001	7529087	DISCHARGE OF MORTGAGE	
3/5/2001	DP1027386	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

roseville

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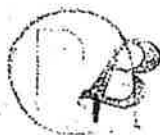
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Received: 25/03/2019 20:07:52

Ref:roseville /Src:M

RP 13

STAMP DUTY



Y550243

TRANSFER

REAL PROPERTY ACT, 1900

T

A	1 of 1	X
\$ 58.94		

R17

DESCRIPTION
OF LAND
Note (a)

VOLUME 12274 FOLIO 139

Now PART
32/791493

If Part Only, Delete Whole and Give Details

~~WHOLE~~
PART being that part of the land formerly comprised in Certificate of Title Volume 12274 Folio 139 and being now part of Lot 32 in Plan of Subdivision of Robert Alfred Pike dated 24th July 1989 DP 791493

Location

Co. Cumberland
Ph. Gordon

D

TRANSFEROR
Note (b)

SYLVIA BEATRICE MURPHY of Roseville

ESTATE
Note (c)

(the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of \$25,000.00 and transfers an estate in fee simple in the land above described to the TRANSFEREE

TRANSFEREE
Note (d)

THE ROSEVILLE GIRLS COLLEGE LIMITED of 27 Bancroft Avenue, Roseville

OFFICE USE ONLY

HIST

TENANCY
Note (e)

as joint tenants/tenants in common

PRIOR
ENCUMBRANCES
Note (f)

subject to the following PRIOR ENCUMBRANCES 1.

2. 3.

DATE 11th August 1989

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

EXECUTION
Note (g)

Signed in my presence by the transferor who is personally known to me

Jan Foulsham
Signature of Witness

IAN W FOULSHAM
Name of Witness (BLOCK LETTERS)

Solicitor Sydney
Address and occupation of Witness

S.B. Murphy
Signature of Transferor

Signed in my presence by the transferee who is personally known to me

Note (g)

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address and occupation of Witness

464

R M Woolner, Solicitor for the Transferee

TO BE COMPLETED
BY LODGING PARTY
Notes (h)
and (i)

\$44

OFFICE USE ONLY

LODGED BY		LOCATION OF DOCUMENTS	
LEGISTAT SERVICES		CT	OTHER
			Herewith.
			In L.T.O. with DP 791493
		<i>AL</i>	Produced by <i>Foulsham & Co</i>
Delivery Box Number 230F			
Checked <i>EB2</i>	Passed <i>EB2</i>	REGISTERED -19	
Signed	Extra Fee	20 OCT 1989	
		Secondary Directions	
		Delivery Directions	



LAND
REGISTRY
SERVICES

Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

25/3/2019 7:35PM

FOLIO: 100/1027386

First Title(s): OLD SYSTEM

Prior Title(s): 1-2/205691

A/388083

16/662121

1/920049

B/974795

VOL 7011 FOL 9

B/339961

16/662120

31-32/791493

A-B/955109

VOL 2531 FOL 225

Recorded	Number	Type of Instrument	C.T. Issue
3/5/2001	DP1027386	DEPOSITED PLAN	FOLIO CREATED EDITION 1
6/3/2003	9418936	TRANSFER GRANTING EASEMENT	EDITION 2
5/10/2005	DP1084428	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

roseville

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LAND
REGISTRY
SERVICES

Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

25/3/2019 7:37PM

FOLIO: 2003/1084428

First Title(s): OLD SYSTEM

Prior Title(s): 100/1027386 1/1084427

Recorded	Number	Type of Instrument	C.T. Issue
5/10/2005	DP1084428	DEPOSITED PLAN	FOLIO CREATED EDITION 1
21/3/2016	AK302710	CHANGE OF NAME	
21/3/2016	AK302711	MORTGAGE	EDITION 2
9/9/2018	AN695392	DEPARTMENTAL DEALING	EDITION 3 CORD ISSUED

*** END OF SEARCH ***

roseville

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FOLIO: 2003/1084428

SEARCH DATE	TIME	EDITION NO	DATE
25/3/2019	7:38 PM	3	9/9/2018

NO CERTIFICATE OF TITLE HAS ISSUED FOR THE CURRENT EDITION OF THIS FOLIO.
CONTROL OF THE RIGHT TO DEAL IS HELD BY NATIONAL AUSTRALIA BANK LIMITED.

LAND

LOT 2003 IN DEPOSITED PLAN 1084428
AT ROSEVILLE
LOCAL GOVERNMENT AREA KU-RING-GAI
PARISH OF GORDON COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1084428

FIRST SCHEDULE

ANGLICAN SCHOOLS CORPORATION

(CN AK302710)

SECOND SCHEDULE (12 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 476948 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 3 A140415 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 4 A261883 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 5 A261883 RIGHT OF WAY 3.66 METRES WIDE APPURTENANT TO THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BENEFITED IN THE TITLE DIAGRAM (SEE DP662120)
- 6 A270386 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 7 A270386 RIGHT OF WAY 3.66 METRES WIDE APPURTENANT TO THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BENEFITED IN THE TITLE DIAGRAM (SEE DP954910)
- 8 A431275 RIGHT OF WAY 3.66 METRES WIDE APPURTENANT TO THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BENEFITED IN THE TITLE DIAGRAM (SEE DP954910)
- 9 B265111 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 10 G200378 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 11 9418936 EASEMENT FOR ELECTRICITY SUBSTATION PURPOSES 3.34 METRES WIDE AFFECTING THE PART OF THE LAND ABOVE DESCRIBED DESIGNATED (S) AS SHOWN SO BURDENED IN THE PLAN WITH 9418936

END OF PAGE 1 - CONTINUED OVER

roseville

PRINTED ON 25/3/2019

FOLIO: 2003/1084428

PAGE 2

SECOND SCHEDULE (12 NOTIFICATIONS) (CONTINUED)

12 AK302711 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

roseville

PRINTED ON 25/3/2019

* 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.



SafeWork NSW

Locked Bag 2906, Lisarow NSW 2252

Customer Experience 13 10 50

ABN 81 913 830 179 | www.safework.nsw.gov.au

Our Ref: D19/133559

6 June 2019

Douglas Partners Pty Ltd
Ms Chamali Nagodavithane
96 Hermitage Rd
WEST RYDE NSW 2114

Dear Ms Nagodavithane

RE SITE: 29 and 37 Bancroft Ave, Roseville NSW 2069

I refer to your site search request received by SafeWork NSW on 3 June 2019 requesting information on Storage of Hazardous Chemicals for the above site.

A search of the records held by SafeWork NSW has not located any records pertaining to the above-mentioned premises.

For further information or if you have any questions, please call us on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely

A handwritten signature in black ink, appearing to read 'G. Perry'.

Customer Service Officer
Customer Experience - Operations
SafeWork NSW

PLANNING CERTIFICATE

818 Pacific Highway, Gordon NSW 2072
Locked Bag 1006, Gordon NSW 2072
T 02 9424 0000 F 02 9424 0001
DX 8703 Gordon TTY 02 9424 0875
E kmc@kmc.nsw.gov.au
W www.kmc.nsw.gov.au
ABN 86 408 856 411



UNDER SECTION 10.7 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

PROPERTY DETAILS

Address: 37 Bancroft Avenue ROSEVILLE NSW 2069

Lot Description: Lot 18 Sec C DP 5035

CERTIFICATE DETAILS

Certificate No: ePC3821/18 **Certificate Date:** 03/12/2018

Certificate Type: Section 10.7(2) & (5)

APPLICANT DETAILS

REF:

Mr R Mooney
Level 2, 146 Arthur Street
NORTH SYDNEY NSW 2060

BACKGROUND INFORMATION

This certificate provides information on how a property (such as land, a house, a commercial building, etc.) may be used and the limits on its development. The certificate contains information Council is aware of through its records and environmental plans with data supplied by the State Government. The details contained in this certificate are limited to that required by Section 10.7 of the Environmental Planning and Assessment Act.

**THE FOLLOWING INFORMATION IS ISSUED UNDER SECTION 10.7(2)
OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979**

**MATTERS AFFECTING THE LAND AS PRESCRIBED BY SCHEDULE 4 –
ENVIRONMENTAL PLANNING & ASSESSMENT ACT REGULATION, 2000.**

1. Names of relevant planning instruments and development control plans

(1) *Which environmental planning instruments apply to the carrying out of development on this land?*

Ku-ring-gai Local Environmental Plan 2015 as published on the NSW Legislation Website on 5 March 2015.

Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005

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 & Offensive Development.

State Environmental Planning Policy No.44 - Koala Habitat Protection.

State Environmental Planning Policy No.55 - Remediation of Land.

State Environmental Planning Policy No.62 - Sustainable Aquaculture.

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 (Building Sustainability Index: BASIX) 2004.

State Environmental Planning Policy (State Significant Precincts) 2005.

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

State Environmental Planning Policy (Miscellaneous Consent Provisions) 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 (Vegetation in Non-Rural Areas) 2017.

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

State Environmental Planning Policy (Coastal Management) 2018.

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

(2) *Which proposed environmental planning instruments apply to the carrying out of development on this land?* (Including planning proposals and proposed environmental planning instruments that are or have been the subject of community consultation or on public exhibition under the E. P. & A. Act).

There are no proposed environmental planning instruments that apply to this land.

(3) Which development control plans apply to the carrying out of development on this land?

Ku-ring-gai Development Control Plan

***SPECIAL NOTE:** A development control plan adds further detail to local environmental plans and may address issues such as building design, car parking, landscaping etc. Copies of the Plans are available from Council.*

2. Zoning and land use under relevant local environmental plans (other than a SEPP or proposed SEPP)

(a) What is the zoning of this property and the relevant environmental planning instrument?

R2 Low Density Residential under the provisions of Ku-ring-gai Local Environmental Plan 2015.

(b) What does not require development consent under the above environmental planning instrument?

Home occupations.

Note: Please refer to the provisions for Exempt and Complying Development as described in Part 3 of Ku-ring-gai Local Environmental Plan 2015.

(c) What does require development consent under the above environmental planning instrument?

Bed and breakfast accommodation; Boarding houses; Building identification signs, Business identification signs; Centre-based child care facilities; Community facilities; Dwelling houses; Environmental protection works; Exhibition homes; Flood mitigation works; Group homes; Health consulting rooms; Home-based child care; Home businesses; Home industries; Hospitals; Neighbourhood shops; Places of public worship; Recreation areas; Respite day care centres; Roads; Secondary dwellings.

(d) What is prohibited under the above environmental planning instrument?

Any development not specified in item (b) or (c).

(e) What is the proposed zoning of this property and the relevant proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(f) What does not require development consent under the above proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(g) What does require development consent under the above proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(h) What is prohibited under the above proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(i) Do any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land?

There are no provisions in Ku-ring-gai Local Environmental Plan 2015 that regulate minimum dimension sizes for the erection of a dwelling house on this property.

(j) Does the land include or comprise critical habitat?

No.

(k) Is the land in a conservation area?

Yes.

This property is within a Heritage Conservation Area under the provisions of Ku-ring-gai Local Environmental Plan 2015.

SPECIAL NOTE: A conservation area is a place of historic and aesthetic value to the community. It contains a number of elements of significance, such as a historic subdivision layout, a pattern of building "footprints" within each street block, buildings of historic and architectural importance, road alignments, trees, gutters and kerb edges which all combine to create a sense of place that is worth keeping. Council's Heritage Planner can provide you with more information on this matter.

(l) Is an item of environmental heritage situated on the land?

No.

SPECIAL NOTE: You are advised that the consent authority may, before granting consent to any development: (a) on land on which a heritage item is located, or (b) on land that is within a heritage conservation area, or (c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.

3. Complying development

The extent to which the land is land on which complying development may or may not be carried out under each of the codes for complying development because of the provisions of 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 and if complying development may not be carried out on that land the reason why it may not be carried out under those clauses?

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

Container Recycling Facilities Code

Complying development under the Container Recycling Facilities Code **may** be carried out on the land.

Commercial and Industrial Alterations Code

Complying development under the Commercial and Industrial Alterations Code **may** be carried out on the land.

Commercial and Industrial (New Buildings and Additions) Code

Complying development under the Commercial and Industrial (New Buildings and Additions) Code **may not** be carried out on the land. The land is affected by the following general exemptions and/or land based exclusions:

- ☐ The land is land within a heritage conservation area. However, this exclusion does not apply if the development is for a detached outbuilding or swimming pool.

Demolition Code

Complying development under the Demolition Code **may** be carried out on the land.

Fire Safety Code

Complying development under the Fire Safety Code **may** be carried out on the land.

General Development Code

Complying development under the General Development Code **may** be carried out on the land.

Housing Code

Complying development under the Housing Code **may not** be carried out on the land. The land is affected by the following general exemptions and/or land based exclusions:

- ☐ The land is land within a heritage conservation area. However, this exclusion does not apply if the development is for a detached outbuilding or swimming pool.

Housing Alterations Code

Complying development under the Housing Alterations Code **may** be carried out on the land.

Low Rise Medium Density Housing Code

Complying development under the Low Rise Medium Density Housing Code **may not** be carried out on the land. The land is affected by the following general exemptions and/or land based exclusions:

- ☐ The land is land within a heritage conservation area. However, this exclusion does not apply if the development is for a detached outbuilding or swimming pool.

Subdivision Code

Complying development under the Subdivision Code **may** be carried out on the land.

4B. Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works

Not applicable. This matter does not apply to land within Ku-ring-gai Local Government Area.

5. Mine subsidence

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961?

No. Council has not been notified that the land is subject to such a proclamation.

6. Road widening and road realignment

Is the land affected by any road widening or road realignment under the Roads Act, any environmental planning instrument or any resolution of council?

No.

7. Council and other public authority policies on hazard risk restrictions.

Is the land affected by a policy adopted by council, or by any other public authority required to be referred to in a planning certificate, that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, contamination, acid sulphate soils or other risk (other than flooding)?

No.

Note: A review of Council's readily available records has been conducted to identify previous land uses that may have caused land contamination. This review did not reveal any reason for contamination of this property. However, prior to urban settlement, sizeable areas of Ku-ring-gai were covered by agricultural and horticultural activities. These uses are listed in the Managing Land Contamination Planning Guidelines as activities that may cause contamination. If you are concerned about possible contamination of the site you should make your own investigations regarding the condition of this property.

