Douglas Partners
Geotechnics / Environment / Groundwater

Integrated Practical Solutions

Report on
Contamination Investigation

Project Area 1
High Street, Kensington

Prepared for
University of New South Wales

Project 86361.01
5 November 2019

Douglas Partners
Geotechnics / Environment / Groundwater

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

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Table of Contents

Page

Report on Contamination Investigation
Project Area 1
High Street, Kensington

1. Introduction

1.1 Background

This report presents the results of a contamination Project Area 1 development at the University of New South Wales, Kensington. The investigation was commissioned by Ms Tania Costa of University of New South Wales and was undertaken in accordance with Douglas Partners' proposal number SYD180256.P.001.Rev2 dated 6 April 2018. Revision 1 of this report has been issued to address a query regarding how the report has addressed SEPP 55 and Managing Land Contamination: Planning Guidelines - SEPP 55 Remediation of Land (DUAP). This is addressed in Section 1.2.

It is understood that the proposed development includes upgrades to Gate 9 and the surrounding entry area, with landscaped and pavement areas, covered areas around the Sir John Clancy Auditorium, demolition of the existing retail food court and learning spaces at Level 1 of the Mathews Building to create a new lowered open plaza, retail area and learning spaces, and an infiltration tank.

The aim of the investigation was to assess the risk and nature of potential contamination at the site, comment on the suitability of the site for the proposed land use, and provide recommendations for further investigations (if necessary) and/ or remediation and management requirements.

The investigation included the drilling of 19 boreholes (Test Locations 6 - 15 and 17 - 23, Test Locations 1 to 5 and 16 were undertaken for Project 86360.01 and Test Location 11 was cancelled due to buried services) and laboratory testing of selected soil samples. The details of the current field work are presented in this report, together with comments and recommendations on the issues listed above.

The investigation was undertaken concurrently with a geotechnical investigation (DP Report 86361.00).

1.2 SEPP 55

This investigation has been undertaken to address:

- *State Environmental Planning Policy No. 55 - Remediation of Land* (1998) (SEPP55); and
- Department of Urban Affairs and Planning / Environment Protection Authority *Managing Land Contamination Planning Guidelines SEPP 55 - Remediation of Land* (1998) (DUAP, 1998).

SEPP 55 and DUAP (1998) outline a staged approach to assessing and managing contamination issues during development. Documents to be prepared and submitted by the proponent to allow the planning authority to consider the suitability of the land for the proposed development are recommended to comprise:

- Stage 1 – Preliminary Investigation;

- Stage 2 – Detailed Investigation;
- Stage 3 – Site Remedial Action Plan; and
- Stage 4 – Validation and Monitoring.

This report covers Stage 1 and 2 above, namely:

- Stage 1: A preliminary investigation of the potential for contamination at the site, including a site history review, preparation of a conceptual site model; and
- Stage 2: A detailed investigation, including intrusive investigation and sampling, analysis of samples to determine actual contaminant concentrations at the site and assessment of the risk the recorded concentration pose to site users under the proposed development.

Stage 3 and Stage 4 works under DUAP (1998) have been recommended for the project in Section 14 of this report.

2. Scope of Works

The scope of this contamination investigation comprised:

- Review of previous investigation report(s) undertaken on the site and made available to DP by the client;
- Review historical aerial photographs, public databases and published mapping via a LotSearch Report;
- Review historical titles;
- A site walk over was conducted to identify current site features and visually apparent areas of environmental concern. The walkover was conducted prior to drilling to identify areas of environmental concern (AECs) to be targeted during sampling;
- Collection of soil samples from the geotechnical test bores for environmental testing;
- All soil samples were screened by an environmental scientist for volatile organic compounds (VOC) using a photo-ionisation detection (PID) instrument;
- Dispatch of selected soil samples (plus 10% QA / QC samples) for analysis by a NATA accredited laboratory for a range of common contaminants and parameters as listed below:
    - Heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn) (HM);
    - Total recoverable hydrocarbons (TRH) a screening test for total petroleum hydrocarbons);
    - BTEX (benzene, toluene, ethyl benzene, xylenes);
    - Polycyclic aromatic hydrocarbons (PAH);
    - Organochlorine pesticides (OCP);
    - Organophosphate pesticides (OPP);
    - Polychlorinated biphenyls (PCB);
    - Volatile organic compounds (VOC);

- Cation exchange capacity (CEC);
- TCLP (for waste classification purposes);
- pH;
- Asbestos ID in 40 g samples;
- Asbestos in Soil 500 ml samples; and
- QA / QC analysis including replicate samples, trip spikes and trip blanks.

- Provision of a contamination assessment report describing the methodology and results of the assessment.

3. Site Identification

The proposed development site is located within the UNSW campus near Gate 9 off High Street, and is currently occupied by road pavements, landscaped gardens, grass-covered areas (i.e., Michael Birt Lawn), paved footpaths, the Sir John Clancy Auditorium, The Pavilions (i.e., food court) and Matthews Building. The approximate site area of Project Area 1 is 16,200 m^2 (refer to Drawing 1, Appendix B).

The ground surface levels generally dip down towards south and south-east from about RL 58 m near High Street / Gate 9 to RL 55.5 m near Oval Lane. The existing lower level of the Pavilions and Matthews building are about 2.5 – 3 m below the paths to the north and east.

The site is bordered by multi-storey buildings to the north-east, east and west, with High Street and Oval Lane to the north and south, respectively.

4. Proposed Development

It is understood that the proposed development includes upgrades to Gate 9 and the surrounding entry area, with landscaped and pavement areas, together with covered areas around the Sir John Clancy (SJC) Auditorium. It is understood that the demolition of the existing retail food court and learning spaces at Level 1 of the Mathews Building to create a new lowered open plaza, retail area and learning spaces no longer forms part of the current scope of development

5. Geology, Topography and Hydrogeology

Reference to the Sydney 1:100 000 Series Geological Sheet indicates that the site is underlain by Quaternary aged sediments comprising medium to fine grained Aeolian sand (deposited by transgressive dunes) overlying Hawkesbury Sandstone which typically comprises medium to coarse grained quartz sandstone with some shale bands or lenses.

Reference to "Engineering Geology of the Sydney Basin" (1985) P.J. Pells indicates that an igneous dyke was previously encountered near the north-western corner of the Chancellery Building (near High

Street) and that the weathered dyke (essentially clay) was mined. The dyke was registered as having a strike of 120° (i.e. trending towards the subject site), however the width is unknown.

The geological mapping and published information was generally confirmed by fieldwork in 2007 and 2008 for DP project series 44291 (in the footprint of the Lowy Cancer Research Centre which shares the northern and eastern boundary of Project Area 1) which identified deep filling overlying extremely weathered igneous rock and/or sandstone. Whilst the igneous rock encountered at the Chancellery Building was previously referred to as a dyke, it is now considered that the igneous rock is more likely to be associated with a diatreme. Diatremes may be defined as "pipe-like volcanic conduits filled with pyroclastic debris and blocks of wall-rock" (Lorenz 1973). Diatremes in the Sydney Basin typically range from 50 m to 500 m in diameter and are generally composed of basalt and volcanic breccia. Diatremes exposed in Hawkesbury Sandstone are commonly deeply eroded and surrounded by steep sandstone walls.

Available information and the current borehole data indicates that the weathered igneous rock within the footprint of the Lowy Centre was mined to depths of approximately 4.5 m to 9.0 m and then backfilled with predominantly sandy filling. The depth of the quarry excavation appears to reduce significantly towards the east (as evidenced from rock exposed in the drainage channel below the western side of the Wallace Wurth Building) and to the south (as evidenced from rock encountered at a depth of 3 m). Similar types of filling are expected beyond the footprint of the Lowy Centre where the former quarry extended.

Based on local topography it is anticipated that the general regional direction of groundwater flow would be the east, south east and north east. The nearest sensitive water receiving bodies are in Centennial Park and the East Lakes system. However, it is not considered likely that groundwater from the site would have an impact on these water bodies, given the distance (at least 1.5 km to Centennial Park) from the subject site and the receiving bodies

Groundwater encountered within the site is largely perched in the filling and clay above the sandstone and it is likely that the groundwater is most likely "trapped" water within the previous quarry excavation but may connect into the general groundwater table within the Quaternary sands. The quarry excavation, however, would effectively act as a sump for subsurface water flows within soil and rock from the surrounding areas, hence ongoing seepage into the site would be expected. It is noted, however, that local sandstone is fractured as a result of the intrusion and as such there is likely to be some connectivity between the groundwater perched in the filling and that within fractures in the sandstone. Based on the presence of the former quarry it is expected that local groundwater gradient would be inwards towards the former quarry.

6. Site History

6.1 Previous Reports

DP has undertaken a number of previous investigations in the upper campus of UNSW. The most relevant project series to the current investigation includes:

- Project Series 44291;
- Project Series 73492; and

- Project series 71543.

The location of these projects in relation to the current investigation area is presented in Figure 1.

Discussion of these reports is presented in Section 6.2.

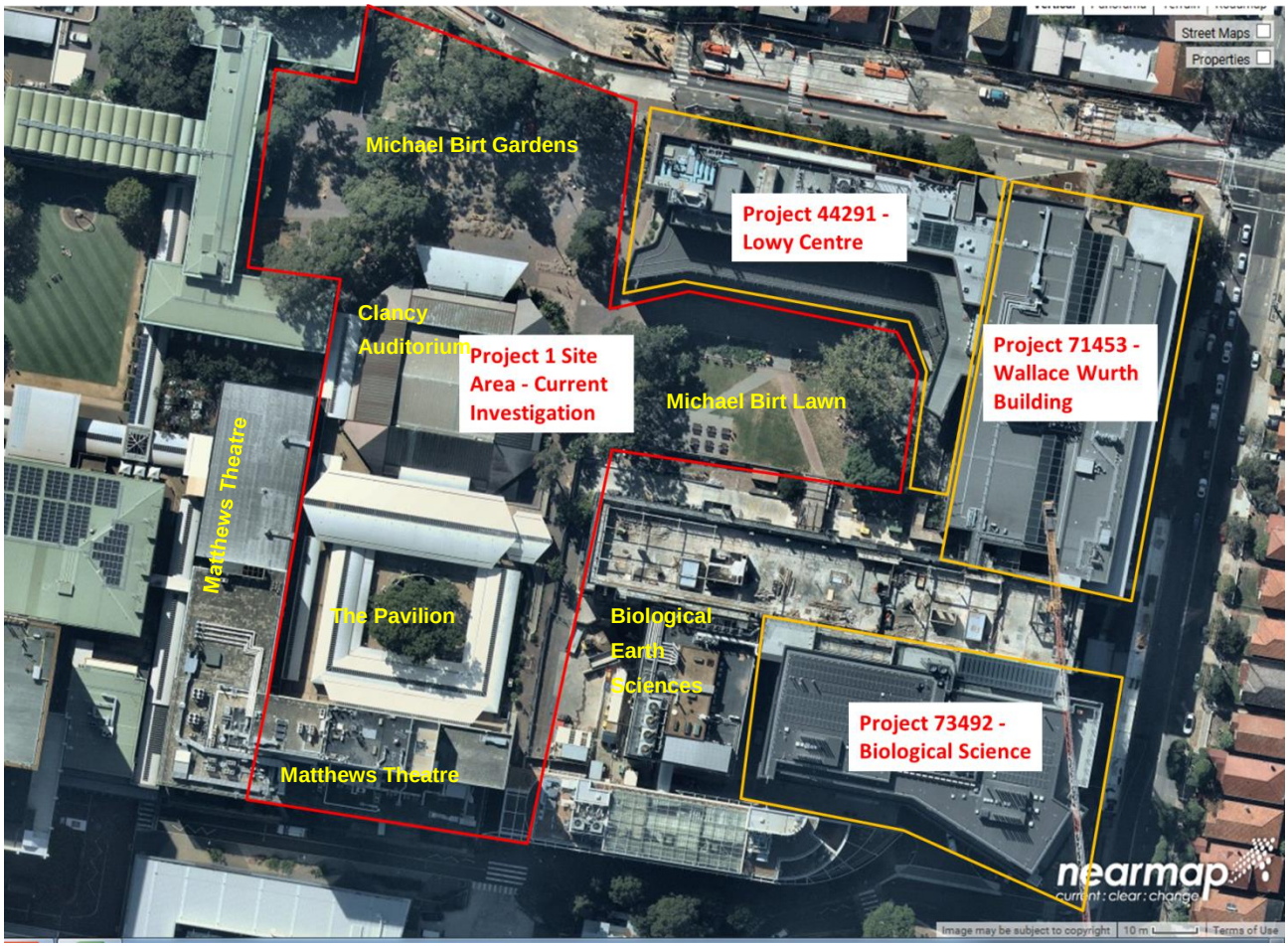


Figure 1 - Project Area and Previous Investigations

6.1.1 Project Series 44291

Project series 44291 (2009) was undertaken for the Lowy Cancer Research Centre, which adjoins the northern and eastern boundaries of Project Area 1. The investigation included a geotechnical investigation, a preliminary contamination assessment, a detailed soil and groundwater investigation, a remediation action plan, remediation works and a validation report. The key findings of these investigations are as follows:

Soil Investigation

During the successive stages of investigation highly variable subsurface conditions were encountered generally comprising deep sandy filling to approximate depths of 4.5 m to 9.0 m overlying clay and / or

igneous rock and / or sandstone. The thickness of filling generally increased toward the west and comprised predominantly sand with inclusions such as organic and clayey layers, peat, gravel, glass, ceramics, terracotta, brick, charcoal, metal, rubber, plastic, slag, timber and shell. Hydrocarbon odours were noted in a number of locations within the fill materials.

The concentrations of the contaminants of concern were generally within the adopted commercial land use criteria. The primary contaminants of concerned identified in the Lowy Centre were PAH (maximum total PAH 1132.4 mg / kg and benzo(a) pyrene 140 mg / kg), lead (maximum concentration of 1900 mg / kg) and TRH C10 - C36 (maximum concentration of 5700 mg / kg). The high PAHs were generally associated with ashy fill.

It is noted that the site assessment guidelines (as adopted in this investigation for Project Area 1) were revised (in 2013) by the appropriate authorities and therefore the guidelines quoted above are no longer current.

The fill material was generally classified as solid waste (largely equivalent to the current classification of general solid waste), however, pockets of hazardous waste were identified due to elevated concentrations of PAH and/or lead.

Acid Sulfate Soils

Potential acid sulfate soils were identified in the dark grey silty sand filling with organic materials and organic odours in the south western corner of the Lowy Centre. It was noted that due to the uncontrolled nature of the filling, ASS may be present in other parts of the site. In this respect it was noted that care should be taken during excavation to segregate any filling bearing signs of potential presence of ASS including:

- All dark grey silty sand filling; and
- All materials with sulphur and / or organic odours.

Remediation Works

The remediation works undertaken included the bulk excavation and disposal of all the fill material within the footprint of the Lowy Centre (basement excavation). The remedial excavations did not extend beyond the building footprints and as such the former quarry that had been backfilled extended to the west and south of the Lowy Centre (into Project Area 1).

Groundwater

A round of groundwater sampling was undertaken prior to the remediation works and following the completion of remediation works at the Lowy Centre from groundwater wells within the site footprint around the perimeter of the building. Groundwater samples were analysed for a combination of heavy metals, PAH, TPH, BTEX, OCPs, PCBs, phenols, plus a range of general water quality parameters.

The results of were generally within the adopted GIL with the exception of the some lead, zinc, PAH, and copper.

An environmental management plan was prepared for the capping and management of the fill soils retained on site outside of the footprint of the Lowy Centre.

6.1.2 71543 Project Series

Project series 71453 (2010): included a geotechnical and contamination investigation at the Wallace Wurth Building. The boreholes generally encountered sandy filling to depths of 0.7 m to 3.3 m, overlying natural sand then sandstone bedrock at depths of 3.1 to 5.3 m (RL 50.6 to 53.3 m), with sandstone also encountered at a depth of 0.4 m (RL 52.9 m) within the loading dock. Igneous rock of highly variable strength was also intersected in two boreholes, indicating a dyke possibly striking east / south-east from the diatreme encountered below the LCRC.

In 2010, groundwater was measured at levels of between RL 50.4 and RL 51.7 m.

The results of the soil analysis indicated that the organic and inorganic contaminant concentrations in all sampled soils were within the site assessment criteria (SAC) for commercial or residential land use. All soil results were within the General Solid Waste (non-putrescible) criteria.

The results of the groundwater analysis indicated that the majority of heavy metals were below the PQL and/or less than the adopted GIL with the exception of copper and zinc. The concentrations of TPH, PAH (including benzo(a)pyrene), BTEX, PAH, PCB, OCP and phenols were below the laboratory practical quantitation limits.

No asbestos containing materials were identified at the site, however based on the nature of the filling and the presence of building rubble, it was considered that there was a probability of asbestos being present in the filling.

In conclusion, based on the investigation findings, it was considered that the site was suitable for the proposed redevelopment and continued commercial land use.

6.1.3 73492 Project Series

Project series 73492 (2016) included geotechnical and contamination investigations for the Biological Science Building. Medium and high strength sandstone was encountered below RL 52.5 m (as well as below the base of a pad footing), with a 0.5 m thick very low strength shale band intersected below RL 50 m.

At the time of investigation, the site was in the middle of enabling works in preparation of Stage 1 constructions. An underground petroleum storage tank (UPSS) was located to the north of the eastern portion of the site, an underground trade waste tank was located between the now demolished F26 building and Substation No. 6, and an additional waste tank or possible retention tank was observed in the mid-section of the site. On the 30 June 2015, DP was informed by BMC of the unexpected find of an in-situ tank.

The collection of supplementary soil samples was primarily based on areas that allowed for opportunistic sampling i.e. trenches for the installation of new services and excavation faces at or within the vicinity of areas of concern.

The sampling locations and density for the UPSS validation were based on the minimum recommended protocols for soil sampling in the NSW EPA, *Technical Note: Investigation of Service Station Sites*, April 2014. The removed tank was observed to have an approximate capacity of 46,000 litres and had no signs of damage, penetrations or corrosion. Overall, validation results indicated that there was no

significant residual contamination in the tank pit and, therefore, further remediation (excavation) of the pit was not required.

Based on the analytical results no significant soil contamination was found to be present at the site at the sampling locations with all analytical results being below the health investigation and screening levels adopted from NEPC (2013). The groundwater results from in project series 73942) indicated that all organic contaminant concentrations were below the laboratory practical quantitation levels, and that metals were either below the groundwater investigation levels or within expected background concentrations.

All total concentrations of contaminants detected in the filling samples across the investigation areas were within the General Solid Waste (non-putrescible) criteria.

Based on the site observations and analytical results the natural material underlying the fill at the site, comprise light brown fine to medium grained sand and grey, brown and orange fine to medium grained natural sandstone which exhibits no signs of contamination and was classified as Virgin Excavated Natural Material (VENM).

6.2 Title Deeds

A historical title deeds search was used to obtain ownership and occupancy information including company names and the occupations of individuals. The title information can assist in the identification of previous land uses by the company names or the site owners and can, therefore, assist in establishing whether there were potentially contaminating activities occurring at the site. A summary of the title deeds and possible land uses (with reference to the aerial photographs and the Historical Business Directory) is presented in Table 1. A copy of the search is attached.

Table 1: Historical Title Deeds

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Possible Landuse
The early title to this land is Crown Title		From previous investigation it is known that quarrying (of the dyke) was undertaken (to a depth of up to 9 m bgl) within the site. It is possible that these activities were undertaken during this period or the subsequent period prior to 1943.
02.09.1903	Randwick Park dedicated for Public Recreation	Public park.
13.11.1959	Appropriated for the purposes of the University of New South Wales	University
20.11.1959	Vested in the University of New South Wales	
26.08.1964	Minister for Education	
26.08.1964 (1964 to date)	# The University of New South Wales (Formerly The NSW University of Technology)	

# Denotes Current Registered Proprietor

Leases: -

- Numerous leases were found from 04.08.1992 onwards that have since expired due to effluxion of time or have been surrendered - These have not been investigated.

  Please refer to the current title 1/510271 for current leases.

Easements: -

- 31.03.1970 (D.P. 217735 & L 852165) Easement for Drainage.

6.3 Aerial Photographs

Historical aerial photographs were obtained by LotSearch from databases held by the NSW Land & Property Information Division for the years, 1943, 1955, 1961, 1965, 1975, 1982, 1991, 2000, 2009 and 2016. DP obtained one additional aerial photograph for 1930 from NSW Land & Property Information Division which is presented in Figure 2 below. Extracts of the remaining aerial photographs are provided in the LotSearch Report, and a summary of features observed for the site and surrounding properties is presented in Table 2.

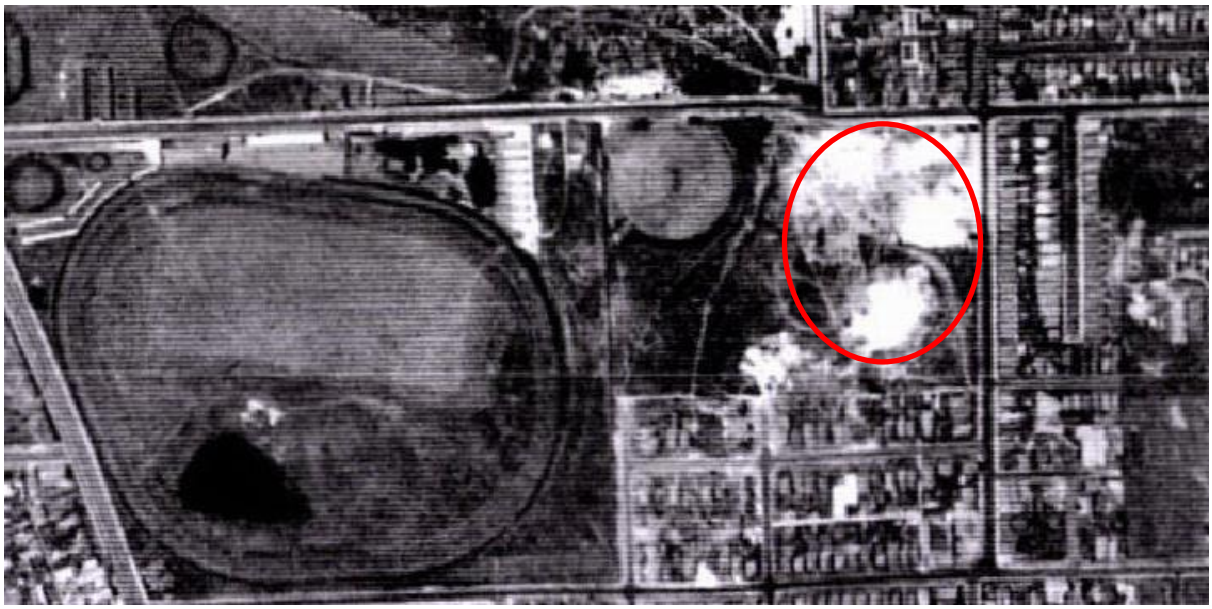


Figure 2 – 1930 Aerial Photograph

Table 2: Aerial Photograph Review

Year	Site Features	Surrounding Features
1930	The site appears to be vacant. The ground surface appears to be bare ground (no vegetation). It is possible that activities related to the quarry	The Kensington Race course is present in what is now lower campus and Randwick Racecourse is present to the north. The south and east of the site is residential.
1943	The site appears to a public park / open space.	The surrounding area does not appear to have changed significantly.
1955	There does not appear to be any significant changes within the site.	The surrounding area does not appear to have changed significantly.
1961	Within the site there appears to be a number of sheds (within the Michael Birt Lawn). The remainder of Project Area 1 generally appears to be vacant.	The first university buildings appear to have commenced construction (the Wallace Wurth Building and northern section of the BEEs building
1965	The Michael Birt Lawn area appears to be a landscaped driveway to the Wallace Wurth Building.	Several new university buildings appear to have been constructed to the west.
1970	The northern part of the site (The Matthews Garden and Lawn) appears to have been developed as a on grade carpark. The Clancy Auditorium appears to have been constructed.	Several new university buildings appear to have been constructed to the west.
1982	The Matthews Theatre and Building appears to have been constructed. The Pavilion appears to have been developed as a courtyard.	The BEEs building appears to have been extended and a number of new university buildings appear to have been constructed to the west.
1991	There does not appear to be any significant changes within the site.	The surrounding area does not appear to have changed significantly.
2000	The Pavilion appears to have been constructed.	The surrounding area does not appear to have changed significantly.
2009	The construction sheds for the Lowy Centre appear to be present on the Michael Birt Lawn.	The Lowy Cancer Research Centre appears to be under construction.
2016	The Michael Birt garden appears to have been landscaped following the completion of the Lowy Centre and removal of the construction sheds.	The BEES building, and Biological Sciences appears to be undergoing renovations.

6.4 EPA Records

The EPA publishes records of contaminated sites under Section 58 of the *Contaminated Land Management Act* 1997 (CLM Act) on a public database accessed via the internet. The notices relate to investigation and/or remediation of sites considered to be significantly contaminated under the definition in the CLM Act. More specifically the notices cover the following:

- Actions taken by the EPA under Sections 15, 17, 19, 21, 23, 26 or 28 of the CLM Act;
- Actions taken by the EPA under Sections 35 or 36 of the Environmentally Hazardous Chemicals Act 1985; and
- Site audit statements provided to the EPA under Section 52 of the CLM Act on sites subject to an in-force remediation order.

A search of the public database undertaken in the LotSearch report indicated that the site was not listed.

It should be noted that the EPA record of Notices for contaminated land does not provide a record of all contaminated land in NSW.

The NSW EPA also issues environmental protection licenses under Section 308 of the *Protection of the Environment Operations Act* 1997 (POEO Act). The register contains:

- Environmental protection licenses;
- Applications for new licenses and to transfer or vary existing licenses;
- Environment protection and noise control licenses;
- Convictions in prosecutions under the POEO Act;
- The result of civil proceedings;
- License review information;
- Exemptions from provisions of the POEO Act or Regulations;
- Approvals granted under Clause 9 of the POEO (Control of Burning) Regulation; and
- Approvals granted under Clause 7a of the POEO (Clean Air) Regulation.

A search of the public register undertaken in the Lotsearch report indicated that there are no current Environment Protection Licences issued to the site. Other EPA activities include the PFAS investigation programme. There were no sites within 1000 m of the site where the EPA has commenced a PFAS investigation.

6.5 Historic Business Directory

A record of the historic businesses from 1986, 1982, 1978, 1975, 1970, 1965, 1961 and 1950 was included in the Lotsearch Report. No businesses, other than those related to the university were identified within the site in the records. No motor garages of dry cleaners were identified at the site

6.6 Ecological Constraints

No items of significant ecological value were identified within the site or immediately adjacent to it such as high value native vegetation, groundwater dependant ecosystems or RAMSAR wetlands.

7. Site Walkover

DP undertook a site walkover on 18 April 2018. Site photographs referred to herein are provided in Appendix D.

The following features were noted during the site walkover:

- The north western portion of the site is occupied by an open space (Photograph 1) which included significant areas of brick paving, landscape features (mature trees and shrubs) and a small car park (Photograph 2);
- The southern and western portion of the site was occupied by the Clancy Auditorium (Photograph 3) and the university mall (Photograph 4) which includes a food outlet and outdoor eating spaces. While not observed during fieldwork, grease traps are often associated with food outlets. A pedestrian access path traversed the southern part of the site between the university mall and the BEES building; and
- The eastern portion of the site was occupied by the Biomedical Lawn which included grassed areas, mature trees and shrubs and outdoor benches and tables (Photograph 5).

A grease trap was noted on the southern side of the Matthews Building and another appeared to be present in the Pavilion.

The buildings surround the site included the BEES building to the south of the Biomedical Lawn (which was undergoing renovations, Photograph 6), the Wallace Wurth Building to the east of the Biomedical Lawn, the Lowy Cancer Research Centre (Photograph 7) is to the north of the Biomedical Lawn and the Matthews Lecture Theatre and University Library to the west. To the north of the site was High Street and then Randwick Racecourse and to the south of the site is a multistorey carpark.

There were no obvious indicators of potential contamination identified during the site walkover. It is noted, however, that the Wallace Wurth Building and BEES building contain laboratories. Minor chemical stores are present throughout the building and underground storage tanks have previously been discovered (and removed) on the eastern side of the Biological Science building.

8. 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 the future i.e. it enables an assessment of the potential source – pathway – receptor linkages (complete pathways).

8.1 Potential Sources

Based on the current investigation, the following potential sources of contamination and associated contaminants of potential concern (COPC) have been identified.

S1 – Filling and demolition rubble: Significant fill (up to 9 m) was identified in the backfilled former quarry within and around the footprint of the Lowy Cancer Research Centre.

COPC include metals, total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, xylene (BTEX), polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), organochlorine pesticides (OCP), organophosphate pesticides (OPP), volatile organic compounds (VOC), phenols, and asbestos.

S2 – University laboratories: Adjacent buildings include laboratories that may have chemical stores including both above ground stores and below ground tanks.

COPC include metals, TPH, BTEX, PAH and phenols.

S3 – Food Outlets – possible grease traps.

COPC include metals and TPH.

8.2 Potential Receptors

It is understood that the proposed development for university related activities and therefore this has been taken into account in preparing the CSM.

Human Health Receptors:

R1 – Maintenance and construction workers;
R2 – Current and future users (University staff and students); and
R3 – Adjacent users (Randwick Race Course, residential and commercial).

Environmental Receptors

R4 – Groundwater.

As the nearest sensitive water receiving bodies are in Centennial Park and the East Lakes system (> 1.5 km from the site), surface water bodies were not considered to be a potential receptor.

8.3 Potential Pathways

The potential pathways for the identified receptors are as follows:

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

P3 – Leaching of contaminants and vertical mitigation into groundwater;
P4 – Surface water run-off; and
P5 – Lateral migration of groundwater.

8.4 Summary of Potential Complete Pathways

A 'source–pathway–receptor' approach has been used to assess the potential risks of harm being caused to human, water or environmental 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 to S3) and receptors (R1 to R4) are provided in Table 3 below.

Table 3: Summary of Potential Complete Pathways

Source	Transport Pathway	Receptor	Risk Management Action Recommended
S1 – Filling and demolition rubble: Significant fill (up to 9 m) was identified in the backfilled former quarry within and around the footprint of the Lowy Cancer Research Centre. COPC, TPH, BTEX, PAH, PCB, OCP, OPP, VOC, phenols, and asbestos. S2 – University laboratories and chemical stores adjacent COPC include metals, TPH, BTEX, PAH and phenols. S3 – Food Outlets – possible grease traps COPC include metals and TPH.	P1 – Ingestion and dermal contact. P2 – Inhalation of dust and/or vapours.	R1: Maintenance and construction workers. R2: Current and future users.	The potential for contamination from the identified sources is moderate to high in areas within or adjacent to the former quarry. Outside of the former quarry the risk would be low to moderate. Undertake a contamination assessment of the identified contaminants of concern (this report). Further recommendations as provided in Section 14.
	P2 – Inhalation of dust and/or vapours.	R3 – Adjacent users (residential and commercial).	
	P3 – Leaching of contaminants and vertical mitigation into groundwater.	R4 – Groundwater.	
	P4 – Surface water run-off. P5 – Lateral migration of groundwater.		