7A. Flood related development controls information

Is development on the land or part of the land affected by a policy adopted by council, or by any other public authority required to be referred to in a planning certificate, subject to flood related development controls?

No.

8. Land reserved for acquisition

Do any environmental planning instruments or proposed environmental planning instruments referred to in clause 1 make provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act?

No.

9. Contribution plans

Which contribution plans apply if this land is developed?

Ku-ring-gai Contributions Plan 2010.
Ku-ring-gai s94A Contributions Plan 2015.

SPECIAL NOTE: A contribution plan, commonly known as a section 94 plan, outlines the financial costs Council charges if land is developed and Council believes the development will require additional services such as parks, roads etc. Copies of the contribution plans are available from Council.

9A. Biodiversity certified land

Is the land, land that is biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016?

Council has not been notified that the land is biodiversity certified land.

SPECIAL NOTE: Biodiversity certified land includes land certified under Part 7AA of the Threatened Species Conservation Act 1995 that is taken to be certified under Part 8 of the Biodiversity Conservation Act 2016.

10. Biodiversity stewardship sites

Is the land, land that is a biodiversity stewardship site under a biodiversity stewardship agreement under part 5 of the Biodiversity Conservation Act 2016?

Council has not been notified that the land is biodiversity stewardship land.

SPECIAL NOTE: Biodiversity stewardship agreements include biobanking agreements under Part 7A of the Threatened Species Conservation Act 1995 that are taken to be biodiversity stewardship agreements under Part 5 of the Biodiversity Conservation Act 2016.

10A. Native vegetation clearing set asides

Is the land, land that contains a set aside area under section 60ZC of the Local Land Services Act 2013?

Council has not been notified that the land contains a set aside area.

11. Bush fire prone land

Is the land bush fire prone land?

No.

SPECIAL NOTE: Bush fire prone land is defined in section 4 of the Environmental Planning and Assessment Act 1979 as meaning "land recorded for the time being as bushfire prone land on a bush fire prone land map for the area". The "area" is the local government area of Ku-ring-gai.

12. Property vegetation plans

Is the land, land to which a property vegetation plan under Native Vegetation Act 2003 applies?

Council has not been notified that the land is subject to an approved property vegetation plan.

13. Orders under Trees (Disputes between Neighbours) Act 2006

Is the land, subject to an order under the Tree (Disputes between neighbours) Act 2006 to carry out work in relation to a tree on the land?

Council has not been notified that the land is subject to such an order.

14. Directions under Part 3A

Is the land, land subject to a direction under Part 3A Section 75P(2)(c1) of the Environmental Planning and Assessment Act 1979 No.203?

No.

15. Site Compatibility certificates and conditions for seniors housing

Is there a current site compatibility certificate (seniors housing), of which council is aware, in respect of proposed development on the land issued under clause 24 of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004?

The land is not subject to such a current site compatibility certificate (seniors housing) of which Council is aware.

16. Site Compatibility certificates for infrastructure, schools or TAFE establishments

Is there a valid site compatibility certificate (infrastructure) or site compatibility certificate (schools and TAFE establishments), of which council is aware, in respect of proposed development on the land?

The land is not subject to such a valid site compatibility certificate (infrastructure) of which Council is aware.

17. Site Compatibility certificates and conditions for affordable rental housing

Is there a current site compatibility certificate (affordable rental housing), of which council is aware, in respect of proposed development on the land issued under clause 37 of State Environmental Planning Policy (Affordable Rental Housing) 2009?

The land is not subject to such a current site compatibility certificate (affordable rental housing) of which Council is aware.

18. Paper subdivision information

Is the land, land subject to a development plan adopted by a relevant authority, land proposed to be subject to a consent ballot or land subject to a subdivision order?

Not applicable.

SPECIAL NOTE: Words and expressions used in this item have the same meaning as they have in Part 16C of the Environmental Planning and Assessment Regulation 2000.

19. Site verification certificate

Is there a current site verification certificate, of which council is aware, in respect of the land issued under clause 17C of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007?

The land is not subject to a current site verification certificate of which Council is aware.

SPECIAL NOTE: A site verification certificate sets out the Secretary's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land – see Division 3 of Part 4AA of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

20. Loose-fill asbestos insulation

Does the land include any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division?

NSW Fair Trading has not provided Council with written confirmation that this property is listed on the Loose-Fill Asbestos Insulation Register.

SPECIAL NOTE: Some residential homes located in the Ku-ring-gai Local Government Area have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.

You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, the council strongly recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

For further information about the Loose-fill asbestos Public Register contact NSW Fair Trading. Tel: 13 32 20 or www.loosefillasbestos.nsw.gov.au.

21. Affected building notices and building product rectification orders

(1) Is there any affected building notice of which council is aware that is in force in respect of the land?

No.

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

No.

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

No.

SPECIAL NOTE: The terms "affected building notice" and "building product rectification order" have the same meaning as in the Building Products (Safety) Act 2017.

The following matters are prescribed by Section 59(2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate.

- (a) *Is the land to which this certificate relates significantly contaminated land within the meaning of that Act?***

No.

- (b) *Is the land to which this certificate relates subject to a management order within the meaning of that Act?***

No.

- (c) *Is the land to which this certificate relates subject to an approved voluntary management proposal within the meaning of that Act?***

No.

- (d) *Is the land to which this certificate relates subject to an ongoing maintenance order within the meaning of that Act?***

No.

- (e) *Is the land of which this certificate relates subject to a site audit statement within the meaning of the Act?***

No.

SPECIAL NOTE: If you have any concerns about land contamination beyond the information described in this certificate, you should contact the NSW Environmental Protection Authority. Tel: 131 555 or email info@environment.nsw.gov.au.

THE FOLLOWING INFORMATION IS ISSUED UNDER SECTION 10.7(5) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Land Slip or Subsidence:

Council records do not have sufficient information to indicate land slip or subsidence is likely to restrict development on this land. However, some lots in Ku-ring-gai Local Government Area contain filling and/or road batters which may be subject to settlement and require special consideration in the design of foundations.

Flooding:

Some properties in the Ku-ring-gai Local Government area contain or adjoin natural drainage paths, pipelines, watercourses and depressions. During major rainfall or blockage of the drainage system surface water may affect the site or restrict future development.

SPECIAL NOTE: The Department of Planning and Environment and the Department of Commerce have not indicated any private property which may be affected by flooding of major rivers or creeks in the Ku-ring-gai Local Government Area.

Loose-fill asbestos insulation:

Some residential homes located in the Ku-ring-gai Local Government Area have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.

You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, the council strongly recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

For further information about the Loose-fill asbestos Public Register please contact NSW Fair Trading. Tel: 13 32 20 or www.loosefillasbestos.nsw.gov.au.

Contamination:

Council records do not have sufficient information relating to any previous uses of this land to confirm that the land has not been used for a purpose which would be likely to have contaminated the land. Parties should make their own enquiries as to whether the land may be contaminated.

Threatened species, populations and ecological communities:

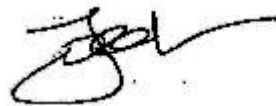
This land may contain threatened species, populations and ecological communities listed under the *Biodiversity Conservation Act 2016 (NSW)* and or the *Environment Protection Biodiversity Conservation Act 1999 (Commonwealth)*. For more information contact NSW Office of Environment and Heritage Tel: 131 555 or the Australian Government Department of Environment and Energy Tel: 1800 803 772.

This land may contain one or more of the following endangered or critically endangered

ecological communities listed under Schedule 2 of the *Biodiversity Conservation Act 2016* (NSW):

Blue Gum High Forest in the Sydney Basin Bioregion,
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East
Corner Bioregions,
Coastal Upland Swamp in the Sydney Basin Bioregion,
Duffys Forest Ecological Community in the Sydney Basin Bioregion,
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and
South East Corner Bioregions,
Sydney Turpentine Ironbark Forest.

For more information contact NSW Department of Environment & Heritage. Tel:131 555 or email
info@environment.nsw.gov.au <<mailto:info@environment.nsw.gov.au>>



John McKee
General Manager

PLANNING CERTIFICATE

818 Pacific Highway, Gordon NSW 2072
Locked Bag 1006, Gordon NSW 2072
T 02 9424 0000 F 02 9424 0001
DX 8703 Gordon TTY 02 9424 0875
E kmc@kmc.nsw.gov.au
W www.kmc.nsw.gov.au
ABN 86 408 856 411



UNDER SECTION 10.7 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

PROPERTY DETAILS

Address: 29 Bancroft Avenue ROSEVILLE NSW 2069

Lot Description: Lot 2003 DP 1084428

CERTIFICATE DETAILS

Certificate No: ePC3822/18 **Certificate Date:** 03/12/2018

Certificate Type: Section 10.7(2) & (5)

APPLICANT DETAILS

REF:

Mr R Mooney
Level 2, 146 Arthur Street
NORTH SYDNEY NSW 2060

BACKGROUND INFORMATION

This certificate provides information on how a property (such as land, a house, a commercial building, etc.) may be used and the limits on its development. The certificate contains information Council is aware of through its records and environmental plans with data supplied by the State Government. The details contained in this certificate are limited to that required by Section 10.7 of the Environmental Planning and Assessment Act.

**THE FOLLOWING INFORMATION IS ISSUED UNDER SECTION 10.7(2)
OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979**

**MATTERS AFFECTING THE LAND AS PRESCRIBED BY SCHEDULE 4 –
ENVIRONMENTAL PLANNING & ASSESSMENT ACT REGULATION, 2000.**

1. Names of relevant planning instruments and development control plans

(1) *Which environmental planning instruments apply to the carrying out of development on this land?*

Ku-ring-gai Local Environmental Plan (Local Centres) 2012 as published on the NSW Legislation Website on 25 January 2013.

Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005

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 & Offensive Development.

State Environmental Planning Policy No.44 - Koala Habitat Protection.

State Environmental Planning Policy No.55 - Remediation of Land.

State Environmental Planning Policy No.62 - Sustainable Aquaculture.

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 (Building Sustainability Index: BASIX) 2004.

State Environmental Planning Policy (State Significant Precincts) 2005.

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

State Environmental Planning Policy (Miscellaneous Consent Provisions) 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 (Vegetation in Non-Rural Areas) 2017.

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

State Environmental Planning Policy (Coastal Management) 2018.

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

(2) *Which proposed environmental planning instruments apply to the carrying out of development on this land?* *(Including planning proposals and proposed environmental planning instruments that are or have been the subject of community consultation or on public exhibition under the E. P. & A. Act).*

There are no proposed environmental planning instruments that apply to this land.

(3) Which development control plans apply to the carrying out of development on this land?

Ku-ring-gai Local Centres Development Control Plan

***SPECIAL NOTE:** A development control plan adds further detail to local environmental plans and may address issues such as building design, car parking, landscaping etc. Copies of the Plans are available from Council.*

2. Zoning and land use under relevant local environmental plans (other than a SEPP or proposed SEPP)

(a) What is the zoning of this property and the relevant environmental planning instrument?

SP2 Infrastructure - Educational Establishment under the provisions of Ku-ring-gai Local Environmental Plan (Local Centres) 2012.

(b) What does not require development consent under the above environmental planning instrument?

Nil.

Note: Please refer to the provisions for Exempt and Complying Development as described in Part 3 of Ku-ring-gai Local Environmental Plan (Local Centres) 2012.

(c) What does require development consent under the above environmental planning instrument?

Educational Establishment, including any development that is ordinarily incidental or ancillary to development for that purpose; Environmental protection works; Flood mitigation works; Recreation areas; Roads.

(d) What is prohibited under the above environmental planning instrument?

Any development not specified in item (b) or (c).

(e) What is the proposed zoning of this property and the relevant proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(f) What does not require development consent under the above proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(g) What does require development consent under the above proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(h) What is prohibited under the above proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(i) Do any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land?

There are no provisions in Ku-ring-gai Local Environmental Plan (Local Centres) 2012 that regulate minimum dimension sizes for the erection of a dwelling house on this property.

(j) Does the land include or comprise critical habitat?

No.

(k) Is the land in a conservation area?

No.

SPECIAL NOTE: A conservation area is a place of historic and aesthetic value to the community. It contains a number of elements of significance, such as a historic subdivision layout, a pattern of building "footprints" within each street block, buildings of historic and architectural importance, road alignments, trees, gutters and kerb edges which all combine to create a sense of place that is worth keeping. Council's Heritage Planner can provide you with more information on this matter.

(l) Is an item of environmental heritage situated on the land?

No.

SPECIAL NOTE: You are advised that the consent authority may, before granting consent to any development: (a) on land on which a heritage item is located, or (b) on land that is within a heritage conservation area, or (c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.

3. Complying development

The extent to which the land is land on which complying development may or may not be carried out under each of the codes for complying development because of the provisions of 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 and if complying development may not be carried out on that land the reason why it may not be carried out under those clauses?

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

Container Recycling Facilities Code

Complying development under the Container Recycling Facilities Code **may** be carried out on the land.

Commercial and Industrial Alterations Code

Complying development under the Commercial and Industrial Alterations Code **may** be carried out on the land.

Commercial and Industrial (New Buildings and Additions) Code

Complying development under the Commercial and Industrial (New Buildings and Additions) Code **may** be carried out on the land.

Demolition Code

Complying development under the Demolition Code **may** be carried out on the land.

Fire Safety Code

Complying development under the Fire Safety Code **may** be carried out on the land.

General Development Code

Complying development under the General Development Code **may** be carried out on the land.

Housing Code

Complying development under the Housing Code **may** be carried out on the land.

Housing Alterations Code

Complying development under the Housing Alterations Code **may** be carried out on the land.

Low Rise Medium Density Housing Code

Complying development under the Low Rise Medium Density Housing Code **may** be carried out on the land.

Subdivision Code

Complying development under the Subdivision Code **may** be carried out on the land.

4B. Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works

Not applicable. This matter does not apply to land within Ku-ring-gai Local Government Area.

5. Mine subsidence

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961?

No. Council has not been notified that the land is subject to such a proclamation.

6. Road widening and road realignment

Is the land affected by any road widening or road realignment under the Roads Act, any environmental planning instrument or any resolution of council?