9. Fieldwork

The minimum number of sampling points for a site of this size (16,200 m^2) in accordance with the NSW EPA *Sampling Design Guidelines* (1995) for contaminated site investigations would be 26 sampling points. NEPC (2013) recommends the use of professional judgement in determining appropriate sample

numbers. However, site access constraints prevented a grid based approached and limited the number of available sampling locations to 20 which is considered appropriate for a preliminary investigation.

The investigation was devised broadly in accordance with the seven step Data Quality Objective (DQO) process as specified in Schedule B2 of the *National Environment Protection (Assessment of Site Contamination)* Measure 1999 as amended 2013 (NEPC 2013). The DQO process is included in Appendix G. Field and laboratory procedures were assessed against data quality indicators (DQIs) which are also included in Appendix G.

9.1 Test Locations and Rationale

The boreholes were located accessible areas outside of the buildings following service location undertaken. The locations were chosen to gain coverage of the accessible parts of the site. Environmental fieldwork, including drilling, and soil sampling was conducted in May 2018.

Soil samples were collected from nineteen test bores (Test Locations 6-10, 12-15 and 17-23) at regular depth intervals and / or at signs of contamination. Borehole 11 was cancelled due to the presence of numerous buried services. It is noted that Test Locations 1-5 and 16 were drilled for Project 86360.00 / 86360.01 (the adjacent site investigation), reported elsewhere.

Selected soil samples were analysed for a range of COPCs, as identified in the CSM provided in Section 8. These samples were selected based on site observations (odour, staining etc.) and their location within the subsoil strata (*i.e.,* fill or natural). Borehole test locations are shown on Drawing 1, Appendix B.

9.2 Drilling Methods

The field work for the included the Twenty (20) locations (Test Locations 6-15 & 17-23). Test locations 1 to 5 and 16 were undertaken for Project 86360.01 (the SAAB project) and are reported elsewhere.

Test bores 6, 7, 8, 9, 19, 20 and 21 were drilled using a solid flight auger mounted to a 3.5 tonne excavator and were drilled to a maximum depth of 3.0 m bgl. Test bores 10, 12, 14, 15, 17 and 22-26 were drilled using hand tools due to the limited access. Hand auger bores were drilled to a maximum depth of 1.5 m or prior refusal.

Bores 13 and 18 were drilled using a Bobcat mounted drilling rig and then extended into bedrock using nlmc coring techniques for geotechnical investigation purposes.

The ground surface levels at the borehole locations were determined by GPS methods.

Groundwater monitoring wells were installed in Bores 13 and 18 (for geotechnical purposes). The reported water levels are provided in Section 11.

9.3 Soil Sampling Procedures

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

- Use of disposable sampling equipment including disposal nitrile gloves;
- Transfer of samples into laboratory-prepared glass jars and capping immediately with Teflon lined lids;
- All re-used equipment where applicable was decontaminated between samples using a 3% solution of Decon 90 and rinsing with deionised water;
- Labelling of sampling containers with individual and unique identification, including project number sample location and sample depth; and
- Placement of sample containers and bags into a cooled, insulated and sealed container for transport to the laboratory.

Envirolab Services Pty Ltd (Envirolab), accredited by NATA, was employed to conduct the primary sample analysis and ALS Environmental, accredited by NATA, was employed to conduct analysis of the inter-laboratory duplicate. The laboratories are required to carry out in-house QC procedures.

9.4 Analytical Rationale

The analytical scheme was designed to obtain an indication of the potential presence and possible distribution of identified contaminants of concern based on information obtained for past and present activities and features within the site. The primary contaminants of concern as identified in Section 8 were metals, TPH, BTEX, PAH, OCP, OPP, PCB, VOC, phenols and asbestos.

10. Site Assessment Criteria

Analytical results from laboratory testing of soils are assessed against Site Assessment Criteria (SAC) primarily comprising (Tier 1) investigation levels, screening levels and management limits sourced from Schedule B1 of NEPC, 2013. This guideline has been endorsed by the NSW EPA under the Contaminated Land Management (CLM) Act 1997. Schedule B of NEPC (2013) provides investigation and screening levels for commonly encountered contaminants which are applicable to generic land uses and include consideration of, where relevant, the soil type and the depth of contamination. The investigation and screening levels are not intended to be used as clean up levels. They establish concentrations above which further appropriate investigation (e.g. Tier 2 or Tier 3) should be undertaken.

In addition to SAC sourced from NEPC (2013), screening levels (for direct contact) have been adopted from the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) *Technical Report no. 10 Health screening levels for petroleum hydrocarbons*

in soil and groundwater (2011). The following sub-sections outline the adopted SAC for soil as documented in NEPC (2013) and CRC CARE, 2011.

10.1 Health Investigation Levels

Table 4 shows the health investigation levels (HIL) that have been adopted as SAC for assessing the human health risk from a contaminant via all relevant pathways of exposure. As the site is proposed to be developed for various functions within the university, HIL have been adopted from Column D (for commercial/industrial sites). The table does not contain the complete list of HIL provided in NEPC (2013).

Table 4: Health Investigation Levels

Contaminant	HIL – D (mg / kg)
Metals	
Arsenic	3000
Cadmium	900
Chromium (VI)	3600
Copper	240 000
Lead	1500
Mercury (inorganic)	730
Nickel	6000
Zinc	400 000
PAH	
Carcinogenic PAH (as Benzo(a)pyrene TEQ)	40
Total PAH	4000
OCP	
DDT+DDE+DDD	3600
Aldrin + Dieldrin	45
Chlordane	530
Endosulfan	2000
Endrin	100
Heptachlor	50
HCB	80
Methoxychlor	2500
OPP	
Chlorpyrifos	2000
PCB	7
Phenols	
Phenol	240 000
Pentachlorophenol	660
Cresols	25 000

10.2 Health Screening Levels for Vapour Intrusion

Table 5 shows the Health Screening Levels (HSL) for petroleum hydrocarbon compounds adopted for the assessment and are based on the exposure to petroleum hydrocarbons through the dominant vapour inhalation exposure pathway only (i.e., not direct contact to soils). The HSL have been adopted from Column HSL D (for commercial / industrial sites). The HSL derivation has assumed a slab-on-ground construction for building structures, and, therefore is only considered relevant to parts of the site with building structures (yet to be constructed). As fill soils have been encountered through the site, the most conservative HSL (for sand) has been adopted.

Table 5: Soil Health Screening Levels for Vapour Intrusion

Contaminant	HSL – D (mg / kg)
	Depth 0 m to <1 m
Naphthalene	NL
TPH C_6-C_{10} less BTEX	250
TPH >C_{10}-C_{16} less Naphthalene	NL
Benzene	3
Toluene	NL
Ethylbenzene	NL
Xylenes	230

Note: NL is 'not limiting' (where the derived soil HSL exceeds the soil saturation concentration)

10.3 Health Screening Level for Direct Contact

Table 6 shows the HSL for direct contact for commercial and industrial sites, sourced from CRC CARE (2011), which are mentioned but not presented in NEPC (2013).

Table 6: Soil Health Screening Levels for Direct Contact

Contaminant	HSL – D (mg / kg)
Naphthalene	11 000
TPH C_6-C_{10}	26 000
TPH >C_{10}-C_{16}	20 000
TPH >C_{16}-C_{34}	27 000
TPH >C_{34}-C_{40}	38 000
Benzene	430
Toluene	99 000
Ethylbenzene	27 000
Xylenes	81 000

10.4 Ecological Investigation Levels and Ecological Screening Levels

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

The EIL is calculated using the following formula:

EIL = ABC + ACL

The ABC is determined through direct measurement at an appropriate reference site (preferred) or through the use of methods defined by Olszowy et al *Trace element concentrations in soils from rural and urban areas of Australia*, Contaminated Sites monograph no. 4, South Australian Health Commission, Adelaide, Australia 1995 (Olszowy, 1995) or Hamon et al, *Geochemical indices allow estimation of heavy metal background concentrations in soils*, Global Biogeochemical Cycles, vol. 18, GB1014, (Hamon, 2004). ACL is based on the soil characteristics of pH, CEC and clay content.

EIL (and ACLs where appropriate) have been derived in NEPC (2013) for only a short list of contaminants comprising arsenic, copper, chromium (III), DDT, naphthalene, nickel, lead and zinc. An *Interactive (Excel) Calculation Spreadsheet* may be used for calculating site-specific EIL for these contaminants, and has been provided in the ASC NEPM Toolbox available on the SCEW (Standing Council on Environment and Water) website (http://www.scew.gov.au/node/941).

The adopted EIL, derived from Tables 1B (1) to 1B (5), Schedule B1 of NEPC (2013) the *Interactive (Excel) Calculation Spreadsheet* are shown in Table 7. The following site specific data and assumptions have been used to determine the EILs:

- A protection level of 80% (typical for a commercial landuse) has been adopted;
- The EILs apply to the top 2 m of the soil profile;
- Given the likely source of soil contaminants (i.e., historical site use / fill) the contamination is considered as “aged” (>2 years);
- ABCs have been derived using the *Interactive (Excel) Calculation Spreadsheet* using input parameters of NSW for the State in which the site is located, and high for traffic volumes.
- A pH of 6.6 has been used as an input value based on site specific data. This input value is the (rounded) average of the three sample results from the site (see laboratory certificate, Appendix F);
- A CEC of 4.6 cmol / kg has been used as an input value based on site specific data. This input value is the (rounded) average of the results (see laboratory certificate, Appendix F; and
- In the absence of site specific data, a conservative clay content value of 10% and a conservative organic carbon content value of 1% have been used.

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

Analyte		EIL
Metals	Arsenic	160
	Copper	150
	Nickel	50
	Chromium III	680
	Lead	1800
	Zinc	460
PAH	Naphthalene	370
OCP	DDT	640

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

ESL have been derived in NEPC (2013) for petroleum fractions F1 to F4 as well as BTEX and benzo (a) pyrene. The adopted ESL, from Table 1B (6), Schedule B1 of NEPC (2013) are shown in Table 8. ESLs are for commercial / industrial land use with coarse grained soils have been adopted.

Table 8: Ecological Screening Levels (ESL) in mg / kg

Analyte		ESL	Comments
TRH	C6 – C10 (less BTEX) [F1]	*215	All ESLs are low reliability apart from those marked with * which are moderate reliability.
	>C10-C16 [F2]	*170	
	>C16-C34 [F3]	1700	
	>C34-C40 [F4]	3300	
BTEX	Benzene	75	
	Toluene	135	
	Ethylbenzene	165	
	Xylenes	180	
PAH	Benzo(a)pyrene	1.4	

10.5 Management Limits

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

- Formation of observable light non-aqueous phase liquids (LNAPL);
- Fire and explosion hazards;

- Effects on buried infrastructure e.g., penetration of, or damage to, in-ground services.

Management limits to avoid or minimise these potential effects have been adopted in NEPC (2013) as interim Tier 1 guidance. The adopted management limits, from Table 1B(7), Schedule B1 of NEPC (2013) are shown in Table 9. The management limits are shown for 'coarse' soil textures has been adopted.

Table 9: Management Limits

Contaminant	Management Limit – Commercial and industrial (mg / kg)
TPH C_6 – C_{10}	700
TPH >C_{10}-C_{16}	1000
TPH >C_{16}-C_{34}	3500
TPH >C_{34}-C_{40}	10 000

10.6 Asbestos is Soil

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

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

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

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

For 40 gram asbestos samples the presence or absence of asbestos at a limit of reporting of 0.1 g / kg as well as a visual assessment for the presence or absence of ACM has been adopted as the SAC.

NEPC (2013) defines the various asbestos types referred to above as follows:

Bonded ACM: Asbestos containing material which is in sound condition, bound in a matrix of cement or resin, and cannot pass a 7 mm x 7 mm sieve.

FA: Fibrous asbestos material including severely weathered cement sheet, insulation products and woven asbestos material. This material is typically unbonded or was previously bonded and is now significantly degraded and crumbling.

AF: Asbestos fines including free fibres, small fibre bundles and also small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve.

For 500 gram bag samples the adopted SAC for AF / FA was 0.001% w / w and for ACM was 0.05% w / w.

10.7 Waste Classification

The preliminary waste classification was undertaken in accordance the NSW EPA Waste Classification Guidelines (2014).

11. Field Work Observations

Details of the subsurface conditions encountered in each borehole are provided in the detailed bore logs in Appendix E, together with notes defining classification methods and descriptive terms.

FILLING: Variably compacted, predominantly sand filling with inclusions of silt, sandstone gravel, glass, rubber, metal wire, tile, tree roots to depths of 6.7 m and 6.5 m in the deeper boreholes BH13 and BH18, respectively. The remainder of the boreholes were discontinued at depths of 1.5 m and 3 m, or prior refusal, in similar filling except for BH7, 8, 9, 14, 17, 21, 23, 25 and 26, which encountered natural sand and / or possible bedrock; overlying.

SAND: Medium dense and dense sand in BH7, 8, 9, 14, 17 below depths of 0.7 m to 2.6 m. The filling was directly over bedrock in BH13 and 18 (i.e., no natural sand profile).

BEDROCK: In BH13 and BH18 (at the SJC Auditorium), variably very low to medium strength sandstone below depths of 6.7 m (RL 51.1 m) and 6.5 m (RL 50.0 m), with zones of core loss possibly indicating extremely low and very low strength rock. More consistent medium and high strength sandstone was present below depths of 9.8 m (RL 48.0 m) and 8.4 m (RL 48.1 m).

Auger refusal in variable strength sandstone (possible filling) occurred at BH21, 23, 25 and 26. Whilst the refusal depths are consistent with previous investigation results for top of rock, auger refusal may have occurred on sandstone filling.

Groundwater was observed in boreholes BH13, 18, 21 and 23 during auger drilling at depths of 5.0 m (RL 52.8 m), 3.9 m (RL 52.6 m), 2.7 m (RL 53.7 m) and 0.3 m (RL 54.6 m), respectively.

12. Results Summary

The results of the laboratory analysis undertaken are presented in the following tables attached in Appendix F:

Table F1: Results Summary – Soil.

Table F2: Waste Classification Results.

The NATA laboratory certificates of analysis together with the chain of custody and sample receipt information are included in Appendix F.

13. Analysis and Discussion of Results

All results for soil samples analysed for BTEX, phenols, OPP and PCB below laboratory limits of reporting (Table F1) and therefore well within the adopted site assessment criteria (SAC) for human health and ecological risk.

A trace level of OCP (deildrin) was detected in sample 14 / 0.2 - 0.3, however, this result was within the adopted SAC. All other OCP results were below the laboratory detection limits. Low levels of TRH were detected in several samples, however, the concentrations were all within the adopted SAC.

The concentrations of heavy metals were within the adopted (human health based) commercial SAC in all samples with the exception of sample 9 / 0.9 - 1.0. The lead concentration in this sample was 1800 mg / kg which exceeded the commercial SAC. The 95% upper confidence limit for lead within the area of the former quarry (excluding bores 22 - 25) was calculated using ProUCL (Appendix F). The 95% UCL was 389.1 mg / kg. Therefore, the lead exceedance of the HIL is not considered to be significant.

A number of exceedances of the adopted ecological investigation levels for heavy metals and PAH were detected as follows:

- Copper (EIL 150 mg / kg) in samples 9 /0.9 - 1.0 (520 mg / kg), 13 /5.5 - 5.5 (160 mg / kg), 18 /2.0 - 2.5 (230 mg / kg) and 24 /0.4 - 0.5 (220 mg / kg). It is noted, however, that the EIL only applies to the top 2.0 m, therefore, those exceedances below 2 m are not considered to be significant;
- Zinc (EIL 460 mg / kg) in samples 13 /5.4 - 5.5 (560 mg / kg), 18 /4 - 4.5 (710 mg / kg) and 13 /2.4 - 2.5 (triplicate, 730 mg / kg). However, all these samples were from below 2 m bgl and therefore, are not significant;
- Benzo (a) pyrene (EIL 1.4 mg / kg) in samples 8 /0.9 - 1.0 (3 mg / kg), 9 /0.9 - 1.0 (2.6 mg / kg), 13 /5.4 - 5.5 (1.5 mg / kg), 18 /2.0 - 2.5 (1.7 mg / kg), 18 /4.0 - 4.5 (2.7 mg / kg) and 20 /0.9 - 1.0 (5.4 mg / kg). It is noted, however, that the EIL only applies to the top 2.0 m, therefore, exceedances below 2 m are not considered to be significant; and
- Asbestos was detected in two samples 13 /0.4 - 0.5 and 18 /4 - 4.45. Test bores 13 and 18 were located on the northern and eastern side of the Clancy Auditorium.

Schedule B5A of NEPC (2013) states that '…*the aim of the EILs is that varying levels of protection will be provided to the following ecological receptors at all sites:*

- *Biota supporting ecological processes, including microorganisms and soil invertebrates*
- *Native flora and fauna*
- *Introduced flora and fauna*
- *Transitory or permanent wildlife…'.*

Furthermore, Schedule B5A of NEPC (2013) states that, '*Commercial and industrial land, particularly in long-established industrial areas, is often heavily contaminated by past activities or fill materials used to level the area. In these cases, jurisdictions may determine that HILs are the most appropriate soil quality criteria and that EILs are not applicable. In many cases, the only generic ecological value for this land use will be 'transitory wildlife…'.*

It is noted that while Project Area 1 includes several landscaped areas including mature trees, the ecological value of the land is not high and the most threatened receptor would be transitory wildlife. However, as asbestos has been detected a capping layer is considered appropriate (refer to Section 14) in the landscaping areas (The Michael Birt Lawn and Gardens) to mitigate asbestos risk. The capping layer would also reduce the ecological risk and also lead impacted soils in test bore 9 that exceeded the HIL. Within building footprints or in paved areas the ecological value / risk would be considered to be low.

As noted above asbestos was detected in two locations i.e., Test Bores 13 and 18 located on the northern and eastern side of the Clancy Auditorium. It is considered likely that the Test Bores 13 and 18 were within the footprint of the former quarry that extends into the Michael Birt Lawn and Michael Birt Gardens (and formerly the Lowy Cancer Research Centre). Extensive and variable fill is present throughout this area and building rubble inclusions were noted in a number of the test locations in both the current and previous investigations. Therefore, it is considered likely that asbestos containing materials may be distributed randomly in the filling throughout this area of the site.

No asbestos was detected in the southern portion of the site (the Pavilion and Matthews Theatre). Furthermore, no building rubble was noted in these test bores. In addition, this portion of the site does not appear to be within the footprint of the former quarry. Therefore, the risk of asbestos being present in this area of the site is considerably lower.

13.1 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 CT values relevant to this waste classification are shown in the attached Table F2.

Table 10: Six Step Classification Procedure

Step	Comments	Rationale
1. Is the waste special waste?	Yes	Asbestos was detected in samples in Test Bores 13 and 18.
2. Is the waste liquid waste?	No	The stockpile comprised a soil matrix.
3. Is the waste "pre-classified"?	No	The stockpile 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 F2.
6. Is the waste putrescible?	No	The fill 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 following is noted in regards to the classification of the fill:

- The concentrations of the chemical contaminants tested were generally within the CT1 criteria for general solid waste with the following exceptions;
  - Benzo (a) pyrene in 8 of the 30 samples tested (maximum concentration of 5.4 mg / kg); and
  - Lead in 15 of the 33 samples tested (maximum concentration of 1800 mg / kg).
- TCLP analysis was conducted selected worst case samples for lead and PAH. The results were within the SCC1 and TCLP thresholds in all samples with the exception of sample 9 /0.9 - 1.0 which exceeded both SCC1 and TCLP1;
- Therefore, based on chemical analysis the fill material at the majority of the site is within general solid waste thresholds. The fill in the vicinity of Test Bore 9 exceeded the general solids waste thresholds but was within the restricted solid waste thresholds;
- Asbestos was detected in samples 13 /0.4 - 0.5 and 18 /4 - 4.45. It is noted that the source of the fill in the majority of the site, in particular in the Michael Birt Gardens and Michael Birt Lawn was from the backfilling of the former quarry. The fill in this region is heterogeneous in nature and building rubble is present sporadically throughout. Therefore, it is considered highly likely that asbestos may be present throughout the fill in this area. Therefore, a conservative approach has been adopted and it has been assumed that asbestos is present in this area of the site; and
- Building rubble inclusions were generally not observed in the Pavilion or south of the Matthews Building or south of the (Test Bores 22 to 26) and no asbestos was detected in Test Bore 22 to 26. Therefore, the risk of asbestos being present in the fill is considered to be lower and it has not been assumed that asbestos is present in the fill in this part of the site.

Therefore, the fill at the site is assigned the following provisional classifications:

- The Pavilion Region (Test Bores 22 to 26) – General Solid Waste (non-putrescible)
- Vicinity of Test Bore 9 – Special Waste (asbestos), and Restricted Solid Waste (non-putrescible); and
- Remainder of site - Special Waste (asbestos), and General Solid Waste (non-putrescible)

It is recommended that the further waste classification assessment be undertaken following excavation of fill (where required) to confirm the provisional classifications above. In particular if asbestos is not as widespread as suspected in the Michael Birt Gardens and lawn and at the Clancy Auditorium then it might be possible to reclassify the fill (with the exception of the materials in the immediate vicinity of Test Bores 13 and 18 where asbestos has been confirmed).

Furthermore, due to the presence of acid sulfate soils in the fill material within the Lowy centre, if materials similar to those classified as acid sulfate soil (dark grey silty sand filling with organic materials and organic odours), acid sulfate soil testing should be undertaken to assist in waste classification.

Trace levels of benzo (a) pyrene (a PAH compound) were detected in the natural soil samples tested. This may be the result of leaching of contaminants from the overlying fill soils. Therefore, at this stage the natural sands cannot be classified as virgin excavated natural materials (VENM) and accordingly the natural sands within Project Area 1 are provisionally classified as General Solid Waste. It is recommended that that if encountered (i.e., if development works extend into the natural soils), then natural soils are stockpiled separately during excavation and further assessment is conducted to determine whether they can be classified as VENM.

14. Conclusion and Recommendations

Elevated levels of heavy metals and PAH were detected in the northern portion of the site (the Michael Birt Gardens, Michael Birt Lawn and the surrounds of the Clancy Auditorium). Lead exceeded the HIL in one location (Test Bore 9). Asbestos was also detected in two locations (Test Bores 13 and 18) and given the nature of the fill it is suspected that asbestos and PAH may be present more widely in the northern part of the site (particularly the Michael Birt Gardens and Lawn).

It is noted that due to settlement within the Michael Birt Gardens and Michael Birt Lawn, the geotechnical report (report 86361.00) has recommended that the top 0.5 m of fill be stripped from these areas and replaced with imported (and compacted) soil (imported VENM) to address settlement issues.

Compacted VENM would also serve as a capping layer for the underlying contaminated soils and thus render the site suitable for the proposed development. It is recommended that a geotextile marker layer be placed below the imported ‘capping’ layer to demarcate the underlying contaminated fill. Following the completion of the capping layer an environmental management plan should be prepared. A permanent pavement (concrete) could act as a suitable alternative to the 0.5 m capping layer, i.e., within building footprints. The remedial works should be outlined in a Remediation Action Plan (RAP).

The results from the southern portion of Project Area 1 (i.e., Test Bores 22 to 26 in The Pavilion and Matthews Theatre area) were within the adopted investigation levels (with the exception of minor

exceedance of the ecological investigation levels) and no asbestos was detected in this area. Therefore, it is considered that no remedial works are required in that area of the site.

It is recommended that further waste classification assessment be undertaken at the time of excavation. Testing should include acid sulfate soil assessment, particularly, if dark grey silty sand filling with organic materials and organic odours is encountered).

It is considered that the site can be made suitable for the proposed development subject to implementation of the recommendations discussed above. The recommended works include the preparation of a RAP, which will require validation and monitoring, which comprise Stages 3 and 4 in SEPP 55 (refer to Section 1.2).

15. Limitations

Douglas Partners (DP) has prepared this report for High Street, Kensington in accordance with DP's proposal dated 6 April 2018, and email acceptance from the University of New South Wales. This report is provided for the exclusive use of the University of New South Wale 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 was detected in two locations. Building demolition materials, were, also noted in a number of locations 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 access constraints (as discussed above), or to parts of the site being inaccessible and not available for 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 components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

About This Report

About this Report

Douglas Partners

Introduction

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

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

Copyright

Borehole and Test Pit Logs

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

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

Groundwater

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

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

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

Reports

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

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

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

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

About this Report

Site Anomalies

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

Information for Contractual Purposes

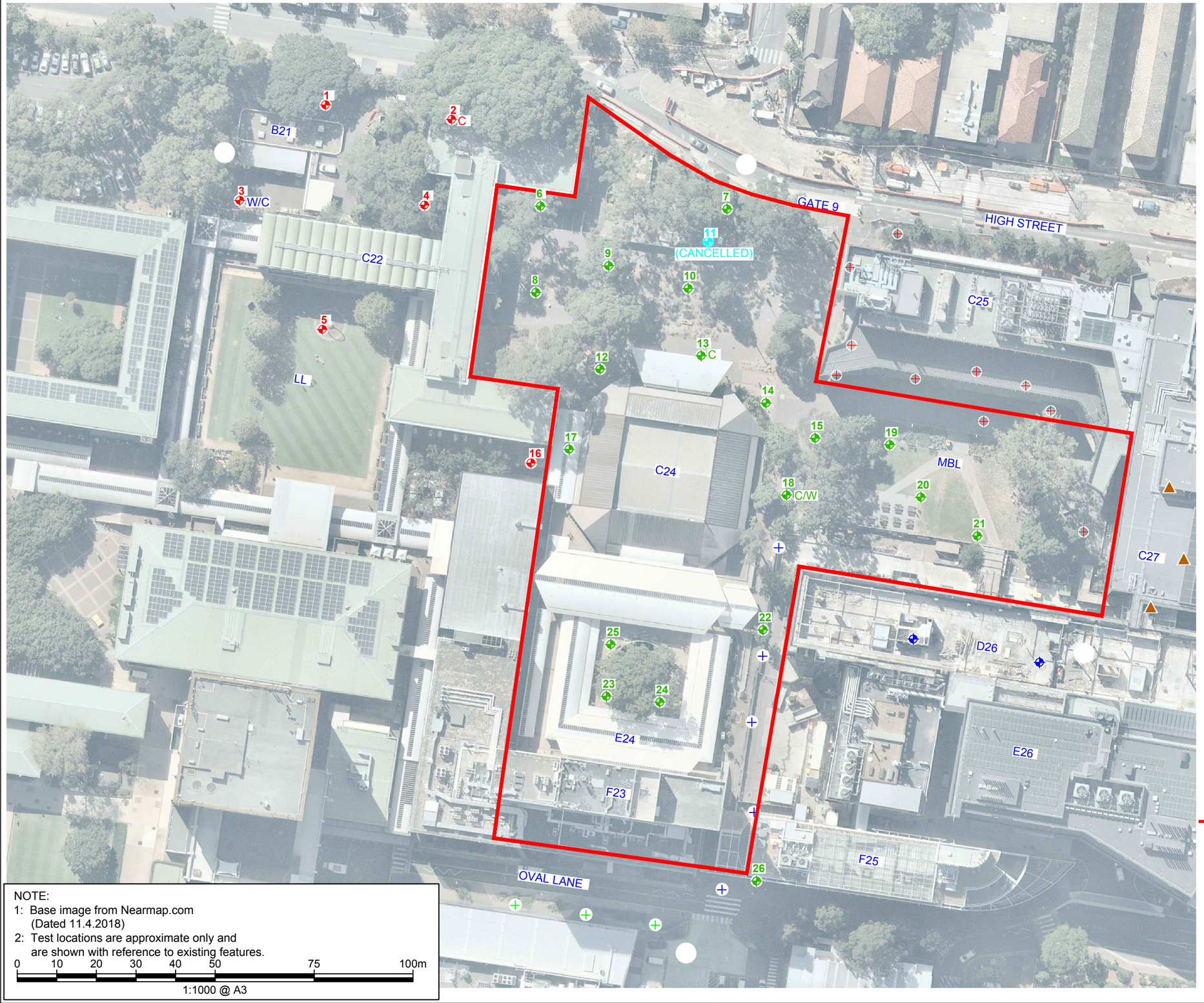
Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate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

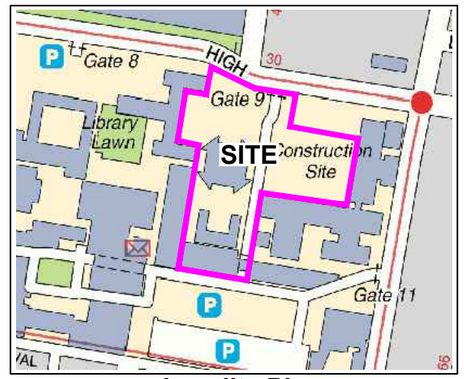
Site Inspection

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

Appendix B

Drawings





Locality Plan

LEGEND

- Current borehole location (Proj. 86360 Series, 2018)
- Current borehole location
- Previous borehole (Proj. 73492.09, 2016)
- Previous borehole (Proj. 71453 Series, 2010)
- Previous borehole (Proj. 44291 Series, 2006-2007)
- Previous borehole (Proj. 71283, 2009)
- Previous borehole (Proj. 72075, 2010)
- W Groundwater well
- C Rock cored borehole
- Approximate site boundary
- C22 Chancellery
- C24 Sir John Clancy Auditorium
- E24 The Pavilions
- F23 Matthews
- C25 Lowy Cancer Research Centre
- D26 Biological Science North
- F25 Biological Science South
- LL Library Lawn
- MBL Michael Birt Lawn

NOTE:
1: Base image from Nearmap.com (Dated 11.4.2018)
2: Test locations are approximate only and are shown with reference to existing features.