No.

7. Council and other public authority policies on hazard risk restrictions.

Is the land affected by a policy adopted by council, or by any other public authority required to be referred to in a planning certificate, that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, contamination, acid sulphate soils or other risk (other than flooding)?

No.

Note: A review of Council's readily available records has been conducted to identify previous land uses that may have caused land contamination. This review did not reveal any reason for contamination of this property. However, prior to urban settlement, sizeable areas of Ku-ring-gai were covered by agricultural and horticultural activities. These uses are listed in the Managing Land Contamination Planning Guidelines as activities that may cause contamination. If you are concerned about possible contamination of the site you should make your own investigations regarding the condition of this property.

7A. Flood related development controls information

Is development on the land or part of the land affected by a policy adopted by council, or by any other public authority required to be referred to in a planning certificate, subject to flood related development controls?

No.

8. Land reserved for acquisition

Do any environmental planning instruments or proposed environmental planning instruments referred to in clause 1 make provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act?

No.

9. Contribution plans

Which contribution plans apply if this land is developed?

Ku-ring-gai Contributions Plan 2010.
Ku-ring-gai s94A Contributions Plan 2015.

SPECIAL NOTE: A contribution plan, commonly known as a section 94 plan, outlines the financial costs Council charges if land is developed and Council believes the development will require additional services such as parks, roads etc. Copies of the contribution plans are available from Council.

9A. Biodiversity certified land

Is the land, land that is biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016?

Council has not been notified that the land is biodiversity certified land.

SPECIAL NOTE: Biodiversity certified land includes land certified under Part 7AA of the Threatened Species Conservation Act 1995 that is taken to be certified under Part 8 of the Biodiversity Conservation Act 2016.

10. Biodiversity stewardship sites

Is the land, land that is a biodiversity stewardship site under a biodiversity stewardship agreement under part 5 of the Biodiversity Conservation Act 2016?

Council has not been notified that the land is biodiversity stewardship land.

SPECIAL NOTE: Biodiversity stewardship agreements include biobanking agreements under Part 7A of the Threatened Species Conservation Act 1995 that are taken to be biodiversity stewardship agreements under Part 5 of the Biodiversity Conservation Act 2016.

10A. Native vegetation clearing set asides

Is the land, land that contains a set aside area under section 60ZC of the Local Land Services Act 2013?

Council has not been notified that the land contains a set aside area.

11. Bush fire prone land

Is the land bush fire prone land?

No.

SPECIAL NOTE: Bush fire prone land is defined in section 4 of the Environmental Planning and Assessment Act 1979 as meaning "land recorded for the time being as bushfire prone land on a bush fire prone land map for the area". The "area" is the local government area of Ku-ring-gai.

12. Property vegetation plans

Is the land, land to which a property vegetation plan under Native Vegetation Act 2003 applies?

Council has not been notified that the land is subject to an approved property vegetation plan.

13. Orders under Trees (Disputes between Neighbours) Act 2006

Is the land, subject to an order under the Tree (Disputes between neighbours) Act 2006 to carry out work in relation to a tree on the land?

Council has not been notified that the land is subject to such an order.

14. Directions under Part 3A

Is the land, land subject to a direction under Part 3A Section 75P(2)(c1) of the Environmental Planning and Assessment Act 1979 No.203?

No.

15. Site Compatibility certificates and conditions for seniors housing

Is there a current site compatibility certificate (seniors housing), of which council is aware, in respect of proposed development on the land issued under clause 24 of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004?

The land is not subject to such a current site compatibility certificate (seniors housing) of which Council is aware.

16. Site Compatibility certificates for infrastructure, schools or TAFE establishments

Is there a valid site compatibility certificate (infrastructure) or site compatibility certificate (schools and TAFE establishments), of which council is aware, in respect of proposed development on the land?

The land is not subject to such a valid site compatibility certificate (infrastructure) of which Council is aware.

17. Site Compatibility certificates and conditions for affordable rental housing

Is there a current site compatibility certificate (affordable rental housing), of which council is aware, in respect of proposed development on the land issued under clause 37 of State Environmental Planning Policy (Affordable Rental Housing) 2009?

The land is not subject to such a current site compatibility certificate (affordable rental housing) of which Council is aware.

18. Paper subdivision information

Is the land, land subject to a development plan adopted by a relevant authority, land proposed to be subject to a consent ballot or land subject to a subdivision order?

Not applicable.

SPECIAL NOTE: Words and expressions used in this item have the same meaning as they have in Part 16C of the Environmental Planning and Assessment Regulation 2000.

19. Site verification certificate

Is there a current site verification certificate, of which council is aware, in respect of the land issued under clause 17C of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007?

The land is not subject to a current site verification certificate of which Council is aware.

SPECIAL NOTE: A site verification certificate sets out the Secretary's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land – see Division 3 of Part 4AA of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

20. Loose-fill asbestos insulation

Does the land include any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division?

NSW Fair Trading has not provided Council with written confirmation that this property is listed on the Loose-Fill Asbestos Insulation Register.

SPECIAL NOTE: Some residential homes located in the Ku-ring-gai Local Government Area have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.

You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, the council strongly recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

For further information about the Loose-fill asbestos Public Register contact NSW Fair Trading. Tel: 13 32 20 or www.loosefillasbestos.nsw.gov.au.

21. Affected building notices and building product rectification orders

(1) Is there any affected building notice of which council is aware that is in force in respect of the land?

No.

- (2) ***Is there any building product rectification order of which council is aware that is in force in respect of the land and has not been fully complied with?***

No.

- (3) ***Has any notice of intention to make a building product rectification order of which council is aware has been given in respect of the land and is outstanding?***

No.

SPECIAL NOTE: The terms "affected building notice" and "building product rectification order" have the same meaning as in the Building Products (Safety) Act 2017.

The following matters are prescribed by Section 59(2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate.

- (a) ***Is the land to which this certificate relates significantly contaminated land within the meaning of that Act?***

No.

- (b) ***Is the land to which this certificate relates subject to a management order within the meaning of that Act?***

No.

- (c) ***Is the land to which this certificate relates subject to an approved voluntary management proposal within the meaning of that Act?***

No.

- (d) ***Is the land to which this certificate relates subject to an ongoing maintenance order within the meaning of that Act?***

No.

- (e) ***Is the land of which this certificate relates subject to a site audit statement within the meaning of the Act?***

No.

SPECIAL NOTE: If you have any concerns about land contamination beyond the information described in this certificate, you should contact the NSW Environmental Protection Authority. Tel: 131 555 or email info@environment.nsw.gov.au.

THE FOLLOWING INFORMATION IS ISSUED UNDER SECTION 10.7(5) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Land Slip or Subsidence:

Council records do not have sufficient information to indicate land slip or subsidence is likely to restrict development on this land. However, some lots in Ku-ring-gai Local Government Area contain filling and/or road batters which may be subject to settlement and require special consideration in the design of foundations.

Flooding:

Some properties in the Ku-ring-gai Local Government area contain or adjoin natural drainage paths, pipelines, watercourses and depressions. During major rainfall or blockage of the drainage system surface water may affect the site or restrict future development.

SPECIAL NOTE: The Department of Planning and Environment and the Department of Commerce have not indicated any private property which may be affected by flooding of major rivers or creeks in the Ku-ring-gai Local Government Area.

Loose-fill asbestos insulation:

Some residential homes located in the Ku-ring-gai Local Government Area have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.

You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, the council strongly recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

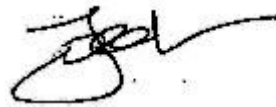
For further information about the Loose-fill asbestos Public Register please contact NSW Fair Trading. Tel: 13 32 20 or www.loosefillasbestos.nsw.gov.au.

Contamination:

Council records do not have sufficient information relating to any previous uses of this land to confirm that the land has not been used for a purpose which would be likely to have contaminated the land. Parties should make their own enquiries as to whether the land may be contaminated.

Threatened species, populations and ecological communities:

This land may contain threatened species, populations and ecological communities listed under the *Biodiversity Conservation Act 2016 (NSW)* and or the *Environment Protection Biodiversity Conservation Act 1999* (Commonwealth). For more information contact NSW Office of Environment and Heritage Tel: 131 555 or the Australian Government Department of Environment and Energy Tel: 1800 803 772.



John McKee
General Manager

Appendix D

Results Summary Tables

Table D3 - Groundwater Results (All results in µg/L unless otherwise stated)

Monitoring Well ID	Date Sampled	Metals								TRH		BTEX					PAH			Phenols	OCP							OPP
		Arsenic (Filtered)	Cadmium (Filtered)	Chromium (III+VI) (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Zinc (Filtered)	C6-C10 less BTEX (F1)	>C10-C16 less NAPHTHALENE (F2)	Benzene	Toluene	Ethylbenzene	Xylene (m&p)	Xylene (o)	Benzo(a) pyrene	Naphthalene	Total PAH	Phenol (mg/L)	Aldrin + Dieldrin	Chlordance	Endosulfan	Endrin	Heptachlor	DDT	Chlorpyrifos	
PQL		1	0.1	1	1	1	0.05	1	1	10	50	1	1	1	2	1	0.1	0.2	1	0.05	0.4	0.4	0.6	0.2	0.2	0.2	0.2	
Site Assessment Criteria (SAC)																												
HSL A& B ¹ , 2 m<4m, silt		-	-	-	-	-	-	-	-	6000	NL	4000	NL	NL	NL	NL	-	NL	-	-	-	-	-	-	-	-	-	
GIL for slightly to moderately disturbed freshwater (95% species protection) ²		24	0.2	1.0 ^C (Cr VI)	1.4	3.4	-	11	8.0 ^C	-	-	950	-	-	200 (p xylene)	350	-	16	-	0.32	-	-	-	-	-	-	0.01 ^D	
GIL for slightly to moderately disturbed freshwater (99% species protection) ²		-	-	-	-	-	0.06 ^D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03 ^D	0.03 ^D	0.01 ^D	0.01 ^D	0.006 ^D	-	
BH401 (MW401)	16/07/2019	<1	<0.1	<1	<1	<1	<0.05	5	10	<10	<50	<1	<1	<1	<2	<1	<0.1	<0.2	NIL (+)VE	<0.05	<0.4	<0.4	<0.6	<0.2	<0.2	<0.2	<0.2	
BD20190716	16/07/2019	<1	<0.1	<1	<1	<1	<0.05	5	10	<10	<50	<1	<1	<1	<2	<1	<0.1	<0.2	NIL (+)VE	-	-	-	-	-	-	-	-	
BH406 (MW406)	16/07/2019	8	<0.1	<1	<1	<1	<0.05	3	16	<10	<50	<1	<1	<1	<2	<1	<0.1	<0.2	NIL (+)VE	<0.05	<0.4	<0.4	<0.6	<0.2	<0.2	<0.2	<0.2	

- Notes
- 1

2

C

D

Table 1A(4) Groundwater HSLs for vapour intrusion from NEPC (2013)

Australian and New Zealand guidelines for fresh and marine water quality 2000 (ANZECC & ARMCANZ, 2000)

Figure may not protect key species from chronic toxicity

Chemical for which possible bioaccumulation and secondary poisoning effects should be considered

Table D4 - Waste Classification Table (All results in mg/kg unless otherwise stated)

Borehole/ Sample ID ^a	Sampling Date	Strata	Metals							Total Petroleum Hydrocarbons								PAH			Phenols	OCP		OPP	PCB	Asbestos	
			Arsenic	Cadmium	Chromium (VI) ^b	Lead	Lead TCLP (mg/L)	Mercury	Nickel	C6 - C9	C10 - C14	C15-C28	C29 - C36	Benzene	Toluene	Ethylbenzene	Xylenes	Benzo(a) Pyrene (BaP)	BaP TCLP (mg/L)	Total PAH	Phenol	Endosulfan	Total OCP *	Chlorpyrifos	Total OPP**	PCB ***	Asbestos
PQL			4	0.4	1	1	0.03	0.1	1	25	50	100	100	0.2	0.5	1	3	0.05	0.001	0.05	5	0.1	0.1	0.1	0.1	0.1	0.1g /kg
Published Background Values																											
Olszowy et al (1995) - Urban Soils (0-150mm) ¹			<5-40	<0.5-14	5-131	3-1465	-	<0.1-3.4	<5-160	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	NA	NA	NA	NA	NA
Berkman 4th Edition (2001) - Field Geologists Manual ²			1- 50	1	5-1000	2-200	-	0.03	5-500	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	NA	NA	NA	NA	NA
Waste Classification Guidelines																											
NSW EPA (2014) CT1 (mg/kg) General Solid Waste			100	20	100	100	-	4	40	650	10 000			10	288	600	1000	0.8	-	200	288	60	<50	4	250	<50	NAD
NSW EPA (2014) SCC1 (mg/kg) TCLP1 (mg/L) General Solid Waste			500	100	1900	1500	5	50	1050	650	10 000			18	518	1080	1800	10	0.04	200	518	108	<50	7.5	-	<50	NAD
NSW EPA (2014) CT2 (mg/kg) Restricted Solid Waste			400	80	400	400	20	16	160	2600	40 000			40	1152	2400	4000	3.2	0.16	800	1152	240	<50	16	1000	<50	NAD
BH401/0.5	27/06/2019	fill	<4	<0.4	23	12	-	0.2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD4 270619	27/06/2019	fill	<4	<0.4	19	14	-	<0.1	2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.1	-	0.56	-	-	-	-	-	-	-
BD4 270619 - A	27/06/2019	fill	5.1	<0.4	29	17	-	<0.1	<5	<20	<20	<50	<50	<0.1	<0.1	<0.1	<0.3	<0.5	-	<0.5	-	-	-	-	-	-	-
BH401/1.0	27/06/2019	fill	4 ^b	<0.4	25 ^b	21 ^b	-	0.1	4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.3 ^b	-	2.4 ^b	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD
BH402/0.2	29/06/2019	fill	5	<0.4	21	71	-	0.1	4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.5	-	4.6	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD
BH403/0.2	28/06/2019	fill	4	<0.4	9	56	-	<0.1	2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	-	0.2	-	-	-	-	-	-	NAD
BH403/0.5	28/06/2019	fill	8	<0.4	7	60	-	<0.1	3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.1	-	0.4	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD
BH404/1.0	26/06/2019	fill	4	<0.4	24	9	-	0.1	3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	-	<0.05	-	-	-	-	-	-	NAD
BH405/0.2	26/06/2019	fill	<4	<0.4	8	28	-	<0.1	4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.08	-	0.5	-	-	-	-	-	-	NAD
BH406/0.3	27/06/2019	natural	6	<0.4	24	13	-	<0.1	1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	-	<0.05	-	-	-	-	-	-	NAD
BH407/0.5	28/06/2019	natural	<4	<0.4	4	9	-	<0.1	<1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	-	<0.05	-	-	-	-	-	-	NAD
BH408/0.2	28/06/2019	fill	90 ^b	<0.4	18	140	<0.03	0.1	7	<25	<50	100	170	<0.2	<0.5	<1	<3	1.2	<0.001	11 ^b	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD
BH408/0.5	28/06/2019	fill	30	<0.4	17	63	-	<0.1	3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.85	-	7.7	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD

Notes

- NSW EPA (2014)
- a

Duplicate and triplicate sample is listed below primary sample
- b

Replicate / triplicate value adopted
- NAD
- No asbestos detected at the laboratory reporting limit of 0.1g/kg
-
- Not tested
- *
- Total OCP includes chemicals listed as "Scheduled Chemicals" in NSW EPA (2014)
- **
- Total OPP includes chemicals listed as Moderately Harmful Pesticides in NSW EPA (2014)
- ***
- PCBs must be managed in accordance with the EPA's PCB Chemical Control Order 1997
- ¹
- Olszowy, H., P. Torr, and P. Imray. 1995. Trace element concentrations in soil from rural and urban areas of Australia.
- ²
- Average abundance of selected minor elements in the earth's crust (soils) - taken predominantly from Swaine D J, 1995, The trace element content of soils

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Uncensored Full Data Sets											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.15/08/2019 4:06:57 PM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												
11	Copper											
12												
13	General Statistics											
14	Total Number of Observations				9		Number of Distinct Observations				9	
15							Number of Missing Observations				0	
16	Minimum				1		Mean				34	
17	Maximum				200		Median				14	
18	SD				63.35		Std. Error of Mean				21.12	
19	Coefficient of Variation				1.863		Skewness				2.813	
20												
21	Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use											
22	guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.											
23	For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).											
24	Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1											
25												
26	Normal GOF Test											
27	Shapiro Wilk Test Statistic				0.548		Shapiro Wilk GOF Test					
28	5% Shapiro Wilk Critical Value				0.829		Data Not Normal at 5% Significance Level					
29	Lilliefors Test Statistic				0.371		Lilliefors GOF Test					
30	5% Lilliefors Critical Value				0.274		Data Not Normal at 5% Significance Level					
31	Data Not Normal at 5% Significance Level											
32												
33	Assuming Normal Distribution											
34	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
35	95% Student's-t UCL				73.27		95% Adjusted-CLT UCL (Chen-1995)				89.89	
36							95% Modified-t UCL (Johnson-1978)				76.57	
37												
38	Gamma GOF Test											
39	A-D Test Statistic				0.562		Anderson-Darling Gamma GOF Test					
40	5% A-D Critical Value				0.765		Detected data appear Gamma Distributed at 5% Significance Level					
41	K-S Test Statistic				0.257		Kolmogorov-Smirnov Gamma GOF Test					
42	5% K-S Critical Value				0.293		Detected data appear Gamma Distributed at 5% Significance Level					
43	Detected data appear Gamma Distributed at 5% Significance Level											
44												
45	Gamma Statistics											
46	k hat (MLE)				0.578		k star (bias corrected MLE)				0.46	
47	Theta hat (MLE)				58.81		Theta star (bias corrected MLE)				73.99	
48	nu hat (MLE)				10.41		nu star (bias corrected)				8.271	
49	MLE Mean (bias corrected)				34		MLE Sd (bias corrected)				50.16	
50							Approximate Chi Square Value (0.05)				2.893	
51	Adjusted Level of Significance				0.0231		Adjusted Chi Square Value				2.266	
52												
53	Assuming Gamma Distribution											
54	95% Approximate Gamma UCL (use when n>=50)				97.2		95% Adjusted Gamma UCL (use when n<50)				124.1	
55												

	A	B	C	D	E	F	G	H	I	J	K	L
56	Lognormal GOF Test											
57	Shapiro Wilk Test Statistic					0.977	Shapiro Wilk Lognormal GOF Test					
58	5% Shapiro Wilk Critical Value					0.829	Data appear Lognormal at 5% Significance Level					
59	Lilliefors Test Statistic					0.152	Lilliefors Lognormal GOF Test					
60	5% Lilliefors Critical Value					0.274	Data appear Lognormal at 5% Significance Level					
61	Data appear Lognormal at 5% Significance Level											
62												
63	Lognormal Statistics											
64	Minimum of Logged Data					0	Mean of logged Data					2.452
65	Maximum of Logged Data					5.298	SD of logged Data					1.54
66												
67	Assuming Lognormal Distribution											
68	95% H-UCL					451.1	90% Chebyshev (MVUE) UCL					78.73
69	95% Chebyshev (MVUE) UCL					100.6	97.5% Chebyshev (MVUE) UCL					131
70	99% Chebyshev (MVUE) UCL					190.6						
71												
72	Nonparametric Distribution Free UCL Statistics											
73	Data appear to follow a Discernible Distribution at 5% Significance Level											
74												
75	Nonparametric Distribution Free UCLs											
76	95% CLT UCL					68.73	95% Jackknife UCL					73.27
77	95% Standard Bootstrap UCL					67.05	95% Bootstrap-t UCL					283.9
78	95% Hall's Bootstrap UCL					249.6	95% Percentile Bootstrap UCL					73.56
79	95% BCA Bootstrap UCL					94.33						
80	90% Chebyshev(Mean, Sd) UCL					97.35	95% Chebyshev(Mean, Sd) UCL					126
81	97.5% Chebyshev(Mean, Sd) UCL					165.9	99% Chebyshev(Mean, Sd) UCL					244.1
82												
83	Suggested UCL to Use											
84	95% Adjusted Gamma UCL					124.1						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	Recommendations are based upon data size, data distribution, and skewness.											
88	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
89	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
90												

Appendix E

Borehole Log Results

Descriptive Notes



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

Sampling Methods

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.

BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 82.1 m AHD
EASTING: 331778
NORTHING: 6260361
DIP/AZIMUTH: 90°/-

BORE No: BH401
PROJECT No: 85310.01
DATE: 27.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing			
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type
82	0.1	FILLING: red-brown sandy gravel filling, humid																D/E			PID=2.7
		FILLING: brown and grey silty clay filling trace ironstone gravels, rootlets, sand and ceramic fragments, moist																D/E			PID<1 BD4270619(x2)
81	1.2	SANDY CLAY: firm to stiff, pale grey fine sandy clay, moist																D/E			PID<1 6,2,3 N = 5
																		S			PID<1
																		D/E			
80	2.0	SANDSTONE: extremely low strength, pale grey, fine to medium grained sandstone																			4,25/50 refusal
	2.6																	S			
	2.6	SANDSTONE: medium strength, highly to moderately weathered, slightly fractured to unbroken, red-brown, medium grained sandstone																			PL(A) = 0.33
79	3																	C	100	100	PL(A) = 0.85
	4																				
	4.3	SANDSTONE: medium strength, fresh, slightly fractured to unbroken, pale grey and pale brown medium grained sandstone																			PL(A) = 0.92
77	5																				
	6																	C	100	100	PL(A) = 0.64
	6																				
	6.9	SANDSTONE: high strength, fresh, unbroken, pale grey, medium grained sandstone																			PL(A) = 1.3
75	7																				
	8																				PL(A) = 1
74	8																				
	9																	C	100	100	PL(A) = 1.4
73	9																				
	10	Bore discontinued at 10.0m																			PL(A) = 1.2
72	10.0																				

RIG: Geoprobe 4x4

DRILLER: Terratest

LOGGED: AT

CASING: HW to 2.7m

TYPE OF BORING: Hand auger to 1.5m, Pushtube to 2.7m, NMLC to 10.00m

WATER OBSERVATIONS: No free groundwater observed whilst pushtubing

REMARKS: Location coordinates are in MGA94 Zone 56. Groundwater well installed, refer to well construction diagram for well construction details.

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	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	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)



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WELL LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 82.1 m AHD
EASTING: 331778
NORTHING: 6260361
DIP/AZIMUTH: 90°/-

BORE No: BH401
PROJECT No: 85310.01
DATE: 27/6/2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
82.1	0.1	FILLING: red-brown sandy gravel filling, humid		D/E	0.1				Backfill	
		FILLING: brown and grey silty clay filling trace ironstone gravels, rootlets, sand and ceramic fragments, moist		D/E	0.2					
				D/E	0.4		BD4270619(x2)			
				D/E	0.5					
				D/E	0.9					
81	1.2	SANDY CLAY: firm to stiff, pale grey fine sandy clay, moist		S	1.0		6.2,3 N = 5		1	Bentonite Blank PVC
				D/E	1.45					
				D/E	1.5					
				D/E	1.6					
80	2.0	SANDSTONE: extremely low strength, pale grey, fine to medium grained sandstone			2.4		4.25/50 refusal		2	Machine slotted PVC screen
	2.6	SANDSTONE: medium strength, highly to moderately weathered, slightly fractured to unbroken, red-brown, medium grained sandstone		S	2.6					
					2.95		PL(A) = 0.33		3	
				C	3.95		PL(A) = 0.85		4	
					4.5					
	4.3	SANDSTONE: medium strength, fresh, slightly fractured to unbroken, pale grey and pale brown medium grained sandstone			4.95		PL(A) = 0.92		5	Machine slotted PVC screen
				C	5.9		PL(A) = 0.64		6	
					6.9		PL(A) = 1.3		7	
					7.3					
					7.9		PL(A) = 1		8	
				C	8.95		PL(A) = 1.4		9	End cap
					9.95		PL(A) = 1.2		10	
					10.0					
72	10	Bore discontinued at 10.0m								

RIG: Geoprobe 4x4

DRILLER: Terratest

LOGGED: AT

CASING: HW to 2.7m

TYPE OF BORING: Hand auger to 1.5m, Pushtube to 2.7m, NMLC to 10.00m

WATER OBSERVATIONS: No free groundwater observed whilst pushtubing

REMARKS: Location coordinates are in MGA94 Zone 56. Groundwater well installed, refer to well construction diagram for well construction details.

SAMPLING & IN SITU TESTING LEGEND



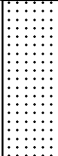
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample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

BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 83.0 m AHD
EASTING: 331787
NORTHING: 6260343
DIP/AZIMUTH: 90°/--

BORE No: BH402
PROJECT No: 85310.01
DATE: 27.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details		
				Type	Depth	Sample	Results & Comments				
83		FILLING: dark grey clayey silt filling (topsoil), trace rootlets		D/E	0.1		PID<1				
	0.25	FILLING: brown silty clay filling, with fine gravel trace sand, damp		D/E	0.2		PID<1				
				D/E	0.4		PID<1				
					0.5						
82	0.8	CLAY: very stiff, red-brown and pale grey-brown clay, with some ironstone bands, moist		D/E	0.9		PID<1				
1				D/E	1.0				1		
						1.2					
				S				25,18,6 N = 24			
					1.65						
81	1.8	SANDSTONE: extremely low strength, pale grey and red-brown fine grained sandstone		D/E	1.9		PID<1				
2				D/E	2.0				2		
						2.2					
				S				4,4,9 N = 13			
						2.65					
				D/E	2.9		PID<1				
80	3	Below 2.5m: grading to pale grey		S	3.0		30,B refusal		3		
	3.15	Bore discontinued at 3.15m Refusal of pushtube/SPT within extremely low strength sandstone			3.15						
79	4								4		

RIG: Geoprobe 4x4

DRILLER: Terratest

LOGGED: AT

CASING: uncased

TYPE OF BORING: Pushtube to 3.15m

WATER OBSERVATIONS: No free groundwater observed whilst pushtubing

REMARKS: Location coordinates are in MGA94 Zone 56.

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	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	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)



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BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 83.3 m AHD
EASTING: 331801
NORTHING: 6260316
DIP/AZIMUTH: 90°/--

BORE No: BH403
PROJECT No: 85310.01
DATE: 28.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
83 <												

RIG: Hand tools

DRILLER: AT

LOGGED: AT

CASING: uncased

TYPE OF BORING: Hand Auger to 1.1m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

☐ 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	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	W	Water seep	S	Standard penetration test
E	Environmental sample	WL	Water level	V	Shear vane (kPa)



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BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 84.7 m AHD
EASTING: 331757
NORTHING: 6260346
DIP/AZIMUTH: 90°/--

BORE No: BH404
PROJECT No: 85310.01
DATE: 26.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
84.7 84.6 84.5 84.4 84.3 84.2 84.1 84.0	0.4	FILLING: dark grey silty clay filling (topsoil), with some fine sand and rootlets, humid		D/E	0.1		PID<1 BD2260619			
					0.2					
					0.4		PID<1			
		FILLING: brown to orange-brown, clay filling, with some concrete gravel, moist to damp		D/E	0.5					
					0.9		PID<1			
					1.0					
					1.2					
		CLAY: stiff to very stiff, orange-brown, clay, trace silt, moist		S	1.4		2.7,6 N = 13 PID<1			
				D/E	1.5					
					1.65					
83.9 83.8 83.7 83.6 83.5 83.4 83.3 83.2 83.1 83.0	1.6	SANDSTONE: extremely low strength, red-brown and pale grey, fine grained sandstone			1.9		PID<1			
				D/E	2.0					
					2.2		25,B refusal			
	2.2	SANDSTONE: extremely low strength, pale grey, fine grained sandstone with some red-brown ironstone bands		S	2.35					
	2.35	Bore discontinued at 2.35m Refusal of pushtube/SPT within extremely low strength sandstone								
82.9 82.8 82.7 82.6 82.5 82.4 82.3 82.2 82.1 82.0										
81.9 81.8 81.7 81.6 81.5 81.4 81.3 81.2 81.1 81.0										
80.9 80.8 80.7 80.6 80.5 80.4 80.3 80.2 80.1 80.0										

RIG: Geoprobe 4x4

DRILLER: Terratest

LOGGED: AT

CASING: uncased

TYPE OF BORING: Pushtube to 2.35m

WATER OBSERVATIONS: No free groundwater observed whilst pushtubing

REMARKS: Location coordinates are in MGA94 Zone 56.

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	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	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)



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BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 85.6 m AHD
EASTING: 331733
NORTHING: 6260336
DIP/AZIMUTH: 90°/-

BORE No: BH405
PROJECT No: 85310.01
DATE: 26.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing					
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %	RQD %
85.6 85 84.4 84 83.6 82 81 80 79 78 77 76	0.2	FILLING: dark grey-brown silty sand filling (topsoil), trace rootlets, damp																				PID<1	
		CLAY: stiff to very stiff, grey-brown clay, trace silt and sand, damp (possibly fill)																				PID<1	
	0.7																						
		CLAY: very stiff, orange-brown mottled pale grey clay, trace ironstone gravel, moist																				PID<1 4,8,11 N = 19	
	1.3																						
		CLAY: very stiff, red-brown clay, with ironstone gravel and trace silt, humid to moist																				PID<1 BD1260619	
	2																						
	2.2																						
		SANDSTONE: extremely low strength, pale grey, fine to medium grained sandstone, with some ironstone bands																					5,10,10 N = 20 PID<1
	3																						
3.7 3.76	4	SANDSTONE: medium strength, highly weathered, fractured to slightly fractured, brown to red-brown, medium grained sandstone																					3.7m: CORE LOSS: 60mm
4.55	5	SANDSTONE: medium strength, slightly weathered, slightly fractured to unbroken, pale grey to pale brown, medium grained sandstone with some extremely low strength clay seams																					5.14m: partial void 10mm 5.2m: Cs, 200mm 5.53m: B, 0-10°, pl, ro, cly co 5.75m: B, 80-90°, un, ro, cln
6.8	7	SANDSTONE: high strength, fresh, slightly fractured to unbroken, pale grey to pale brown medium grained sandstone																					6.79m: B, 0-10°, pl, ro, cbs co 7.04m: B, 0-10°, pl, ro, cbs co
	8																						7.62m: B, 0-10°, pl, ro, cbs co
	9																						8.9m: B, 0-10°, pl, ro, cly co
	10.0																						

Bore discontinued at 10.0m

RIG: Geoprobe 4x4 **DRILLER:** Terratest **LOGGED:** AT **CASING:** HW to 3.7m
TYPE OF BORING: Pushtube to 3.7m, NMLC to 10.00m
WATER OBSERVATIONS: No free groundwater observed whilst pushtubing
REMARKS: Location coordinates are in MGA94 Zone 56.

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	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: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 86.4 m AHD
EASTING: 331742
NORTHING: 6260305
DIP/AZIMUTH: 90°/--

BORE No: BH406
PROJECT No: 85310.01
DATE: 27.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering					Graphic Log	Rock Strength					Water	Fracture Spacing (m)	Discontinuities		Sampling & In Situ Testing				
			EW	HW	MW	SW	FS		FR	Ex Low	Very Low	Low	Medium			High	Very High	Ex High	B - Bedding S - Shear	J - Joint F - Fault	Type	Core Rec. %
86 85 84 83 82 81 80 79 78 77	0.05	ASPHALTIC CONCRETE																			PID<1	
	0.2	CONCRETE SLAB: 150mm thick																D/E			PID<1	
	0.4	SILTY CLAY: firm, grey to pale brown clay, moist to damp (possibly filling)																D/E				
	1	CLAY: firm to stiff, pale grey mottled orange brown clay, with trace silt, moist																S			3,4,7 N = 11	
	1.8	from 1.5m: grading to pale grey																				
	2	CLAY: very stiff, pale grey clay, trace of ironstone gravel, humid to moist																D/E			PID<1 BD3270619	
	2.5	SANDSTONE: extremely low strength, pale grey, fine grained sandstone with some ironstone bands																S			9,9,13 N = 22	
	3																	D/E			PID<1	
	4																		S			14,18,25/100 refusal
	4.66																					
5	SANDSTONE: medium strength, highly to moderately weathered, fractured, red-brown and brown, medium grained sandstone with some extremely low strength clay seams																				PL(A) = 0.32	
5.53	SANDSTONE: medium strength, moderately weathered to fresh stained, fractured, pale grey and pale brown, medium grained sandstone with some extremely low strength clay seams																	C	100	79	PL(A) = 0.35	
6																						
7																					PL(A) = 0.43	
7.2																						
8	SANDSTONE: medium strength, fresh, slightly fractured to unbroken, pale grey medium grained sandstone																	C	100	97	PL(A) = 0.71	
9																					PL(A) = 0.9	
9.9	Bore discontinued at 9.9m																	C	100	100	PL(A) = 1	

RIG: Geoprobe 4x4

DRILLER: Terratest

LOGGED: AT

CASING: HW to 4.5m

TYPE OF BORING: Pushtube to 4.5m, NMLC to 9.9m

WATER OBSERVATIONS: No free groundwater observed whilst pushtubing

REMARKS: Location coordinates are in MGA94 Zone 56. Groundwater well installed, refer to well construction diagram for well construction details.

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	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: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 86.4 m AHD
EASTING: 331742
NORTHING: 6260305
DIP/AZIMUTH: 90°/-

BORE No: BH406
PROJECT No: 85310.01
DATE: 27/6/2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Well Construction Details	
				Type	Depth	Sample	Results & Comments			
86.4	0.05	ASPHALTIC CONCRETE								
	0.2	CONCRETE SLAB: 150mm thick		D/E	0.2		PID<1			Backfill
	0.4	SILTY CLAY: firm, grey to pale brown clay, moist to damp (possibly filling)		D/E	0.3					
		CLAY: firm to stiff, pale grey mottled orange brown clay, with trace silt, moist			0.4					
					0.5					
	1				1.2		3,4,7 N = 11			
		from 1.5m: grading to pale grey		S	1.65					
	1.8	CLAY: very stiff, pale grey clay, trace of ironstone gravel, humid to moist		D/E	1.9		BD3270619			Bentonite Blank PVC
					2.0					
					2.2					
	2.5	SANDSTONE: extremely low strength, pale grey, fine grained sandstone with some ironstone bands		S	2.65		9,9,13 N = 22			
					2.9					
				D/E	3.0					
					3.2					
				S	3.6		14,18,25/100 refusal			
	4				4.5					
	4.66	SANDSTONE: medium strength, highly to moderately weathered, fractured, red-brown and brown, medium grained sandstone with some extremely low strength clay seams			4.9		PL(A) = 0.32			
	5.53	SANDSTONE: medium strength, moderately weathered to fresh stained, fractured, pale grey and pale brown, medium grained sandstone with some extremely low strength clay seams		C	5.8		PL(A) = 0.35			
					6.6					
					6.85		PL(A) = 0.43			Gravel
	7.2	SANDSTONE: medium strength, fresh, slightly fractured to unbroken, pale grey medium grained sandstone			7.9		PL(A) = 0.71			Machine slotted PVC screen
				C	8.94		PL(A) = 0.9			
					9.1					
				C	9.85		PL(A) = 1			End cap
	9.9	Bore discontinued at 9.9m								

RIG: Geoprobe 4x4

DRILLER: Terratest

LOGGED: AT

CASING: HW to 4.5m

TYPE OF BORING: Pushtube to 4.5m, NMLC to 9.9m

WATER OBSERVATIONS: No free groundwater observed whilst pushtubing

REMARKS: Location coordinates are in MGA94 Zone 56. Groundwater well installed, refer to well construction diagram for well construction details.

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	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	W	Water seep	sp	Standard penetration test
E	Environmental sample	W	Water level	S	Shear vane (kPa)



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BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 82.2 m AHD
EASTING: 331794
NORTHING: 6260283
DIP/AZIMUTH: 90°/--

BORE No: BH407
PROJECT No: 85310.01
DATE: 28.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)			
				Type	Depth	Sample	Results & Comments		5	10	15	20
82.1	0.15	CONCRETE KERB										
	0.3	ROADBASE GRAVEL: 15-20mm aggregates in a medium sand matrix		D/E	0.2		PID<1					
		CLAY: firm to stiff, brown mottled red-brown clay, trace silt, moist		B	0.3		Bulk sample: 0.3-0.8m					
				D/E	0.4		PID<1					
					0.5							
81	0.8	CLAY: very stiff to hard, red-brown clay trace of ironstone gravel, moist			0.9		PID<1					
	1			D/E	1.0							
80	1.4	Bore discontinued at 1.4m Refusal on ironstone band										
	2											
	3											
	4											

RIG: Hand tools

DRILLER: AT

LOGGED: AT

CASING: uncased

TYPE OF BORING: Hand auger to 1.4m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Augered adjacent to road's concrete kerb

☐ 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	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: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 82.0 m AHD
EASTING: 331803
NORTHING: 6260263
DIP/AZIMUTH: 90°/--

BORE No: BH408
PROJECT No: 85310.01
DATE: 28.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing				Water	Dynamic Penetrometer Test (blows per 150mm)
				Type	Depth	Sample	Results & Comments		
82		FILLING: dark grey, sandy silt fill (topsoil) trace of rootlets			0.1		PID<1		
	0.25	FILLING: red-brown to dark brown clay, with silt and ironstone gravels, damp		D/E	0.2				
					0.4		PID<1		
	0.6	CLAY: stiff to very stiff, red-brown mottled pale grey clay, trace silt and ironstone gravels, moist		D/E	0.5				
81					0.9		PID<1		
	1			D/E	1.0				
	1.6	Bore discontinued at 1.6m Refusal on ironstone band							
80	2								
79	3								
78	4								

RIG: Hand tools

DRILLER: AT

LOGGED: AT

CASING: uncased

TYPE OF BORING: Hand auger to 1.6m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

☐ 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	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	W	Water seep	S	Standard penetration test
E	Environmental sample	W	Water level	V	Shear vane (kPa)



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Appendix F

Data Quality Objectives

DATA QUALITY ASSESSMENT

Q1. Data Quality Objectives

The detailed site investigation 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 that have been addressed within the report are shown in Table Q1.

Table Q1: Data Quality Objectives

Data Quality Objective	Report Section where Addressed
State the Problem	S1 Introduction
Identify the Decision	S13 Conclusions and Recommendations
Identify Inputs to the Decision	S1 Introduction S2 Scope of Works S3 Site Description S5 Proposed Development S6 Site History S7 Conceptual Site Model S10 Fieldwork Results S11 Laboratory Analytical Results
Define the Boundary of the Assessment	S3 Site Description S8 Fieldwork (vertical extent of investigation) Drawing 1 (Appendix A)
Develop a Decision Rule	S9 Site Assessment Criteria
Specify Acceptable Limits on Decision Errors	S9 Site Assessment Criteria Data Quality Assessment – Sections Q2, Q3
Optimise the Design for Obtaining Data	S2 Scope of Works S8 Fieldwork Data Quality Assessment – 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 data quality indicators in Table Q5 and the laboratory results certificates in Appendix G for further details.

Table Q2: Field QC

Item	Frequency	Acceptance Criteria	Achievement
Intra-laboratory replicates	10% primary samples	RPD <30% (inorganics), <50% (organics)	yes ¹

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

Table Q3: Laboratory QC

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

*It is noted that PAHs in TCLP analysis was performed outside of recommended holding times.

A 10% intra-laboratory analysis frequency was achieved for soil and groundwater samples. A 10% inter-laboratory analysis frequency was achieved for soil samples.

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

Q2.1 Intra-Laboratory Replicates

Q2.1.1 Soil

Intra-laboratory replicates were analysed as an internal check of the reproducibility within the primary laboratory Envirolab Services Pty Ltd (ELS) and as a measure of consistency of sampling techniques. The comparative results of analysis between original and intra-laboratory replicate samples are summarised in Table Q4.1.

Note that, where both samples are below LOR/PQL the difference and RPD has been given as zero. Where one sample is reported below LOR/PQL, but a concentration is reported for the other, the LOR/PQL value has been used for calculation of the RPD for the less than LOR/PQL sample.

The calculated RPD values for the duplicate and primary sample were within the acceptable range of ± 30 for inorganic analytes and $\pm 50\%$ for organics, 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;
- Soil replicates, rather than homogenised soil duplicates, were used to minimise the risk of possible volatile loss, hence greater variability can be expected;
- 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.

Q2.1.2 Groundwater

The calculated RPD values for the duplicate and primary groundwater samples were within the acceptable range of ± 30 for inorganic analytes and $\pm 50\%$ for organics (0% RPD was achieved for all samples), therefore the intra-laboratory replicate comparisons indicate that the sampling techniques were generally consistent and repeatable.

Q2.2 Inter-Laboratory Replicates

Inter-laboratory replicates were conducted as a check of the reproducibility of results between the primary laboratory ELS and the secondary laboratory Eurofins, as a measure of consistency of sampling techniques.

The comparative results of analysis between the intra-laboratory and inter-laboratory replicate samples are summarized in Table Q4.2.

Note that, where both samples are below LOR/PQL the difference and RPD has been given as zero. Where one sample is reported below LOR/PQL, but a concentration is reported for the other, the LOR/PQL value has been used for calculation of the RPD for the less than LOR/PQL sample.

The calculated RPD values for the inter and intra laboratory duplicate were within the acceptable range of ± 30 for inorganic analytes and $\pm 50\%$ for organics, 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;
- Soil replicates, rather than homogenised duplicates, were used to minimise the risk of volatile loss, hence greater variability can be expected;
- 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.

The overall inter-laboratory replicate comparisons indicate that the sampling technique was generally consistent and repeatable and the two laboratory sampling handling and analytical methods are comparable.

Field Instrument Calibration

The photoionisation detector (PID) fitted with a [11.7 volt lamp] was calibrated and serviced prior to use on the field.