0 10 20 30 40 50 75 100m
1:1000 @ A3

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: University of New South Wales		TITLE: **Location of Tests** **Project Area 1** **High Street, Kensington UNSW**
OFFICE: Sydney	DRAWN BY: PSCH	
SCALE: 1:1000 @ A3	DATE: 25.5.2018	

N

PROJECT No:	86361.01
DRAWING No:	1
REVISION:	0

Appendix C

Site History Information

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

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

Summary of Owners Report

LRS NSW (Formerly LPI) **Sydney**

Address: - High Street, Kensington

Description: - Part of Lot 1 D.P. 510271

The early title to this land is Crown Title

We are aware of the following events: -

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
02.09.1903	Randwick Park dedicated for Public Recreation	Gazette 02.09.1903
13.11.1959	Appropriated for the purposes of the University of New South Wales	
20.11.1959	Vested in the University of New South Wales	Gazette 20.11.1959
26.08.1964	Minister for Education	Vol 9787 Fol 109
26.08.1964 (1964 to date)	# The University of New South Wales (Formerly The NSW University of Technology)	Vol 9787 Fol 109 Now 1/510271

# Denotes Current Registered Proprietor

Leases: -

- Numerous leases were found from 04.08.1992 onwards that have since expired due to effluxion of time or have been surrendered – These have not been investigated

  Please refer to the current title 1/510271 for current leases

Easements: -

- 31.03.1970 (D.P. 217735 & L 852165) Easement for Drainage

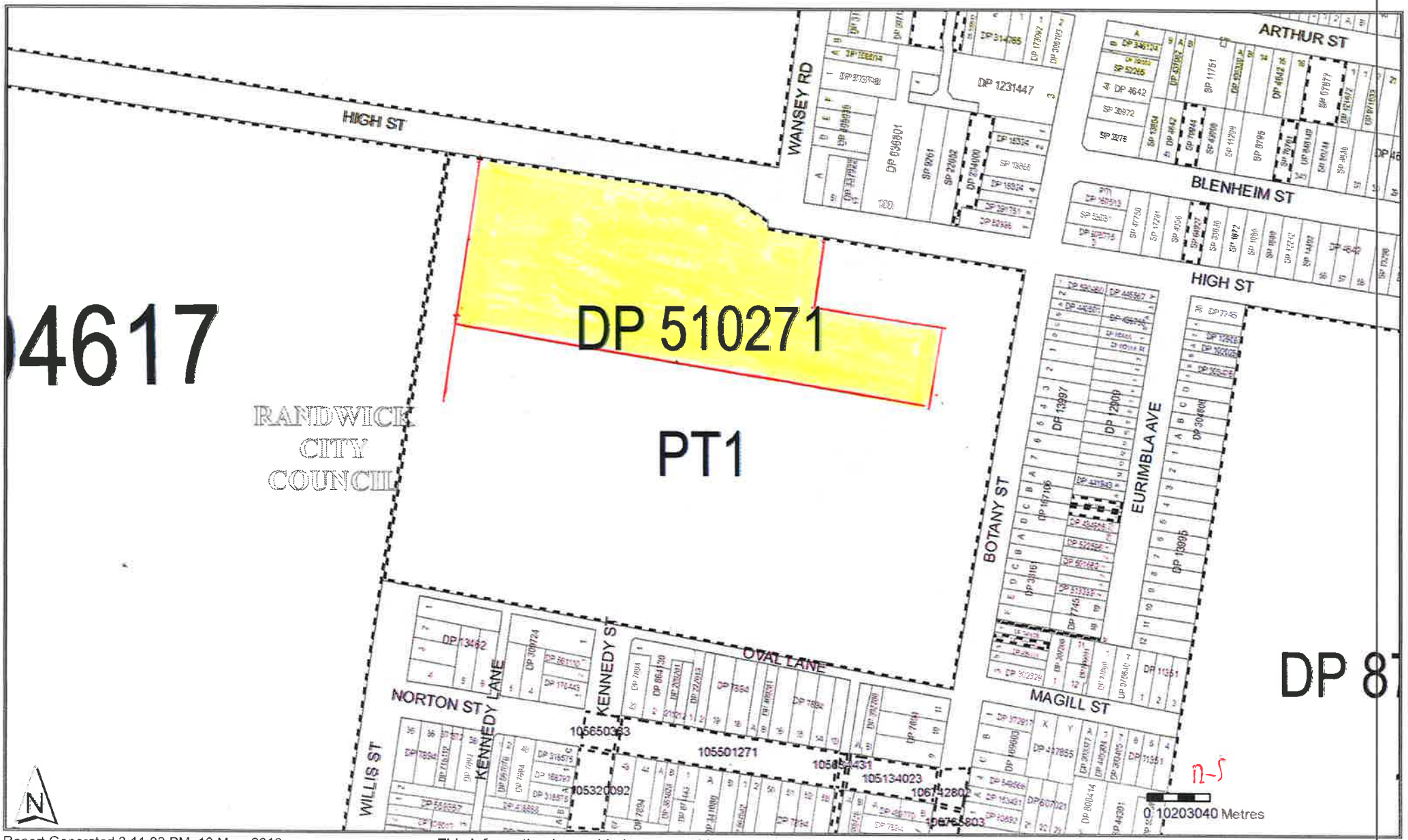
Yours Sincerely
Mark Groll
10 May 2018

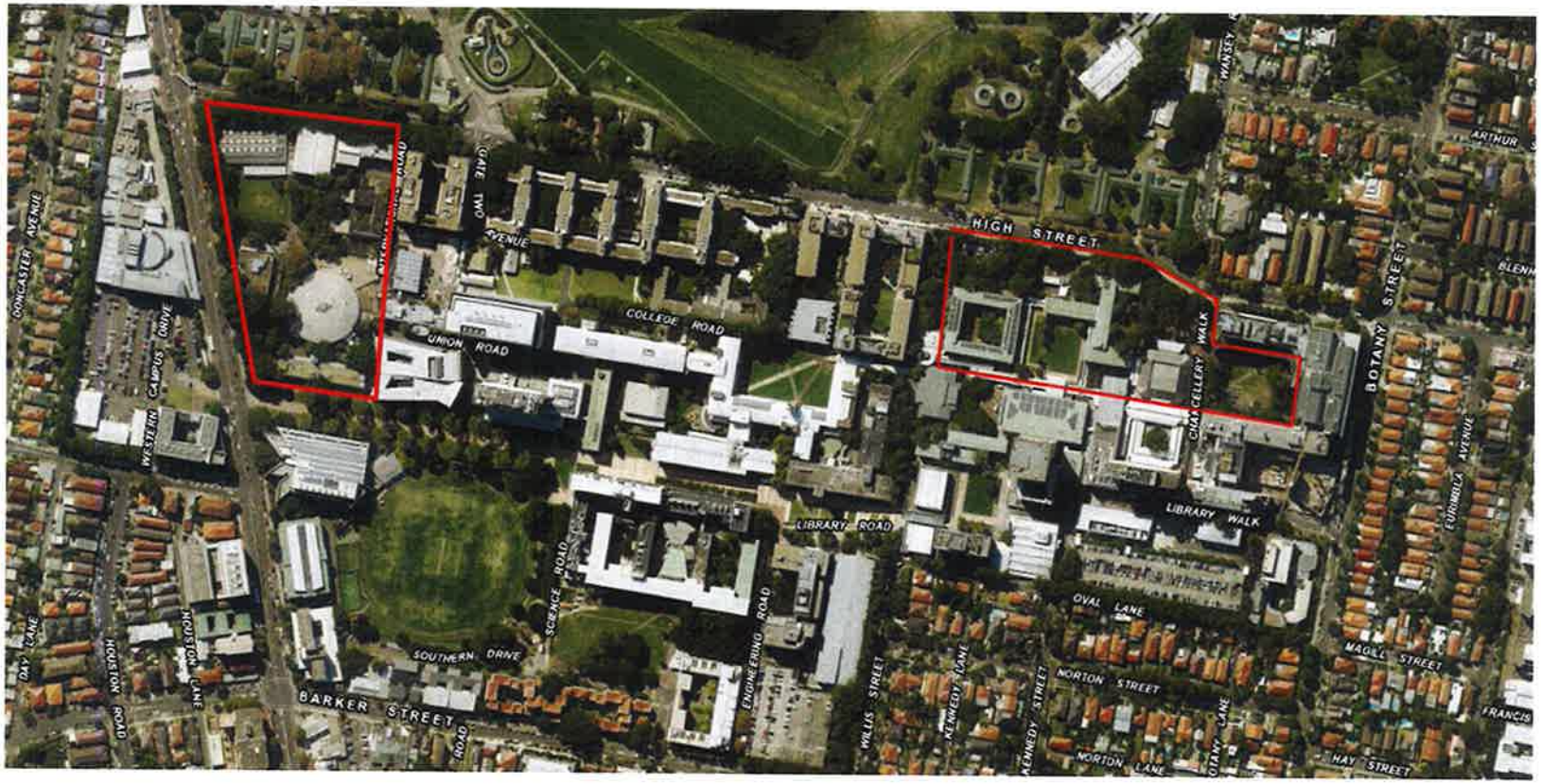
LAND REGISTRY SERVICES

Cadastral Records Enquiry Report : Lot 1 DP 510271

Locality : KENSINGTON
LGA : RANDWICK
Parish : ALEXANDRIA
County : CUMBERLAND

Ref : CMapIT




HIGH STREET
COLLEGE ROAD
UNION ROAD
LIBRARY ROAD
LIBRARY WALK
CHANCELLERY WALK
OVAL LANE
SOUTHERN DRIVE
BARKER STREET
SCIENCE ROAD
ENGINEERING ROAD
WESTERN CAMPUS DRIVE
DONCASTER AVENUE
HOUSTON ROAD
HOUSTON LANE
OAK LANE
WILLIS STREET
KENNEDY STREET
KENNEDY PLANE
NORTON STREET
NORTON LANE
BOTANY STREET
BOTANY LANE
FURNELLA AVENUE
MAGILL STREET
HAY STREET
FRANCIS
ARTHUR
WARSEY

Form 1 S.B. 21106

OFFICE USE ONLY

DP510271

PLAN OF Portions 1291 and 1500 appropriated for the purposes of the University of N.S.W. by notification in Gazette 13th November 1959

Registered: 13.2.1964

Mun./Shire/City: Randwick

Town or Locality: Kensington

Parish: Alexandria

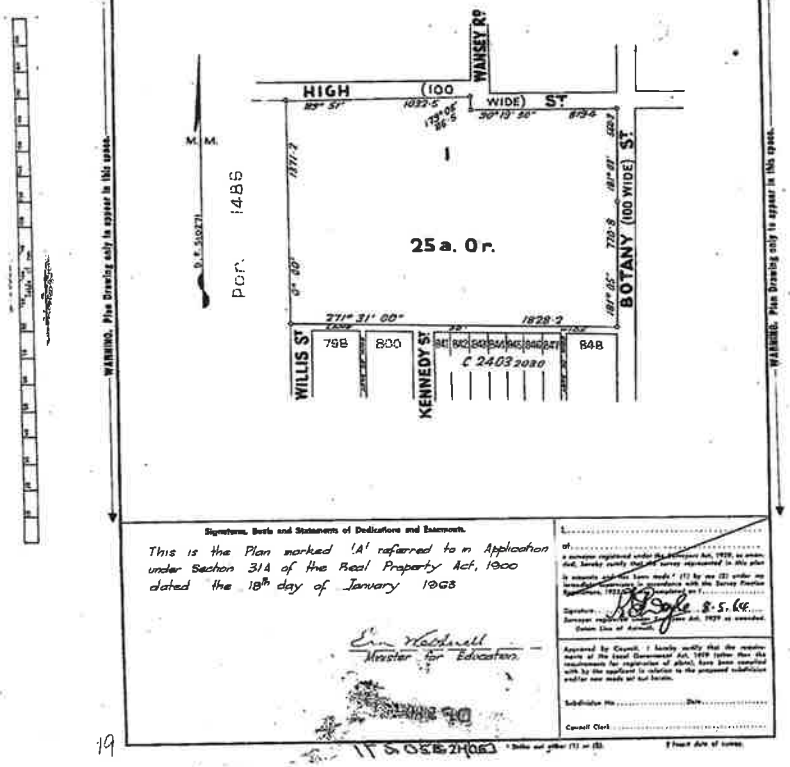
County: Cumberland Scale: 4 chains to an inch

Title System: Old System

Purpose: PA 43832

Ref. Map: Randwick Sh. 8

Last Plan: dc



Signatures, Seals and Statements of Dedications and Easements.

This is the Plan marked 'A' referred to in Application under Section 31A of the Real Property Act, 1900 dated the 18th day of January 1963

Minister for Education

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 510271

FEET	INCHES	METRES
20	-	6.096

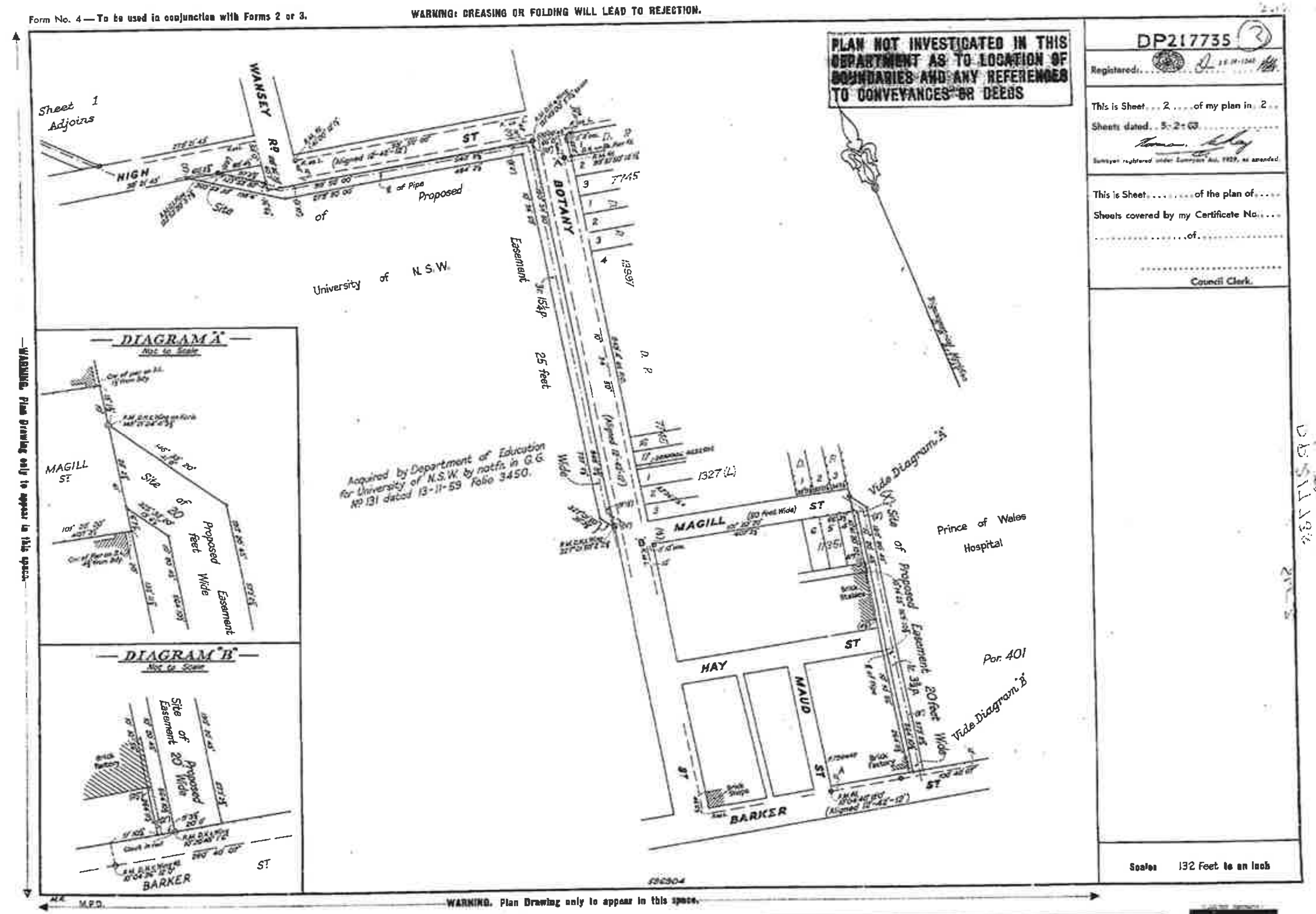
LINKS	METRES
20	4.025
86.5	17.401
100	20.117
560.3	112.714
770.8	155.050
819.4	164.837
1032.5	207.706
1371.2	275.842
1828.2	367.775

AC	RD	P	HA
25	-	-	10.12

I, Jack Hayward Watson, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 19th day of March, 1976.

Form No. 4 — To be used in conjunction with Forms 2 or 3.

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION.



AMENDMENTS OR ADDITIONS NOTED ON PLAN IN REGISTRAR GENERAL'S OFFICE.