Table Q4.1: Relative Percentage Difference Results Intra-laboratory Replicates (Soil)

			Metals							
			Arsenic	Cadmium	Chromium (VI)	Copper	Lead	Mercury (inorganic)	Nickel	Zinc
Sample ID	Depth	Sampled Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BD4 270619	0.5	27/06/2019	<4	<0.4	19	8	14	<0.1	2	9
BH401	0.5	27/06/2019	<4	<0.4	23	3	12	0.2	2	6
		Difference	0	0	4	5	2	0.1	0	3
		RPD	0%	0%	19%	91%	15%	67%	0%	40%

Table Q4.2: Relative Percentage Difference Results Inter-laboratory Replicates (Soil)

Lab	Sample ID	Date Sampled	Units	Metals								PAH			
				Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Naphthalene	Benzo(a)pyrene	Benzo(a)pyrene TEQ	Total PAH
ELS	BD4 270619	27/06/2019	mg/kg	<4	<0.4	19	8	14	<0.1	2	9	<1	0.1	<0.5	0.56
Eurofins	BD4 270619 - A	27/06/2019	mg/kg	5.1	<0.4	29	8.7	17	<0.1	<5	15	<0.5	<0.5	1.2	<0.5
Difference			mg/kg	1.1	0.0	10.0	0.7	3.0	0.0	3.0	6.0	0.0	0.4	0.7	0.1
RPD			%	24	0.0	42	8	19	0.0	86	50	0.0	133	82	11

Note: 0% RPD achieved for TRH and BTEX

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	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 the primary contaminants of potential concern (COPC) identified in the Conceptual Site Model (CSM); 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 field staff; Use of NATA registered laboratories; Satisfactory results for field and laboratory QC samples.
Representativeness	Samples were extracted and generally analysed within holding times; Samples were analysed in accordance with the analysis request; It is noted that a report comment is made by ELS with respect to sub-sampled asbestos from soil jars. This is expected and acceptable for analytical requirements.

Data Quality Indicator	Method(s) of Achievement
Precision	Acceptable RPD between original samples and replicates. Overall, satisfactory results were achieved 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 G

Laboratory Certificates

Chain of Custody Documentation

CERTIFICATE OF ANALYSIS 220713

Client Details

Client	Douglas Partners Pty Ltd
Attention	Wen-Fei Yuan
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	85310.02, Roseville
Number of Samples	16 SOIL
Date samples received	01/07/2019
Date completed instructions received	01/07/2019

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	08/07/2019
Date of Issue	08/07/2019
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Asbestos Approved By

Analysed by Asbestos Approved Identifier: Aida Marner
 Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By

Diego Bigolin, Team Leader, Inorganics
 Giovanni Agosti, Group Technical Manager
 Jaimie Loa-Kum-Cheung, Metals Supervisor
 Lucy Zhu, Senior Asbestos Analyst
 Nick Sarlamis, Inorganics Supervisor
 Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil

Our Reference		220713-1	220713-2	220713-4	220713-5	220713-6
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.2	BH403/0.5	BH404/1.0
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	26/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	06/07/2019	06/07/2019	06/07/2019	06/07/2019	06/07/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	34	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	34	<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	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	127	124	128	119	125

vTRH(C6-C10)/BTEXN in Soil

Our Reference		220713-7	220713-9	220713-11	220713-12	220713-13
Your Reference	UNITS	BH405/0.2	BH406/0.3	BH407/0.5	BH408/0.2	BH408/0.5
Date Sampled		26/06/2019	27/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	06/07/2019	06/07/2019	06/07/2019	06/07/2019	06/07/2019
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	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	120	134	120	128	131

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		220713-14	220713-15	220713-16
Your Reference	UNITS	BD4 270619	TS	TB
Date Sampled		27/06/2019	27/06/2019	27/06/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	06/07/2019	06/07/2019	06/07/2019
TRH C ₆ - C ₉	mg/kg	<25	[NA]	<25
TRH C ₆ - C ₁₀	mg/kg	<25	[NA]	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	[NA]	<25
Benzene	mg/kg	<0.2	88%	<0.2
Toluene	mg/kg	<0.5	90%	<0.5
Ethylbenzene	mg/kg	<1	88%	<1
m+p-xylene	mg/kg	<2	89%	<2
o-Xylene	mg/kg	<1	88%	<1
naphthalene	mg/kg	<1	[NA]	<1
Total +ve Xylenes	mg/kg	<3	[NA]	<3
Surrogate aaa-Trifluorotoluene	%	121	108	93

svTRH (C10-C40) in Soil

Our Reference		220713-1	220713-2	220713-4	220713-5	220713-6
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.2	BH403/0.5	BH404/1.0
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	26/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	05/07/2019	05/07/2019	05/07/2019	05/07/2019	05/07/2019
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	%	86	85	87	86	86

svTRH (C10-C40) in Soil

Our Reference		220713-7	220713-9	220713-11	220713-12	220713-13
Your Reference	UNITS	BH405/0.2	BH406/0.3	BH407/0.5	BH408/0.2	BH408/0.5
Date Sampled		26/06/2019	27/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	05/07/2019	05/07/2019	05/07/2019	05/07/2019	05/07/2019
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	170	<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	220	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	170	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	390	<50
Surrogate o-Terphenyl	%	86	88	86	96	88

svTRH (C10-C40) in Soil		
Our Reference		220713-14
Your Reference	UNITS	BD4 270619
Date Sampled		27/06/2019
Type of sample		SOIL
Date extracted	-	03/07/2019
Date analysed	-	05/07/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100
Total +ve TRH (>C ₁₀ -C ₄₀)	mg/kg	<50
Surrogate o-Terphenyl	%	89

PAHs in Soil						
Our Reference		220713-1	220713-2	220713-4	220713-5	220713-6
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.2	BH403/0.5	BH404/1.0
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	26/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	05/07/2019	05/07/2019	05/07/2019	05/07/2019	05/07/2019
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	0.3	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.7	0.1	0.2	<0.1
Pyrene	mg/kg	0.1	0.8	0.1	0.2	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.7	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.09	0.5	<0.05	0.1	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.3	<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	0.4	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.4	4.6	0.2	0.4	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	0.6	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	0.7	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	0.7	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	98	96	95	90	94

PAHs in Soil						
Our Reference		220713-7	220713-9	220713-11	220713-12	220713-13
Your Reference	UNITS	BH405/0.2	BH406/0.3	BH407/0.5	BH408/0.2	BH408/0.5
Date Sampled		26/06/2019	27/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	05/07/2019	05/07/2019	05/07/2019	05/07/2019	05/07/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	0.2	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	0.4	0.4
Anthracene	mg/kg	<0.1	<0.1	<0.1	0.2	0.2
Fluoranthene	mg/kg	0.2	<0.1	<0.1	1.2	1.1
Pyrene	mg/kg	0.2	<0.1	<0.1	1.4	1.2
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.7	0.7
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.8	0.8
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	2	1
Benzo(a)pyrene	mg/kg	0.08	<0.05	<0.05	1.2	0.85
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.8	0.5
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	1.3	0.6
Total +ve PAH's	mg/kg	0.50	<0.05	<0.05	10	7.7
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	1.7	1.1
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	1.7	1.2
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	1.7	1.2
Surrogate p-Terphenyl-d14	%	92	95	93	94	93

PAHs in Soil		
Our Reference		220713-14
Your Reference	UNITS	BD4 270619
Date Sampled		27/06/2019
Type of sample		SOIL
Date extracted	-	03/07/2019
Date analysed	-	05/07/2019
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	0.2
Pyrene	mg/kg	0.2
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	0.56
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	92

Organochlorine Pesticides in soil						
Our Reference		220713-1	220713-2	220713-5	220713-12	220713-13
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.5	BH408/0.2	BH408/0.5
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
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	%	74	99	109	90	99

Organophosphorus Pesticides						
Our Reference		220713-1	220713-2	220713-5	220713-12	220713-13
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.5	BH408/0.2	BH408/0.5
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
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
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-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	%	74	99	109	90	99

PCBs in Soil						
Our Reference		220713-1	220713-2	220713-5	220713-12	220713-13
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.5	BH408/0.2	BH408/0.5
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
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	%	74	99	109	90	99

Acid Extractable metals in soil

Our Reference		220713-1	220713-2	220713-4	220713-5	220713-6
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.2	BH403/0.5	BH404/1.0
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	26/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
Arsenic	mg/kg	<4	5	4	8	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	24	21	9	7	24
Copper	mg/kg	4	10	14	15	<1
Lead	mg/kg	18	71	56	60	9
Mercury	mg/kg	0.1	0.1	<0.1	<0.1	0.1
Nickel	mg/kg	4	4	2	3	3
Zinc	mg/kg	18	72	57	96	2

Acid Extractable metals in soil

Our Reference		220713-7	220713-9	220713-11	220713-12	220713-13
Your Reference	UNITS	BH405/0.2	BH406/0.3	BH407/0.5	BH408/0.2	BH408/0.5
Date Sampled		26/06/2019	27/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
Arsenic	mg/kg	<4	6	<4	83	30
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	24	4	18	17
Copper	mg/kg	200	<1	1	40	19
Lead	mg/kg	28	13	9	140	63
Mercury	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Nickel	mg/kg	4	1	<1	7	3
Zinc	mg/kg	29	6	3	120	41

Acid Extractable metals in soil		
Our Reference		220713-14
Your Reference	UNITS	BD4 270619
Date Sampled		27/06/2019
Type of sample		SOIL
Date prepared	-	03/07/2019
Date analysed	-	04/07/2019
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	19
Copper	mg/kg	8
Lead	mg/kg	14
Mercury	mg/kg	<0.1
Nickel	mg/kg	2
Zinc	mg/kg	9

Misc Soil - Inorg						
Our Reference		220713-1	220713-2	220713-5	220713-12	220713-13
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.5	BH408/0.2	BH408/0.5
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Moisture						
Our Reference		220713-1	220713-2	220713-4	220713-5	220713-6
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.2	BH403/0.5	BH404/1.0
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	26/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
Moisture	%	14	14	12	15	16

Moisture						
Our Reference		220713-7	220713-9	220713-11	220713-12	220713-13
Your Reference	UNITS	BH405/0.2	BH406/0.3	BH407/0.5	BH408/0.2	BH408/0.5
Date Sampled		26/06/2019	27/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
Moisture	%	14	20	15	16	19

Moisture		
Our Reference		220713-14
Your Reference	UNITS	BD4 270619
Date Sampled		27/06/2019
Type of sample		SOIL
Date prepared	-	03/07/2019
Date analysed	-	04/07/2019
Moisture	%	11

Asbestos ID - soils						
Our Reference	UNITS	220713-1	220713-2	220713-4	220713-5	220713-6
Your Reference		BH401/1.0	BH402/0.2	BH403/0.2	BH403/0.5	BH404/1.0
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	26/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Sample mass tested	g	Approx. 30g	Approx. 20g	Approx. 20g	Approx. 50g	Approx. 25g
Sample Description	-	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown sandy soil & rocks	Brown clayey soil & rocks	Brown clayey 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	UNITS	220713-7	220713-9	220713-11	220713-12	220713-13
Your Reference		BH405/0.2	BH406/0.3	BH407/0.5	BH408/0.2	BH408/0.5
Date Sampled		26/06/2019	27/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Sample mass tested	g	Approx. 20g	Approx. 25g	Approx. 45g	Approx. 60g	Approx. 40g
Sample Description	-	Brown clayey soil & rocks	Brown clayey soil & rocks	Peach clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
		Organic fibres detected	Organic fibres detected	Organic fibres detected	Organic fibres detected	Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Misc Inorg - Soil				
Our Reference		220713-3	220713-8	220713-10
Your Reference	UNITS	BH402/1.0	BH405/1.0	BH406/2.0
Date Sampled		29/06/2019	27/06/2019	27/06/2019
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	03/07/2019	03/07/2019	03/07/2019
pH 1:5 soil:water	pH Units	5.4	4.9	5.2

CEC				
Our Reference		220713-3	220713-8	220713-10
Your Reference	UNITS	BH402/1.0	BH405/1.0	BH406/2.0
Date Sampled		29/06/2019	27/06/2019	27/06/2019
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	04/07/2019	04/07/2019	04/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019
Exchangeable Ca	meq/100g	2.0	1.3	1.2
Exchangeable K	meq/100g	0.2	<0.1	0.1
Exchangeable Mg	meq/100g	0.86	2.7	2.2
Exchangeable Na	meq/100g	0.38	<0.1	0.24
Cation Exchange Capacity	meq/100g	3.4	4.1	3.8

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	<p>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.</p> <p>For soil results:-</p> <ol style="list-style-type: none"> 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. <p>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.</p>
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)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	<p>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)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p> <p>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.</p>

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	220713-4
Date extracted	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	03/07/2019
Date analysed	-			06/07/2019	1	06/07/2019	06/07/2019		06/07/2019	06/07/2019
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	1	<25	<25	0	97	105
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	1	<25	<25	0	97	105
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	82	91
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	96	106
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	97	105
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	104	112
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	99	108
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	135	1	127	121	5	102	110

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	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	06/07/2019	06/07/2019		[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	128	128	0	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	220713-4
Date extracted	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	03/07/2019
Date analysed	-			05/07/2019	1	05/07/2019	05/07/2019		05/07/2019	05/07/2019
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	1	<50	<50	0	90	122
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	1	<100	<100	0	90	122
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	1	<100	<100	0	86	112
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	1	<50	<50	0	90	122
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	1	<100	<100	0	90	122
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	1	<100	<100	0	86	112
Surrogate o-Terphenyl	%		Org-003	90	1	86	87	1	98	98

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	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	05/07/2019	05/07/2019		[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	110	10	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	12	170	180	6	[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	220	220	0	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	12	170	180	6	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	12	96	99	3	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	220713-2
Date extracted	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	03/07/2019
Date analysed	-			05/07/2019	1	05/07/2019	05/07/2019		05/07/2019	05/07/2019
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	112	97
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	106	97
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	104	124
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	0.1	0.3	100	98	89
Pyrene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.5	133	100	90
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	<0.1	0.3	100	100	130
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	<0.2	0.5	86	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	0.09	0.3	108	100	121
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	0.2	67	[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	0.1	0.2	67	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	97	1	98	103	5	128	93

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	05/07/2019	05/07/2019		[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	0.2	0.2	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	0.4	0.4	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	12	0.2	0.3	40	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	12	1.2	1.4	15	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	12	1.4	1.6	13	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	12	0.7	0.8	13	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	12	0.8	0.9	12	[NT]	[NT]
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-012	[NT]	12	2	2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	12	1.2	1.2	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	12	0.8	0.9	12	[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	1.3	1.1	17	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	12	94	92	2	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	[NT]
Date analysed	-			04/07/2019	1	04/07/2019	04/07/2019		04/07/2019	[NT]
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	95	[NT]
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	93	[NT]
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	90	[NT]
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	95	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	94	[NT]
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	97	[NT]
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	111	[NT]
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	94	[NT]
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	91	[NT]
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	107	[NT]
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	98	1	74	81	9	124	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	04/07/2019	04/07/2019		[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	90	86	5	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	[NT]
Date analysed	-			04/07/2019	1	04/07/2019	04/07/2019		04/07/2019	[NT]
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]
Chlorpyrifos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	98	[NT]
Chlorpyrifos-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	87	[NT]
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	116	[NT]
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	104	[NT]
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	108	[NT]
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	106	[NT]
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	93	[NT]
Surrogate TCMX	%		Org-008	98	1	74	81	9	87	[NT]

QUALITY CONTROL: Organophosphorus Pesticides					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	04/07/2019	04/07/2019		[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]
Chlorpyrifos	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-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	90	86	5	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	[NT]
Date analysed	-			04/07/2019	1	04/07/2019	04/07/2019		04/07/2019	[NT]
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	106	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	98	1	74	81	9	87	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	04/07/2019	04/07/2019		[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	90	86	5	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	220713-4
Date prepared	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	03/07/2019
Date analysed	-			04/07/2019	1	04/07/2019	04/07/2019		04/07/2019	04/07/2019
Arsenic	mg/kg	4	Metals-020	<4	1	<4	4	0	104	104
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	106	102
Chromium	mg/kg	1	Metals-020	<1	1	24	25	4	101	96
Copper	mg/kg	1	Metals-020	<1	1	4	5	22	102	106
Lead	mg/kg	1	Metals-020	<1	1	18	21	15	108	94
Mercury	mg/kg	0.1	Metals-021	<0.1	1	0.1	<0.1	0	98	108
Nickel	mg/kg	1	Metals-020	<1	1	4	3	29	103	101
Zinc	mg/kg	1	Metals-020	<1	1	18	20	11	108	115

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	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	04/07/2019	04/07/2019		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	12	83	90	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	18	18	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	12	40	41	2	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	12	140	130	7	[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	7	7	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	12	120	120	0	[NT]	[NT]

Client Reference: 85310.02, Roseville

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			03/07/2019	[NT]	[NT]	[NT]	[NT]	03/07/2019	[NT]
Date analysed	-			03/07/2019	[NT]	[NT]	[NT]	[NT]	03/07/2019	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	[NT]	[NT]	101	[NT]

Client Reference: 85310.02, Roseville

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			03/07/2019	[NT]	[NT]	[NT]	[NT]	03/07/2019	[NT]
Date analysed	-			03/07/2019	[NT]	[NT]	[NT]	[NT]	03/07/2019	[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-1	[NT]
Date prepared	-			04/07/2019	10	04/07/2019	04/07/2019		04/07/2019	[NT]
Date analysed	-			04/07/2019	10	04/07/2019	04/07/2019		04/07/2019	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	10	1.2	0.8	40	97	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	10	0.1	0.1	0	106	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	10	2.2	2.0	10	101	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	10	0.24	0.24	0	102	[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.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Report Comments

Asbestos: Excessive sample volumes were provided for asbestos analysis.

A portion of the supplied samples were sub-sampled according to Envirolab procedures.

We cannot guarantee that these sub-samples are indicative of the entire sample.

Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.

Note: Samples requested for asbestos testing were sub-sampled from bags provided by the client.

Project No: 85310.02			Suburb: Roseville			To: Envirolab Services		
Project Name: Proposed Roseville College SWELL Centre			Order Number					
Project Manager WFY			Sampler: WFY			Attn: Aileen Hie		
Emails: wenfei.yuan@douglaspartners.com.au						Phone:		
Date Required: Same day <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours <input type="checkbox"/> 72 hours <input type="checkbox"/> Standard <input type="checkbox"/>						Email:		
Prior Storage: <input type="checkbox"/> Esky <input type="checkbox"/> Fridge <input type="checkbox"/> Shelved			Do samples contain 'potential' HBM? Yes <input type="checkbox"/> No <input type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID)					

Sample ID	Lab ID	Date Sampled	Sample Type	Container Type	Analytes							Notes	
			S - soil W - water	G - glass P - plastic	Combo8A	Combo3A	PH, CEC						
BH401/1.0	1	27.06.19	S	G/P	X								Please send
BH402/0.2	2	29.06.19	S	G/P	X								BD4270619 (inter-
BH402/1.0	3	29.06.19	S	P				X					to Eurohins Mt.
BH403/0.2	4	28.06.19	S	G/P			X						
BH403/0.5	5	28.06.19	S	G/P	X								
BH404/1.0	6	26.06.19	S	G/P			X						
BH405/0.2	7	26.06.19	S	G/P			X						
BH405/1.0	8	27.06.19	S	G/P				X					
BH406/0.3	9	27.06.19	S	G/P			X						
BH406/2.0	10	27.06.19	S	G/P				X					
BH407/0.5	11	28.06.19	S	G/P			X						
BH408/0.2	12	28.06.19	S	G/P	X								
BH408/0.5	13				X								
PQL (S) mg/kg													ANZECC PQLs req'd for all water analytes <input type="checkbox"/>
PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit Metals to Analyse: 8HM unless specified here: Total number of samples in container: Relinquished by: WFY Transported to laboratory by: Send Results to: Douglas Partners Pty Ltd Address: 96 Hermitage Road, West Ryde Phone: 9809 0999 Signed: Received by: T. Nguyen Date & Time: 01/07/19 15:30													

Add: 14 BD4270619 (inter-lab replicate)

15 TS

16 TB

X-combo3

CHAIN OF CUSTODY DESPATCH SHEET

Project No: 85310.02			Suburb: Roseville			To: Eurofins Mgt.										
Project Name: Proposed Roseville College SWELL Centre			Order Number													
Project Manager WFY			Sampler: WFY			Attn: Asim Khan										
Emails: wenfei.yuan@douglaspartners.com.au						Phone: 9900 8432										
Date Required: Same day <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours <input type="checkbox"/> 72 hours <input type="checkbox"/> Standard <input type="checkbox"/>						Email: Asimkhan@eurofins.com										
Prior Storage: <input type="checkbox"/> Esky <input type="checkbox"/> Fridge <input type="checkbox"/> Shelved			Do samples contain 'potential' HBM? Yes <input type="checkbox"/> No <input type="checkbox"/> (If YES, then handle, transport and store in accordance with FPM HAZID)													
Sample ID	Lab ID	Date Sampled	Sample Type	Container Type	Analytes											
			S - soil W - water	G - glass P - plastic	Combo8A	Combo3A	pH, CEC									
BD4270619		27/06/19	S.	P.		✓										
PQL (S) mg/kg																
PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit															ANZECC PQLs req'd for all water analytes <input type="checkbox"/>	
Metals to Analyse: 8HM unless specified here:															Lab Report/Reference No:	
Total number of samples in container:																
Relinquished by: WFY					Transported to laboratory by:											
Send Results to: Douglas Partners Pty Ltd					Address: 96 Hermitage Road, West Ryde							Phone: 9809 0999				
Signed:					Received by:							Date & Time:				

CERTIFICATE OF ANALYSIS 220713-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Chamali Nagodavithane
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	<u>85310.02, Roseville</u>
Number of Samples	16 SOIL
Date samples received	01/07/2019
Date completed instructions received	22/07/2019

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	29/07/2019
Date of Issue	24/07/2019
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Jeremy Faircloth, Operations Manager, Sydney
 Loren Bardwell, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

Metals in TCLP USEPA1311		
Our Reference		220713-A-12
Your Reference	UNITS	BH408/0.2
Date Sampled		28/06/2019
Type of sample		SOIL
Date extracted	-	23/07/2019
Date analysed	-	23/07/2019
pH of soil for fluid# determ.	pH units	7.8
pH of soil TCLP (after HCl)	pH units	1.5
Extraction fluid used	-	1
pH of final Leachate	pH units	5.0
Lead in TCLP	mg/L	<0.03

PAHs in TCLP (USEPA 1311)		
Our Reference		220713-A-12
Your Reference	UNITS	BH408/0.2
Date Sampled		28/06/2019
Type of sample		SOIL
Date extracted	-	23/07/2019
Date analysed	-	24/07/2019
Naphthalene in TCLP	mg/L	<0.001
Acenaphthylene in TCLP	mg/L	<0.001
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	<0.001
Anthracene in TCLP	mg/L	<0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	NIL (+)VE
Surrogate <i>p</i> -Terphenyl-d14	%	75

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. Please note that the mass used may be scaled down from the default based on sample mass available.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-012	Leachates are extracted with Dichloromethane and analysed by GC-MS.
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.

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-		Metals-020 ICP-AES	23/07/2019	[NT]	[NT]	[NT]	[NT]	23/07/2019	[NT]
Date analysed	-			23/07/2019	[NT]	[NT]	[NT]	[NT]	23/07/2019	[NT]
Lead in TCLP	mg/L	0.03		<0.03	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			23/07/2019	[NT]	[NT]	[NT]	[NT]	23/07/2019	[NT]
Date analysed	-			24/07/2019	[NT]	[NT]	[NT]	[NT]	23/07/2019	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	86	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	71	[NT]
Anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Pyrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	72	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	122	[NT]	[NT]	[NT]	[NT]	70	[NT]

Result Definitions

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PQL	Practical Quantitation Limit
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>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
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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.

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Report Comments


PAHs in TCLP USEPA 1311 - All organic analyses has been performed outside of recommended holding time.

Andrew Fitzsimons

From: Simon Song
Sent: Monday, 22 July 2019 4:49 PM
To: Chamali Nagodavithane; Andrew Fitzsimons
Cc: Wen-Fei Yuan
Subject: RE: Additional Analysis

Follow Up Flag: Follow up
Flag Status: Flagged

No problem

Ref: 220713-A
TAT: Std
Due: 29/7/19


Regards,

Simon Song | Customer Service | Envirolab Services Pty Ltd

Great Science, Great Service.

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

New sampling bottle provision now available for PFAS and SVOCs in water samples

Please note that all samples submitted to the Envirolab Group laboratories will be analysed under the Envirolab Group Terms and Conditions. The Terms and Conditions are accessible by clicking this link

From: Chamali Nagodavithane [mailto:Chamali.Nagodavithane@douglaspartners.com.au]
Sent: Monday, 22 July 2019 4:41 PM
To: Simon Song <SSong@envirolab.com.au>
Cc: Wen-Fei Yuan <WenFei.Yuan@douglaspartners.com.au>
Subject: Additional Analysis

Hi Simon,

Can we please request the following additional analysis:

DP job number: 85310.02
ELS job number: 220713
Samples: BH408/0.2 — 12
Analysis required: Lead and BaP TCLP
TAT: standard

Douglas Partners (Syd)
96 Hermitage Road
West Ryde
NSW 2114



NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: Wen-Fei Yuan

Report 663873-S
Project name PROPOSED ROSEVILLE COLLEGE SWELL CENTRE
Project ID 85310.02
Received Date Jul 02, 2019

Client Sample ID			BD4270619
Sample Matrix			Soil
Eurofins mgt Sample No.			S19-JI04509
Date Sampled			Jun 27, 2019
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	86
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5

Client Sample ID			BD4270619
Sample Matrix			Soil
Eurofins mgt Sample No.			S19-JI04509
Date Sampled			Jun 27, 2019
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	108
p-Terphenyl-d14 (surr.)	1	%	100
Heavy Metals			
Arsenic	2	mg/kg	5.1
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	29
Copper	5	mg/kg	8.7
Lead	5	mg/kg	17
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	< 5
Zinc	5	mg/kg	15
% Moisture	1	%	13

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Jul 05, 2019	14 Days
BTEX - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices	Sydney	Jul 05, 2019	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Jul 05, 2019	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Jul 05, 2019	
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Jul 05, 2019	14 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Jul 05, 2019	180 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Jul 03, 2019	14 Days

Company Name: Douglas Partners (Syd)
Address: 96 Hermitage Road
West Ryde
NSW 2114

Project Name: PROPOSED ROSEVILLE COLLEGE SWELL CENTRE
Project ID: 85310.02

Order No.:
Report #: 663873
Phone: 02 9809 0666
Fax:

Received: Jul 2, 2019 2:22 PM
Due: Jul 9, 2019
Priority: 5 Day
Contact Name: Wen-Fei Yuan

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Moisture Set	Eurofins mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	BD4270619	Jun 27, 2019		Soil	S19-JI04509	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