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 28th day of April, 1977

2

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

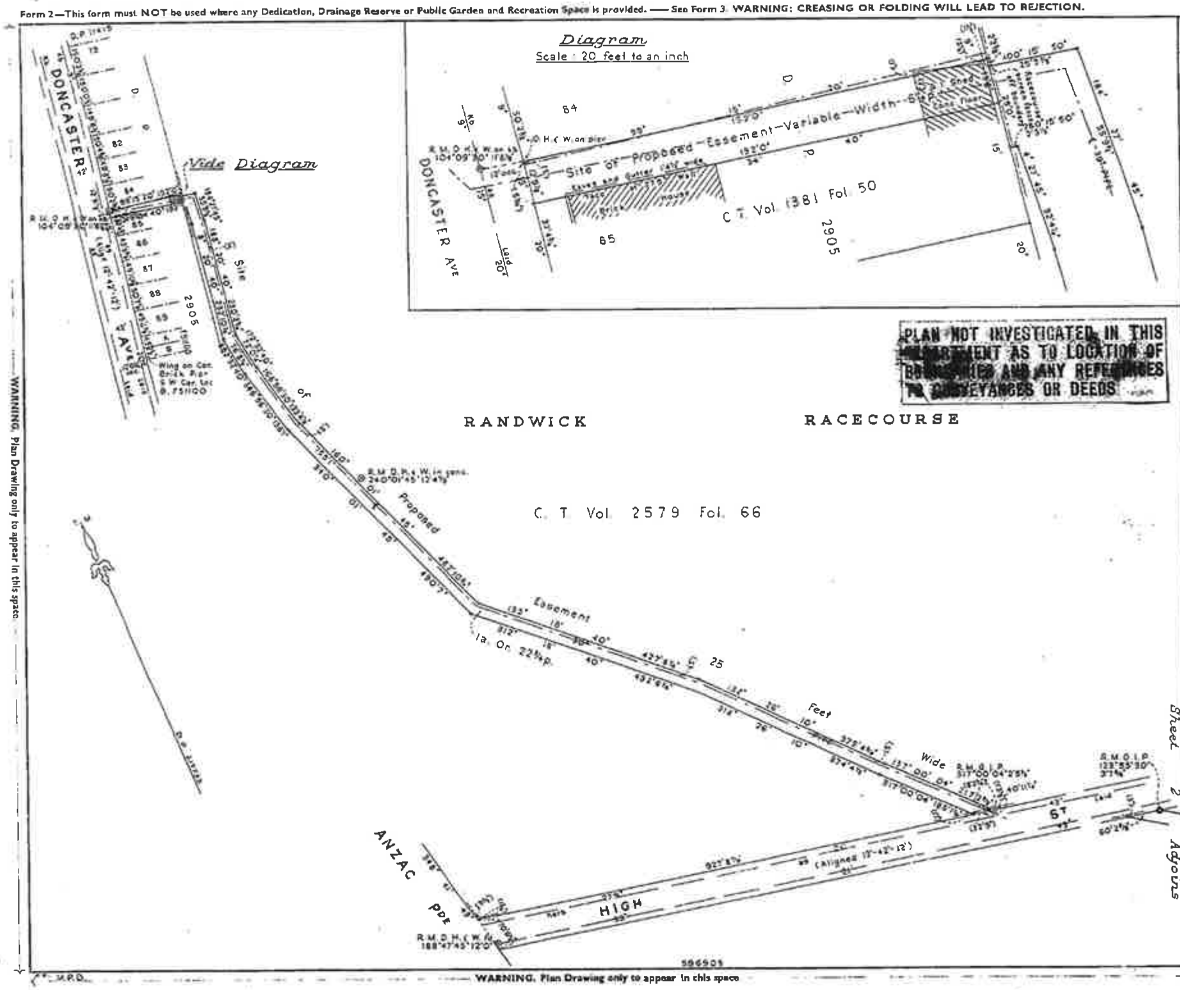
DP 217735 SH 2/2

FEET	INCHES	METRES
-	0 3/4	0.019
-	1	0.025
-	1 1/2	0.038
-	2	0.051
-	2 7/8	0.073
-	3	0.076
-	3 1/4	0.083
-	4 3/8	0.111
-	4 1/2	0.114
-	6	0.152
-	8	0.203
-	9 3/4	0.248
-	10	0.254
-	11	0.279
1	-	0.305
1	2 3/8	0.365
1	6	0.457
2	-	0.610
2	1 7/8	0.657
2	2 1/8	0.664
3	-	0.914
3	7 3/8	1.102
3	7 5/8	1.108
4	-	1.219
4	0 1/8	1.222
4	2 3/8	1.280
4	6	1.372
4	7 3/4	1.416
4	9 1/2	1.461
5	-	1.524
5	9 5/8	1.768
5	9 7/8	1.775
5	10	1.778
5	11 1/4	1.810
6	7 1/2	2.019
7	3 1/2	2.223
7	8 3/4	2.356
8	-	2.438
8	1 1/2	2.477
8	2	2.489
9	3 1/2	2.832
11	10	3.607
11	11	3.632
12	-	3.658
12	1 1/4	3.689
12	1 1/2	3.696
13	6 1/8	4.118
15	1 3/4	4.616
16	6 1/8	5.032
17	6 5/8	5.350
17	10 1/4	5.442
20	-	6.096
25	-	7.620
28	2 3/8	8.595
28	2 5/8	8.601
32	11 1/2	10.046
34	0 1/8	10.366
35	0 7/8	10.690
35	9 5/8	10.912
36	3 1/2	11.062
40	7	12.370
40	8 5/8	12.411
40	9 7/8	12.443
41	8	12.700
42	-	12.802
46	6 1/2	14.186
48	9 3/4	14.878
50	-	15.240
54	-	16.459
60	2 5/8	18.355
62	-	18.898
66	-	20.117
66	2 1/2	20.180
69	10 3/8	21.295
84	10 1/2	25.870
88	4 1/2	26.937
97	8 3/4	29.788

FEET	INCHES	METRES
112	1 1/2	34.176
132	11 1/2	40.526
169	10 3/8	51.775
198	4	60.452
264	11 1/2	80.759
407	3 1/2	124.143
484	2 1/8	147.577
540	9 5/8	164.836
564	10 1/2	172.174
573	2 3/4	174.720
573	4 3/8	174.762
797	2 3/8	242.980
848	9 3/4	258.718
849	4	258.877

AC	RD	P	SQ M
-	1	3 3/4	1107
-	3	15 1/4	3421

Form 2—This form must NOT be used where any Dedication, Drainage Reserve or Public Garden and Recreation Space is provided. — See Form 3. WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION.



WARNING. Plan Drawing only to appear in this space

DP217735

Registered: 31.10.1961

Title System: Torrens, Old System and Crown Land

Purpose: Easement

Ref. Map: Parish Randwick Shs. 5 & 8

Last Plan: D. P. 2905.

OFFICE USE ONLY.

PLAN OF

Sites of Easements proposed to be acquired for Randwick Rising Main Amplification.

Scale: 132 Feet to an inch

Mun./~~Shire~~ ~~City~~: Randwick

Locality: Randwick

Parish: Alexandria

County: Cumberland

I, Norman Charles Ray of M.W.S.& D.B. 341 Pitt St. Sydney a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan is accurate and has been made (1) by me (2) ~~under my immediate supervision~~ in accordance with the Survey Practice Regulations, 1933, and was completed on 5-3-63

Signature: [signature]

Surveyor registered under Surveyors Act, 1929, as amended.

Datum Line of Azimuth: "A"-"B" Sheet 2

Statements of Proposed Easements

It is intended to create easements for watermain over the Sites of Proposed Easements 20 feet, 25 feet and Variable Width shown hereon within the land comprised in C.Ts.: Vol. 1381 Fol. 50 and Vol. 2579 Fol. 66, within land acquired vide G.G. Nº 131 of 13-11-59 Fol. 3450 and within Parish Portion 401 in favour of the M.W.S.& D.B.

Approved by the Council and Certified in accordance with the Provisions of Section 327 of the Local Government Act, 1919.

Date:

Subdivision No.

Council Clerk

*Strike out either (1) or (2). †Insert date of survey.

WARNING. Plan Drawing only to appear in this space

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 28th day of April, 1977

[signature]

1

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 217735 SH 1/2

FEET	INCHES	METRES
-	0 1/2	0.013
-	1 1/2	0.038
-	1 3/4	0.044
-	2	0.051
-	2 5/8	0.067
-	3	0.076
-	5	0.127
-	5 1/4	0.133
-	5 3/4	0.146
-	6	0.152
-	7	0.178
-	9	0.229
-	9 1/2	0.241
-	9 3/4	0.248
1	1	0.330
1	3 1/8	0.384
1	3 1/2	0.394
1	4 1/2	0.419
2	2 5/8	0.676
2	3 1/2	0.699
2	5 1/2	0.749
3	-	0.914
3	7 3/8	1.102
4	11 1/2	1.511
5	-	1.524
5	9 1/2	1.765
7	-	2.134
8	2 1/4	2.496
11	8 1/8	3.559
12	-	3.658
12	0 1/4	3.664
12	4 7/8	3.781
12	9 1/8	3.889
13	6	4.115
25	-	7.620
25	3 7/8	7.718
32	-	9.754
32	4 1/4	9.862
32	9	9.982
37	4 3/4	11.398
40	11 1/4	12.478
42	-	12.802
45	2 1/2	13.780
49	6 5/8	15.103
49	6 7/8	15.110
49	8 1/8	15.142
49	8 3/8	15.148
49	10 1/2	15.202
50	2 3/8	15.300
50	2 3/4	15.310
50	4 3/8	15.351
50	4 5/8	15.357
50	7 1/8	15.421
55	9 1/2	17.005
60	2 5/8	18.355
70	6 1/2	21.501
72	0 1/4	21.952
76	8 1/2	23.381
112	4 5/8	34.255
132	-	40.234
133	4 1/8	40.643
136	1	41.478
149	6 1/2	45.580
150	0 1/2	45.733
150	2 3/8	45.780
155	1	47.269
185	1 1/4	56.420
217	2 3/8	66.202
217	2 3/4	66.211
217	6	66.294
230	2 3/4	70.174
232	10 1/4	70.974
374	4 1/2	114.110
375	4 3/4	114.421
427	8 1/4	130.359
432	6 1/4	131.832
482	10 3/4	147.187

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 217735 SH 1/2 CONTD

FEET	INCHES	METRES
490	7	149.530
927	8 7/8	262.775

AC	RD	P	SQ M
-	-	6 1/4	158.1
1	-	22 3/4	4622

PLAN FORM 2 (APPROVED FORM 3)

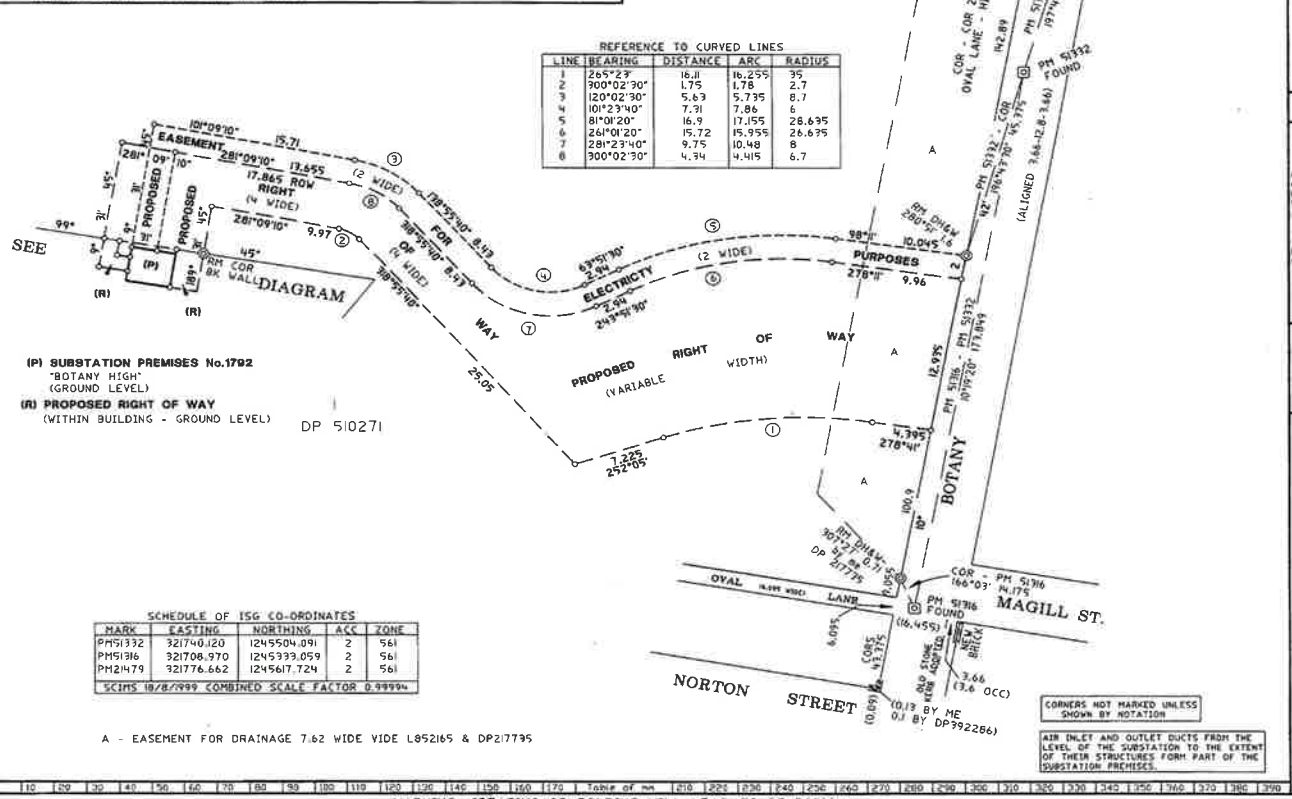
Plan Drawing only to appear in this space

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

DIAGRAM
SCALE: 1:100

(R) PROPOSED RIGHT OF WAY
(WITHIN BUILDING - GROUND LEVEL)

(E1) PROPOSED EASEMENT FOR ELECTRICITY PURPOSES
(WITHIN BUILDING - BELOW GROUND LEVEL)



(P) SUBSTATION PREMISES No.1792
"BOTANY HIGH"
(GROUND LEVEL)

(R) PROPOSED RIGHT OF WAY
(WITHIN BUILDING - GROUND LEVEL)

DP 510271

REFERENCE TO CURVED LINES

LINE	BEARING	DISTANCE	ARC	RADIUS
1	265°23'	16.11	16.255	35
2	300°02'30"	1.75	1.78	2.7
3	120°02'30"	5.63	5.735	8.7
4	101°23'40"	7.31	7.86	6
5	81°01'20"	16.9	17.155	28.695
6	261°01'20"	15.72	15.955	26.695
7	281°23'40"	9.75	10.48	8
8	300°02'30"	4.34	4.415	6.7

SCHEDULE OF ISG CO-ORDINATES

MARK	EASTING	NORTHING	ACC	ZONE
PM51332	321740.120	12455504.091	2	56
PM51316	321706.970	12455333.059	2	56
PM21479	321776.662	12455617.724	2	56

SCIMS 18/8/1999 COMBINED SCALE FACTOR 0.99994

A - EASEMENT FOR DRAINAGE 7.62 WIDE VIDE L852165 & DP217795

Crown Lands Office Approval

PLAN APPROVED

Authorised Officer

Land District

Paper No.

Field Book pages

Council's Certificate

I certify that the provisions of s.1051 of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to the proposed set out hereon

* (insert 'subdivision' or 'new road')

* Authorised Person/General Manager/Accredited Certifier

Consent Authority

Date of Endorsement

Accreditation no.

Subdivision Certificate no.

File No.

Note:

When the plan is to be lodged electronically in the Land Titles Office it should include a signature in an electronic or digital format approved by the Registrar General.

* Delete if inapplicable.

DP1038595

4.3.2002

CA

Title System: TORRENS

Purpose: LEASE

Ref Map: RANDWICK SHT. 53#

Last Plan: DP510271

PLAN OF SUBSTATION PREMISES No. 1792, PROPOSED RIGHTS OF WAY AND PROPOSED EASEMENT FOR ELECTRICITY PURPOSES WITHIN LOT 1 IN DP 510271.

Lengths are in metres. Reduction Ratio 1:250

LGA: RANDWICK

Suburb/Locality: RANDWICK

Parish: ALEXANDRIA

County: CUMBERLAND

This is sheet 1 of my plan in 1 sheets
(Delete if inapplicable)

I, ANDREW FRANK USHER

of USHER & COMPANY 9954 9814
PO BOX 523 MILSONS POINT 1565

a surveyor registered under the Surveyors Act 1929, hereby certify that the Survey represented in this plan is accurate, has been made in accordance with the Surveyors Practice) Regulation 1999 and was completed on 22 SEPTEMBER 1999

The survey relates to PREMISES, EASEMENT, RIGHTS OF WAY & CONNECTIONS

(Here specify the land actually surveyed, or specify any land shown in the plan that is not the subject of the survey)

Datum line: PM 51316 - PM 51332

Signature: Andrew Usher

Zone: Suburban

Surveyor registered under the Surveyors Act 1929

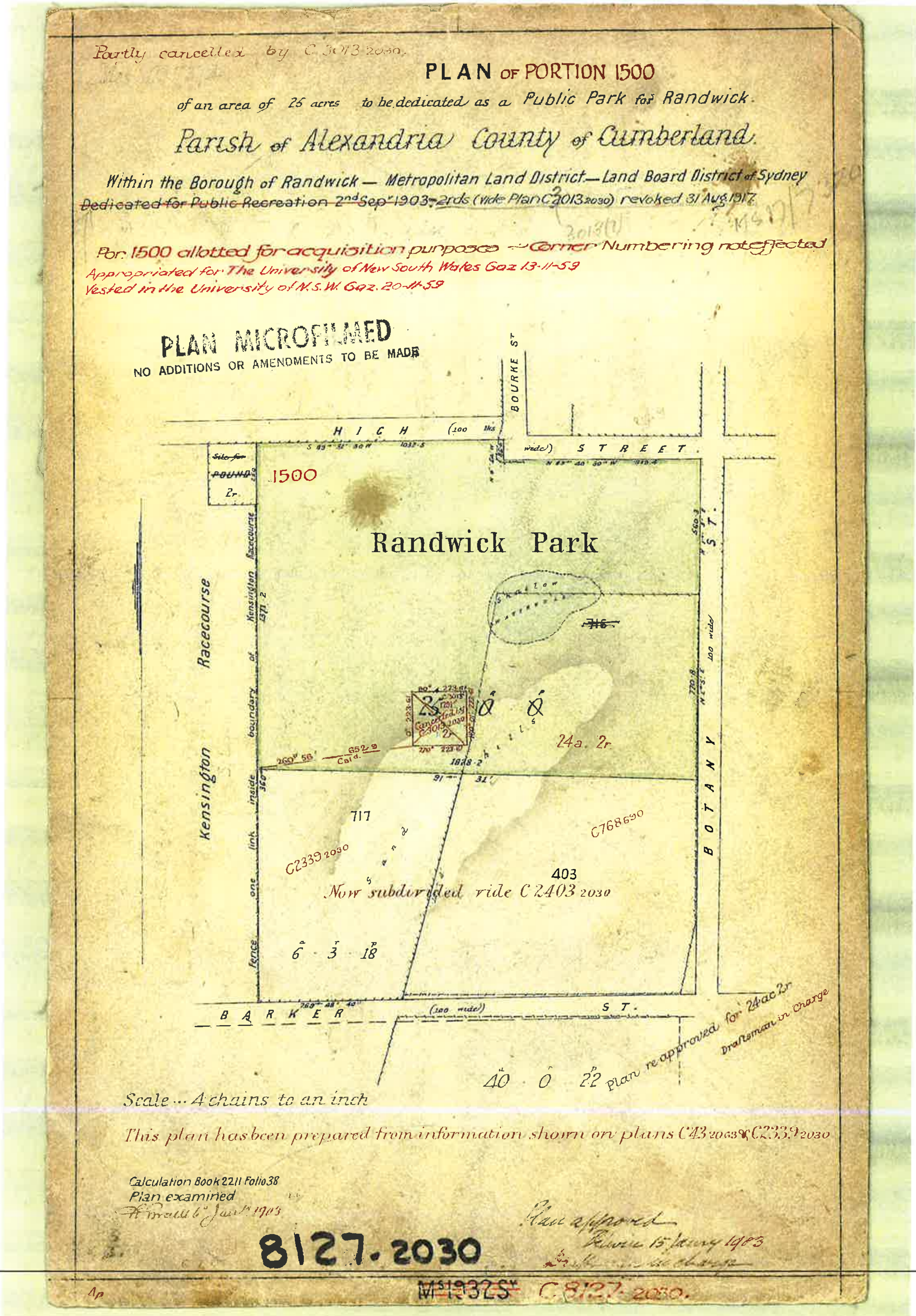
Plans used in preparation of survey / compilation

DP 590480 DP 392286
DP 510271
DP 533218
DP 217795

PANEL FOR USE ONLY for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

SURVEYOR'S REFERENCE S.13821/1 - CHECKLIST

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION


Partly cancelled by C 3013 2030
PLAN OF PORTION 1500
of an area of 25 acres to be dedicated as a Public Park for Randwick.
Parish of Alexandria County of Cumberland.
Within the Borough of Randwick — Metropolitan Land District — Land Board District of Sydney
Dedicated for Public Recreation 2nd Sepr 1903 - 2rds (vide Plan C3013 2030) revoked 31 Aug 1917
Por. 1500 allotted for acquisition purposes — Corner Numbering not effected
Appropriated for The University of New South Wales Gaz 13-11-59
Vested in the University of N.S.W. Gaz. 20-11-59
PLAN MICROFILMED
NO ADDITIONS OR AMENDMENTS TO BE MADE
HIGH (100 lks wide) STREET
BOURKE ST
Site for POUND 2r.
1500
Randwick Park
Racecourse
Kensington
Kensington Racecourse
one link inside fence
BOTANY ST. 100 wide
24a. 2r.
717
403
C2339 2030
C768690
Now subdivided vide C 2403 2030
6 3 18
BARKER (100 wide) ST.
40 0 22
Plan re approved for 24ac 2r
Draftsman in Charge
Scale – 4 chains to an inch
This plan has been prepared from information shown on plans C43 2063 & C2339 2030
Calculation Book 2211 Folio 38
Plan examined
6th Jany 1903
Plan approved
15 Jany 1903
8127.2030
Ms 1932 Sy
C 8127 2030.

[redacted]

TIFICATE OF TITLE

PERTY ACT, 1900, as amended.

09787109

NEW SOUTH WALES
Application No.43832

Vol. 9787 Fol. 109

MA 1st Edition issued 26-8-1964

Vol. 9787 Fol. 109 (Page 1)

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.

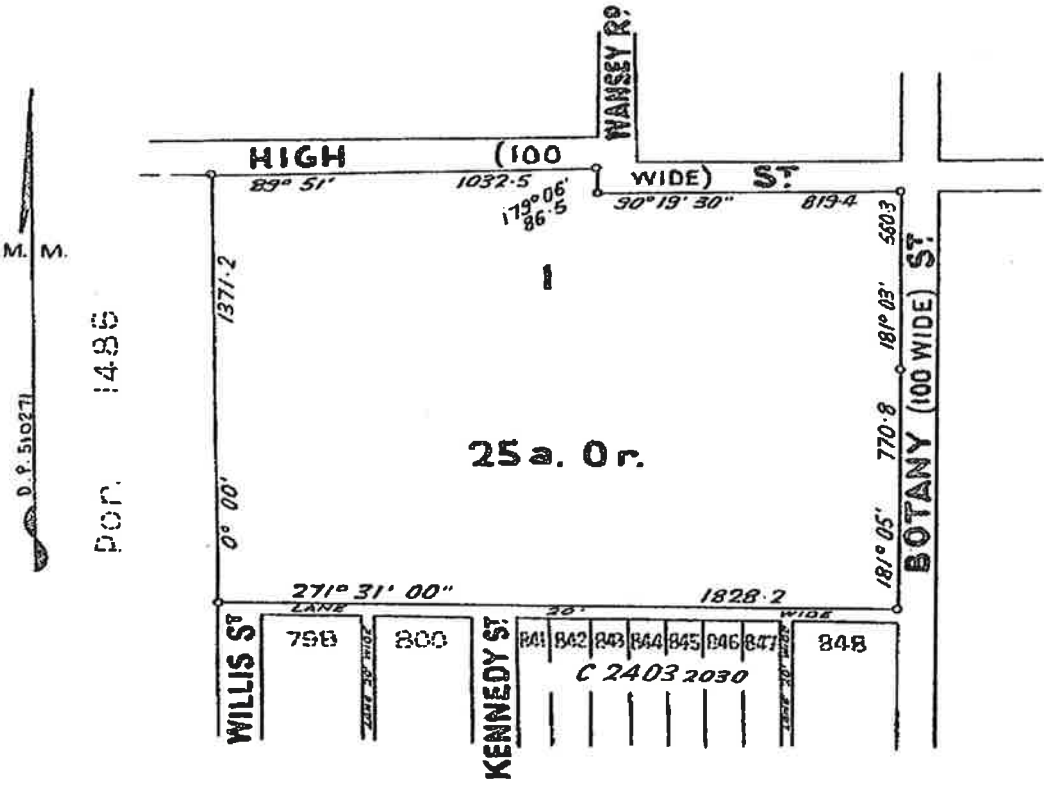
CANCELLED

Witness

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 510271 at Kensington in the Municipality of Randwick Parish of Alexandria and County of Cumberland being land for which no Crown has issued excepting thereout the mines and deposits specified in Section 141 Public Works Act 1912.

FIRST SCHEDULE (continued overleaf)

~~THE MINISTER FOR EDUCATION.~~

Registrar General.

SECOND SCHEDULE (continued overleaf)

GRN

Vol. 9787 Fol. 109

ST 1008 V. C. N. BLIGHT, GOVERNMENT PRINTER

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
The University of New South Wales.	Application	J699417	7.2.1963	26.8.1964	[signature]

CANCELLED

SEE AUTO FOLIO

Tl9/4/70
L852165
To G.

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION
Transfer	L852165 P	31.3.1970	Easement for drainage, as more fully set out in the said instrument, affecting that part of the land within described shown as "Site of Proposed Easement 25 feet Wide" in D.P. 217735	5.6.1970	[signature]	

FORM No. 62

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

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

4/5/2018 2:35PM

FOLIO: 1/510271

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9787 FOL 109

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
21/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
4/8/1992	E656076	LEASE	EDITION 1
22/4/1997	3003038	LEASE	EDITION 2
5/5/1997	3031770	LEASE	
5/5/1997	3031771	LEASE	EDITION 3
10/11/1997		AMENDMENT: LOCAL GOVT AREA	
14/11/1997	3581605	LEASE	EDITION 4
21/5/1998	3989497	LEASE	
21/5/1998	3989498	LEASE	
21/5/1998	3989499	LEASE	
21/5/1998	3989500	LEASE	EDITION 5
6/8/1998	5164746	LEASE	
6/8/1998	5164747	LEASE	EDITION 6
22/11/2001	8053389	LEASE	EDITION 7
4/3/2002	DP1038595	DEPOSITED PLAN	
3/4/2002	8370616	LEASE	EDITION 8
9/4/2002	8493357	LEASE	EDITION 9
7/6/2002	8601990	LEASE	EDITION 10
11/6/2002	8671231	DEPARTMENTAL DEALING	EDITION 11
16/7/2002	8775153	LEASE	EDITION 12
7/8/2003	9857917	LEASE	EDITION 13

END OF PAGE 1 - CONTINUED OVER

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
4/5/2018 2:35PM

FOLIO: 1/510271 PAGE 2

Recorded	Number	Type of Instrument	C.T. Issue
29/3/2004	AA526992	LEASE	EDITION 14
13/4/2005	AB407029	VARIATION OF LEASE	
13/4/2005	AB407030	VARIATION OF LEASE	
13/4/2005	AB407031	VARIATION OF LEASE	EDITION 15
24/10/2006	AC628748	LEASE	EDITION 16
31/10/2006	AC707008	DEPARTMENTAL DEALING	EDITION 17
24/4/2007	AD67887	LEASE	
23/5/2007	AC756988	REJECTED - LEASE	
6/6/2007	AD109072	LEASE	EDITION 18
13/7/2007	AD266134	CAVEAT	
18/9/2007	AD409108	WITHDRAWAL OF CAVEAT	
18/9/2007	AD339232	LEASE	EDITION 19
2/10/2007	AD454822	LEASE	EDITION 20
21/12/2007	AD657627	TRANSFER OF LEASE	EDITION 21
5/8/2008	AE131099	LEASE	EDITION 22
17/10/2008	AE274715	SURRENDER OF LEASE	
17/10/2008	AE274716	SURRENDER OF LEASE	
17/10/2008	AE274717	SURRENDER OF LEASE	
17/10/2008	AE274718	LEASE	
17/10/2008	AE274719	LEASE	
17/10/2008	AE274720	LEASE	
17/10/2008	AE274721	LEASE	EDITION 23
17/3/2009	AE555838	LEASE	EDITION 24
31/3/2009	AE585526	LEASE	EDITION 25
21/4/2009	AE622497	LEASE	EDITION 26
5/5/2009	AE655416	LEASE	EDITION 27

END OF PAGE 2 - CONTINUED OVER

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
4/5/2018 2:35PM

FOLIO: 1/510271 PAGE 3

Recorded	Number	Type of Instrument	C.T. Issue
25/9/2009	AF6090	TRANSFER OF LEASE	
25/9/2009	AF6091	VARIATION OF LEASE	
18/11/2009	AF51723	LEASE	EDITION 28
11/2/2010	AF304944	LEASE	EDITION 29
22/6/2010	AF540078	LEASE	
22/6/2010	AF540079	LEASE	
22/6/2010	AF540080	LEASE	
22/6/2010	AF540081	LEASE	EDITION 30
22/7/2010	AF644200	LEASE	
22/7/2010	AF644201	LEASE	EDITION 31
28/1/2011	AF908252	LEASE	EDITION 32
17/2/2011	AG73937	TRANSFER OF LEASE	EDITION 33
23/12/2011	AG711301	LEASE	EDITION 34
19/7/2012	AH123331	LEASE	EDITION 35
30/8/2012	AH166429	LEASE	EDITION 36
11/12/2012	AH423125	LEASE	EDITION 37
19/2/2013	AH561282	LEASE	
19/2/2013	AH561283	LEASE	
19/2/2013	AH561284	LEASE	EDITION 38
13/3/2013	AH607569	SURRENDER OF LEASE	EDITION 39
14/10/2013	AI78005	LEASE	EDITION 40
12/11/2013	AI156022	LEASE	EDITION 41
30/5/2014	AI330423	LEASE	
30/5/2014	AI330424	LEASE	EDITION 42
18/6/2014	AI668431	VARIATION OF LEASE	
10/7/2014	AI695492	LEASE	EDITION 43

END OF PAGE 3 - CONTINUED OVER

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
4/5/2018 2:35PM

FOLIO: 1/510271 PAGE 4

Recorded	Number	Type of Instrument	C.T. Issue
1/10/2014	AI803371	LEASE	EDITION 44
11/3/2015	AJ321406	DEPARTMENTAL DEALING	
23/3/2015	AJ71566	CHANGE OF NAME	
31/3/2015	AJ141167	VARIATION OF LEASE	
31/3/2015	AJ301235	CHANGE OF NAME	
29/4/2015	AJ288492	SURRENDER OF LEASE	
29/4/2015	AJ288493	LEASE	
29/4/2015	AJ288494	LEASE	
29/4/2015	AJ288495	LEASE	EDITION 45
18/11/2015	AJ925265	LEASE	EDITION 46
22/12/2015	AK19417	VARIATION OF LEASE	
19/2/2016	AK234590	LEASE	
19/2/2016	AK234676	LEASE	
19/2/2016	AK234677	LEASE	
19/2/2016	AK234678	LEASE	
19/2/2016	AK234679	LEASE	EDITION 47
16/3/2016	AK291349	LEASE	EDITION 48
29/4/2016	AK385575	LEASE	EDITION 49
6/7/2016	AK570523	TRANSFER OF LEASE	
20/7/2016	AK609081	LEASE	EDITION 50
12/8/2016	AK674549	CAVEAT	
21/11/2016	AK942665	LEASE	EDITION 51
28/2/2017	AK971351	LEASE	
28/2/2017	AK971352	SUB-LEASE	
28/2/2017	AK971502	MORTGAGE OF LEASE	
28/2/2017	AK971571	CHANGE OF NAME	
28/2/2017	AM125646	DEPARTMENTAL DEALING	
17/3/2017	AM15961	LEASE	EDITION 52