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

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	83			70-130	Pass	

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14				%	88			70-130	Pass	
LCS - % Recovery										
BTEX										
Benzene			%	91				70-130	Pass	
Toluene			%	92				70-130	Pass	
Ethylbenzene			%	93				70-130	Pass	
m&p-Xylenes			%	96				70-130	Pass	
o-Xylene			%	95				70-130	Pass	
Xylenes - Total			%	95				70-130	Pass	
LCS - % Recovery										
Total Recoverable Hydrocarbons - 2013 NEPM Fractions										
Naphthalene			%	100				70-130	Pass	
TRH C6-C10			%	79				70-130	Pass	
TRH >C10-C16			%	83				70-130	Pass	
LCS - % Recovery										
Polycyclic Aromatic Hydrocarbons										
Acenaphthene			%	115				70-130	Pass	
Acenaphthylene			%	115				70-130	Pass	
Anthracene			%	114				70-130	Pass	
Benz(a)anthracene			%	106				70-130	Pass	
Benzo(a)pyrene			%	113				70-130	Pass	
Benzo(b&j)fluoranthene			%	106				70-130	Pass	
Benzo(g.h.i)perylene			%	76				70-130	Pass	
Benzo(k)fluoranthene			%	119				70-130	Pass	
Chrysene			%	121				70-130	Pass	
Dibenz(a.h)anthracene			%	89				70-130	Pass	
Fluoranthene			%	115				70-130	Pass	
Fluorene			%	117				70-130	Pass	
Indeno(1.2.3-cd)pyrene			%	80				70-130	Pass	
Naphthalene			%	119				70-130	Pass	
Phenanthrene			%	119				70-130	Pass	
Pyrene			%	118				70-130	Pass	
LCS - % Recovery										
Heavy Metals										
Arsenic			%	116				70-130	Pass	
Cadmium			%	113				70-130	Pass	
Chromium			%	114				70-130	Pass	
Copper			%	111				70-130	Pass	
Lead			%	113				70-130	Pass	
Mercury			%	120				70-130	Pass	
Nickel			%	112				70-130	Pass	
Zinc			%	113				70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1				Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery										
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1						
TRH C6-C9	S19-JI07364	NCP	%	93				70-130	Pass	
TRH C10-C14	S19-JI04510	NCP	%	74				70-130	Pass	
Spike - % Recovery										
BTEX				Result 1						
Benzene	S19-JI07364	NCP	%	85				70-130	Pass	
Toluene	S19-JI07364	NCP	%	85				70-130	Pass	
Ethylbenzene	S19-JI07364	NCP	%	86				70-130	Pass	
m&p-Xylenes	S19-JI07364	NCP	%	90				70-130	Pass	
o-Xylene	S19-JI07364	NCP	%	87				70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total	S19-JI07364	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S19-JI07364	NCP	%	103			70-130	Pass	
TRH C6-C10	S19-JI07364	NCP	%	88			70-130	Pass	
TRH >C10-C16	S19-JI04510	NCP	%	67			70-130	Fail	Q08
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S19-JI07557	NCP	%	122			70-130	Pass	
Acenaphthylene	S19-JI07557	NCP	%	118			70-130	Pass	
Anthracene	S19-JI07557	NCP	%	117			70-130	Pass	
Benz(a)anthracene	S19-JI07557	NCP	%	113			70-130	Pass	
Benzo(a)pyrene	S19-JI07557	NCP	%	109			70-130	Pass	
Benzo(b&j)fluoranthene	S19-JI07557	NCP	%	105			70-130	Pass	
Benzo(g,h,i)perylene	S19-JI07557	NCP	%	124			70-130	Pass	
Benzo(k)fluoranthene	S19-JI07557	NCP	%	118			70-130	Pass	
Chrysene	S19-JI07557	NCP	%	122			70-130	Pass	
Dibenz(a,h)anthracene	S19-JI07557	NCP	%	117			70-130	Pass	
Fluoranthene	S19-JI07557	NCP	%	125			70-130	Pass	
Fluorene	S19-JI07557	NCP	%	118			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S19-JI07557	NCP	%	126			70-130	Pass	
Naphthalene	S19-JI07557	NCP	%	124			70-130	Pass	
Phenanthrene	S19-JI07557	NCP	%	124			70-130	Pass	
Pyrene	S19-JI07557	NCP	%	125			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S19-JI03516	NCP	%	107			70-130	Pass	
Cadmium	S19-JI03516	NCP	%	105			70-130	Pass	
Chromium	S19-JI03516	NCP	%	97			70-130	Pass	
Copper	S19-JI03516	NCP	%	82			70-130	Pass	
Lead	S19-JI03516	NCP	%	95			70-130	Pass	
Mercury	S19-JI03516	NCP	%	107			70-130	Pass	
Nickel	S19-JI03516	NCP	%	105			70-130	Pass	
Zinc	S19-JI06275	NCP	%	97			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S19-JI04509	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S19-JI07363	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S19-JI07363	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S19-JI07363	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S19-JI04509	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S19-JI04509	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S19-JI04509	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S19-JI04509	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S19-JI04509	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S19-JI04509	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S19-JI04509	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S19-JI04509	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S19-JI07363	NCP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S19-JI07363	NCP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S19-JI07363	NCP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S19-JI07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S19-JI03515	NCP	mg/kg	< 2	2.3	15	30%	Pass
Cadmium	S19-JI03515	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S19-JI03515	NCP	mg/kg	16	17	9.0	30%	Pass
Copper	S19-JI03515	NCP	mg/kg	20	18	11	30%	Pass
Lead	S19-JI03515	NCP	mg/kg	12	14	14	30%	Pass
Mercury	S19-JI03515	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	S19-JI03515	NCP	mg/kg	19	16	13	30%	Pass
Zinc	S19-JI03515	NCP	mg/kg	69	76	10	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	S19-JI04509	CP	%	13	11	13	30%	Pass

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

Nibha Vaidya	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)



Glenn Jackson General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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CHAIN OF CUSTODY DESPATCH SHEET

[illegible]

Relinquished: Tanya Doherty
02/07/2019 ✓
11:45

663873

220713 01/07/19
Rev4/October

Sample Receipt Advice

Company name: **Douglas Partners (Syd)**
Contact name: **Wen-Fei Yuan**
Project name: **PROPOSED ROSEVILLE COLLEGE SWELL CENTRE**
Project ID: **85310.02**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Jul 2, 2019 2:22 PM**
Eurofins | mgt reference: **663873**

Sample information

- ☒ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☒ All samples have been received as described on the above COC.
- ☒ COC has been completed correctly.
- ☒ Attempt to chill was evident.
- ☒ Appropriately preserved sample containers have been used.
- ☒ All samples were received in good condition.
- ☒ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☒ Appropriate sample containers have been used.
- ☐ Split sample sent to requested external lab.
- ☐ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Wen-Fei Yuan - wenfei.yuan@douglaspartners.com.au.

CERTIFICATE OF ANALYSIS 222744

Client Details

Client	Douglas Partners Pty Ltd
Attention	Wen-Fei Yuan
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	<u>85310.02, Roseville</u>
Number of Samples	1 soil
Date samples received	30/07/2019
Date completed instructions received	30/07/2019

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	02/08/2019
Date of Issue	05/08/2019
Reissue Details	This report replaces R00 created on 01/08/2019 due to: Sample ID Amended (Client Request)
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Results Approved By

Loren Bardwell, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

Acid Extractable metals in soil		
Our Reference		222744-1
Your Reference	UNITS	BH401
Depth		0.5
Date Sampled		27/06/2019
Type of sample		soil
Date prepared	-	31/07/2019
Date analysed	-	31/07/2019
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	23
Copper	mg/kg	3
Lead	mg/kg	12
Mercury	mg/kg	0.2
Nickel	mg/kg	2
Zinc	mg/kg	6

Moisture		
Our Reference		222744-1
Your Reference	UNITS	BH401
Depth		0.5
Date Sampled		27/06/2019
Type of sample		soil
Date prepared	-	31/07/2019
Date analysed	-	01/08/2019
Moisture	%	12

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			31/07/2019	[NT]	[NT]	[NT]	[NT]	31/07/2019	[NT]
Date analysed	-			31/07/2019	[NT]	[NT]	[NT]	[NT]	31/07/2019	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	104	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	98	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	81	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	111	[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.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Rev4/October2016

CERTIFICATE OF ANALYSIS 221807

Client Details

Client	Douglas Partners Pty Ltd
Attention	Wen-Fei Yuan
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	<u>85310.01, Roseville</u>
Number of Samples	5 Water
Date samples received	17/07/2019
Date completed instructions received	17/07/2019

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	24/07/2019
Date of Issue	24/07/2019
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Results Approved By

Jaimie Loa-Kum-Cheung, Metals Supervisor
Nick Sarlamis, Inorganics Supervisor
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water

Our Reference		221807-1	221807-2	221807-3	221807-4	221807-5
Your Reference	UNITS	BH401	BH406	BD20190716	TS	TB
Date Sampled		16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
Date analysed	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
TRH C ₆ - C ₉	µg/L	<10	<10	<10	[NA]	<10
TRH C ₆ - C ₁₀	µg/L	<10	<10	<10	[NA]	<10
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	<10	<10	<10	[NA]	<10
Benzene	µg/L	<1	<1	<1	82%	<1
Toluene	µg/L	<1	<1	<1	80%	<1
Ethylbenzene	µg/L	<1	<1	<1	78%	<1
m+p-xylene	µg/L	<2	<2	<2	75%	<2
o-xylene	µg/L	<1	<1	<1	78%	<1
Naphthalene	µg/L	<1	<1	<1	[NA]	<1
Surrogate Dibromofluoromethane	%	98	99	120	99	101
Surrogate toluene-d8	%	98	96	99	99	100
Surrogate 4-BFB	%	99	97	100	96	97

svTRH (C10-C40) in Water				
Our Reference		221807-1	221807-2	221807-3
Your Reference	UNITS	BH401	BH406	BD20190716
Date Sampled		16/07/2019	16/07/2019	16/07/2019
Type of sample		Water	Water	Water
Date extracted	-	18/07/2019	18/07/2019	18/07/2019
Date analysed	-	19/07/2019	19/07/2019	19/07/2019
TRH C ₁₀ - C ₁₄	µg/L	<50	<50	<50
TRH C ₁₅ - C ₂₈	µg/L	<100	<100	<100
TRH C ₂₉ - C ₃₆	µg/L	<100	<100	<100
TRH >C ₁₀ - C ₁₆	µg/L	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50	<50	<50
TRH >C ₁₆ - C ₃₄	µg/L	<100	<100	<100
TRH >C ₃₄ - C ₄₀	µg/L	<100	<100	<100
Surrogate o-Terphenyl	%	127	102	100

PAHs in Water - Low Level				
Our Reference		221807-1	221807-2	221807-3
Your Reference	UNITS	BH401	BH406	BD20190716
Date Sampled		16/07/2019	16/07/2019	16/07/2019
Type of sample		Water	Water	Water
Date extracted	-	18/07/2019	18/07/2019	18/07/2019
Date analysed	-	19/07/2019	19/07/2019	19/07/2019
Naphthalene	µg/L	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate <i>p</i> -Terphenyl-d14	%	79	77	77

OCP in water			
Our Reference		221807-1	221807-2
Your Reference	UNITS	BH401	BH406
Date Sampled		16/07/2019	16/07/2019
Type of sample		Water	Water
Date extracted	-	18/07/2019	18/07/2019
Date analysed	-	19/07/2019	19/07/2019
HCB	µg/L	<0.2	<0.2
alpha-BHC	µg/L	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2
Surrogate TCMX	%	117	70

OP Pesticides in water			
Our Reference		221807-1	221807-2
Your Reference	UNITS	BH401	BH406
Date Sampled		16/07/2019	16/07/2019
Type of sample		Water	Water
Date extracted	-	18/07/2019	18/07/2019
Date analysed	-	19/07/2019	19/07/2019
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2
Chlorpyrifos	µg/L	<0.2	<0.2
Chlorpyrifos-methyl	µg/L	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2
Dichlorvos	µg/L	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2
Surrogate TCMX	%	117	70

HM in water - dissolved				
Our Reference		221807-1	221807-2	221807-3
Your Reference	UNITS	BH401	BH406	BD20190716
Date Sampled		16/07/2019	16/07/2019	16/07/2019
Type of sample		Water	Water	Water
Date prepared	-	18/07/2019	18/07/2019	18/07/2019
Date analysed	-	18/07/2019	18/07/2019	18/07/2019
Arsenic-Dissolved	µg/L	<1	8	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	5	3	5
Zinc-Dissolved	µg/L	10	16	10

Total Phenolics in Water			
Our Reference		221807-1	221807-2
Your Reference	UNITS	BH401	BH406
Date Sampled		16/07/2019	16/07/2019
Type of sample		Water	Water
Date extracted	-	22/07/2019	22/07/2019
Date analysed	-	22/07/2019	22/07/2019
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05

Method ID	Methodology Summary
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-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
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-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
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.
Org-013	Water samples are analysed directly 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)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			19/07/2019	[NT]	[NT]	[NT]	[NT]	19/07/2019	[NT]
Date analysed	-			22/07/2019	[NT]	[NT]	[NT]	[NT]	22/07/2019	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	82	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	82	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	81	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-016	98	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-016	98	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-BFB	%		Org-016	100	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
TRH C ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH C ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	87	[NT]
TRH C ₂₉ - C ₃₆	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	116	[NT]
TRH >C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	87	[NT]
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	116	[NT]
Surrogate o-Terphenyl	%		Org-003	87	[NT]	[NT]	[NT]	[NT]	125	[NT]

QUALITY CONTROL: PAHs in Water - Low Level					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			19/07/2019	[NT]	[NT]	[NT]	[NT]	19/07/2019	[NT]
Naphthalene	µg/L	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	96	[NT]
Acenaphthylene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Phenanthrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	74	[NT]
Anthracene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Pyrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	88	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: OCP in water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			19/07/2019	[NT]	[NT]	[NT]	[NT]	19/07/2019	[NT]
HCB	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
gamma-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Heptachlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	77	[NT]
delta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
gamma-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Dieldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Endrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	98	[NT]
pp-DDD	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Endosulfan II	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	68	[NT]
Methoxychlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-005	82	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: OP Pesticides in water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			19/07/2019	[NT]	[NT]	[NT]	[NT]	19/07/2019	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromophos ethyl	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyrifos	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	117	[NT]
Chlorpyrifos-methyl	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorvos	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	105	[NT]
Dimethoate	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Fenitrothion	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	134	[NT]
Malathion	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	102	[NT]
Parathion	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	105	[NT]
Ronnel	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	124	[NT]
Surrogate TCMX	%		Org-008	82	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: HM in water - dissolved					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date prepared	-			18/07/2019	1	18/07/2019	18/07/2019		18/07/2019	[NT]
Date analysed	-			18/07/2019	1	18/07/2019	18/07/2019		18/07/2019	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	99	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	95	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	105	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	98	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	102	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	5	5	0	96	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	10	10	0	96	[NT]

Client Reference: 85310.01, Roseville

QUALITY CONTROL: Total Phenolics in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			22/07/2019	[NT]	[NT]	[NT]	[NT]	22/07/2019	[NT]
Date analysed	-			22/07/2019	[NT]	[NT]	[NT]	[NT]	22/07/2019	[NT]
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	[NT]	[NT]	[NT]	[NT]	105	[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.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Report Comments

Dissolved Metals: The preserved sample provided was not identified as either total or dissolved, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.

Note: there is a possibility some elements may be underestimated.

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