END OF PAGE 4 - CONTINUED OVER

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
4/5/2018 2:35PM

FOLIO: 1/510271 PAGE 5

Recorded	Number	Type of Instrument	C.T. Issue
7/8/2017	AM568546	TRANSFER OF LEASE	
7/8/2017	AM568547	VARIATION OF LEASE	
27/9/2017	AM759007	LEASE	EDITION 53
19/10/2017	AM814497	LEASE	EDITION 54
27/10/2017	AM820028	SURRENDER OF LEASE	
27/10/2017	AM820029	LEASE	EDITION 55

*** END OF SEARCH ***

LAND REGISTRY SERVICES **Title Search** InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/510271

SEARCH DATE	TIME	EDITION NO	DATE
4/5/2018	2:35 PM	55	27/10/2017

LAND

LOT 1 IN DEPOSITED PLAN 510271
AT KENSINGTON
LOCAL GOVERNMENT AREA RANDWICK
PARISH OF ALEXANDRIA COUNTY OF CUMBERLAND
TITLE DIAGRAM DP510271

FIRST SCHEDULE

THE UNIVERSITY OF NEW SOUTH WALES (AP J699417)

SECOND SCHEDULE (29 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS (S.141 PUBLIC WORKS ACT, 1912)
2 L852165 EASEMENT FOR DRAINAGE AFFECTING THAT PART OF THELAND SHOWN AS SITE OF PROPOSED EASEMENT 25 FEET WIDE IN DP217735
3 3989500 LEASE TO OPTUS NETWORKS PTY LIMITED OF THE AREA SHOWN HATCHED IN PLAN WITH 3989500. COMMENCES 24/12/2011. EXPIRES: 23/12/2016.
AB407031 VARIATION OF LEASE 3989500
4 8370616 LEASE TO AUSGRID (SEE AJ71566) OF SUBSTATION NO.1792 TOGETHER WITH RIGHT OF WAY AND EASEMENT FOR ELECTRICITY PURPOSES OVER ANOTHER PART OF THE LAND ABOVE DESCRIBED SHOWN IN DP1038595. EXPIRES: 30/9/2049.
AK971351 LEASE OF LEASE 8370616 TO BLUE ASSET PARTNER PTY LTD, ERIC ALPHA ASSET CORPORATION 1 PTY LTD, ERIC ALPHA ASSET CORPORATION 2 PTY LTD, ERIC ALPHA ASSET CORPORATION 3 PTY LTD & ERIC ALPHA ASSET CORPORATION 4 PTY LTD EXPIRES: SEE DEALING. CLAUSE 2.3 (b) (ii).
AK971352 LEASE OF LEASE AK971351 TO BLUE OP PARTNER PTY LTD, ERIC ALPHA OPERATOR CORPORATION 1 PTY LTD, ERIC ALPHA OPERATOR CORPORATION 2 PTY LTD, ERIC ALPHA OPERATOR CORPORATION 3 PTY LTD & ERIC ALPHA OPERATOR CORPORATION 4 PTY LTD EXPIRES: SEE DEALING. CLAUSE 12.1
AK971502 MORTGAGE OF LEASE AK971351 TO ANZ FIDUCIARY SERVICES PTY LTD
AK971571 CHANGE OF NAME AFFECTING LEASE 8370616 LESSEE NOW ALPHA DISTRIBUTION MINISTERIAL HOLDING

END OF PAGE 1 - CONTINUED OVER

SECOND SCHEDULE (29 NOTIFICATIONS) (CONTINUED)

CORPORATION

5 AF304944 LEASE TO CHILDRENS CANCER INSTITUTE AUSTRALIA FOR MEDICAL RESEARCH BEING GROUND FLOOR (EXCLUDING COMMON AREAS),LEVEL 1 & 5 OF C25, UNIVERSITY OF NEW SOUTH WALES, UPPER KENSINGTON CAMPUS, KENSINGTON. EXPIRES: 10/11/2044. OPTION OF RENEWAL: FIFTEEN YEARS.

AJ141167 VARIATION OF LEASE AF304944 EXPIRY DATE NOW 22/8/2034.

AJ301235 CHANGE OF NAME AFFECTING LEASE AF304944 LESSEE NOW CHILDRENS CANCER INSTITUTE AUSTRALIA

6 AF908252 LEASE TO VIVID WIRELESS PTY LIMITED OF THE PART SHOWN HATCHED IN PLAN WITH AF908252. EXPIRES: 17/6/2015. OPTION OF RENEWAL: 5 YEARS.

AK19417 VARIATION OF LEASE AF908252 EXPIRY DATE NOW 17/6/2020.

7 AH123331 LEASE TO MARS INTERNATIONAL PTY LTD OF THE CAFE, GROUND FLOOR, MORVEN BROWN BUILDING, KENSINGTON CAMPUS, THE UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 18/2/2017.

8 AH561282 LEASE TO SUBWAY REALTY PTY LIMITED OF PREMISES KNOWN AS TENANCY 02, MORVEN BROWN BUILDING, KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 7/2/2018. OPTION OF RENEWAL: TWO OPTIONS OF 5 YEARS.

9 AH561283 LEASE TO BOOST JUICE PTY LTD OF PREMISES KNOWN AS TENANCY 03, LOWER GROUND FLOOR, MORVEN BROWN BUILDING, KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 24/2/2018. OPTION OF RENEWAL: 5 YEARS.

10 AI78005 LEASE TO ARC @ UNSW LIMITED OF TENANCY LG06, LOWER GROUND FLOOR, MORVEN BROWN BUILDING (C20) KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 30/6/2018. OPTION OF RENEWAL: 5 YEARS.

11 AI156022 LEASE TO EMLA ENTERPRISE PTY LTD BEING THE PREMISES KNOWN AS THE POST OFFICE SHOP, SHOP 100 TO 105 AND 105A, GROUND FLOOR, BANK BUILDING F22, LIBRARY WALK KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 18/5/2018.

AM568546 TRANSFER OF LEASE AI156022 LESSEE NOW K & J ENTERPRISES (AUS) PTY LTD

AM568547 VARIATION OF LEASE AI156022 EXPIRY DATE NOW 18/5/2023.

12 AI330423 LEASE TO TELSTRA CORPORATION LIMITED OF THE AREA SHOWN HATCHED IN PLAN WITH AC628748. EXPIRES: 28/2/2018. OPTION OF RENEWAL: 5 YEARS.

13 AI330424 LEASE TO JC KITCHEN PTY LTD OF LG58, LG58A, LG58B AND LG58C, LOWER GROUND FLOOR, MORVEN BROWN BUILDING, KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES.

END OF PAGE 2 - CONTINUED OVER

SECOND SCHEDULE (29 NOTIFICATIONS) (CONTINUED)

EXPIRES: 30/11/2020. OPTION OF RENEWAL: 7 YEARS.

14 AI695492 LEASE TO NATIONAL TERTIARY EDUCATION INDUSTRY UNION OF PREMISES KNOWN AS ROOMS 1210, 1211, 1212 AND 1213, LEVEL 12, MATHEWS BUILDING (F23) KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 31/7/2018. OPTION OF RENEWAL: FIVE YEARS.

15 AJ925265 LEASE TO RICOH AUSTRALIA PTY LIMITED OF ROOMS 157, 157A, 157B AND 157E, LEVEL 1, MATTHEWS BUILDING (F23) KENSINGTON CAMPUS UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 31/1/2018. OPTION OF RENEWAL: 1 YEAR AND ONE FURTHER OPTION OF 1 YEAR.

16 AK234590 LEASE TO SUSHIROLL UNSW PTY LTD OF TENANCY 6, THE FARE ARCADE, MATHEWS BUILDING (E24), UPPER KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 31/1/2021.

17 AK234676 LEASE TO SAVOURY ASIAN PTY LTD OF TENANCY 5, THE FARE ARCADE, MATHEWS BUILDING (E24), UPPER KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 31/1/2021.

18 AK234677 LEASE TO KMN CATERING PTY LTD OF TENANCY 4, THE FARE ARCADE, MATHEWS BUILDING (E24), UPPER KENSINGTON CAMPUS, UNIVERISTY OF NEW SOUTH WALES. EXPIRES: 31/1/2021.

19 AK234678 LEASE TO CAFFE BRIOSO PTY LTD OF TENANCY 7, THE FARE ARCADE, MATHEWS BUILDING (E24), UPPER KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 31/1/2021.

20 AK234679 LEASE TO RECEP DEMIR & HACI GUZEL OF TENANCY 2, THE FARE ARCADE, MATHEWS BUILDING (E24), UPPER KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 31/1/2021.

AK570523 TRANSFER OF LEASE AK234679 LESSEE NOW RECEP DEMIR & BEKIR DURUNESIL

21 AK291349 LEASE TO JEWEL OF INDIA ENTERPRISES PTY LIMITED OF TENANCY 3 , THE FARE ARCADE, MATHEWS BUILDING (E24), UPPER KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALE S. EXPIRES: 31/1/2021.

22 AK385575 LEASE TO DANNY PHO OF TENANCY 1, THE PAVILIONS, MATHEWS BUILDING (E24), UPPER KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 31/1/2021.

23 AK609081 LEASE TO UNICAFE PTY LTD OF SHOP T1, MATHEWS ARCADE, MATHEWS BUILDING, UNSW, KENSINGTON CAMPUS. EXPIRES: 31/3/2020.

* 24 AK674549 CAVEAT BY AUSGRID

* AM15961 CAVEATOR CONSENTED

* AM568546 CAVEATOR CONSENTED

END OF PAGE 3 - CONTINUED OVER

FOLIO: 1/510271 PAGE 4

SECOND SCHEDULE (29 NOTIFICATIONS) (CONTINUED)

* AM568547 CAVEATOR CONSENTED
* AM759007 CAVEATOR CONSENTED
* AM814497 CAVEATOR CONSENTED
* AM820029 CAVEATOR CONSENTED

25 AK942665 LEASE TO WH SMITH AUSTRALIA PTY LTD OF TENANCY 04 AND 05, LOWER GROUND FLOOR, MORVEN BROWN BUILDING (C20), KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 28/2/2019. OPTION OF RENEWAL: 3 YEARS (AND 2 FURTHER OPTIONS OF 3 YEARS).

26 AM15961 LEASE TO VODAFONE NETWORK PTY LTD OF THE PREMISES KNOWN AS "VODAFONE BTS SITE NO. 2939G" SHOWN HATCHED IN PLAN WITH AM15961. EXPIRES: 17/7/2021.

27 AM759007 LEASE TO ONE CAFE RANDWICK PTY LIMITED OF G2 & G2A, GROUND FLOOR, MORVEN BROWN BUILDING (C20) KENSINGTON CAMPUS UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 30/6/2022. OPTION OF RENEWAL: 5 YEARS.

28 AM814497 LEASE TO COMMONWEALTH BANK OF AUSTRALIA OF BANK BRANCH PREMISES, BANK BUILDING (F22), UPPER KENSINGTON CAMPUS, UNIVERSITY OF NEW SOUTH WALES. EXPIRES: 23/2/2022. OPTION OF RENEWAL: 5 YEARS.

29 AM820029 LEASE TO OPTUS MOBILE PTY LIMITED OF THE LEASE AREA SHOWN HATCHED IN PLAN ANNEXED WITH AM820029. EXPIRES: 8/6/2029.

NOTATIONS

UNREGISTERED DEALINGS: PP DP1227766.

*** END OF SEARCH ***

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 02 May 2018 11:12:39

Reference: LS003302

Address: Upper Campus, University of New South Wales, Sydney, NSW 2052

Table of Contents

Location Confidences

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

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

Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	Dept. Finance, Services & Innovation	02/05/2018	02/05/2018	Daily	-	-	-	-
Topographic Data	Dept. Finance, Services & Innovation	09/04/2018	09/04/2018	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	10/04/2018	09/02/2018	Monthly	1000	0	0	3
Contaminated Land: Records of Notice	Environment Protection Authority	10/04/2018	10/04/2018	Monthly	1000	0	0	1
Former Gasworks	Environment Protection Authority	24/04/2018	11/10/2017	Monthly	1000	0	0	0
National Waste Management Site Database	Geoscience Australia	02/02/2018	07/03/2017	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	12/04/2018	12/04/2018	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	11/01/2018	11/01/2018	Quarterly	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	10/04/2018	10/04/2018	Monthly	1000	1	1	1
Delicensed POEO Activities still Regulated by the EPA	Environment Protection Authority	10/04/2018	10/04/2018	Monthly	1000	0	0	2
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	10/04/2018	10/04/2018	Monthly	1000	0	0	0
UPSS Environmentally Sensitive Zones	Environment Protection Authority	14/04/2015	12/01/2010	As required	1000	1	1	1
UBD Business to Business Directory 1991 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business to Business Directory 1991 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business to Business Directory 1986 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business to Business Directory 1986 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	1
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1978 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1978 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1975 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	2	2
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	2	3
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	0	2	2
UBD Business Directory 1965 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1961 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1961 (Road & Area Matches)	Hardie Grant			Not required	150	-	3	3
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	1
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	4	5

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	1000	0	0	219
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	1000	-	2	29
Points of Interest	Dept. Finance, Services & Innovation	09/04/2018	09/04/2018	Annually	1000	0	1	68
Tanks (Areas)	Dept. Finance, Services & Innovation	09/04/2018	09/04/2018	Annually	1000	0	0	0
Tanks (Points)	Dept. Finance, Services & Innovation	09/04/2018	09/04/2018	Annually	1000	0	1	1
Major Easements	Dept. Finance, Services & Innovation	09/04/2018	09/04/2018	As required	1000	0	0	0
State Forest	Dept. Finance, Services & Innovation	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	18/01/2018	30/09/2017	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Botany Groundwater Management Zones	NSW Department of Primary Industries	15/03/2018	01/10/2005	As required	1000	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Office of Water / Water Administration Ministerial Corporation; Commonwealth of Australia (Bureau of Meteorology)	21/03/2016	01/12/2015	Annually	2000	0	0	453
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	-	1
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Soil Landscapes	NSW Office of Environment & Heritage	12/08/2014		None planned	1000	1	-	4
Atlas of Australian Soils	CSIRO	19/05/2017	17/02/2011	As required	1000	1	1	2
Standard Local Environmental Plan Acid Sulfate Soils	NSW Planning and Environment	07/10/2016	07/10/2016	As required	500	0	-	-
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	Dept. Finance, Services & Innovation	13/07/2017	01/07/2017	As required	1000	0	0	0
SEPP 14 - Coastal Wetlands	NSW Planning and Environment	17/12/2015	24/10/2008	Annually	1000	0	0	0
SEPP 26 - Littoral Rainforest	NSW Planning and Environment	17/12/2015	05/02/1988	Annually	1000	0	0	0
SEPP 71 - Coastal Protection	NSW Planning and Environment	17/12/2015	01/08/2003	Annually	1000	0	0	0
SEPP Major Developments 2005	NSW Planning and Environment	09/03/2013	25/05/2005	Under Review	1000	0	0	0
SEPP Strategic Land Use Areas	NSW Planning and Environment	01/08/2017	28/01/2014	Annually	1000	0	0	0
LEP - Land Zoning	NSW Planning and Environment	11/04/2018	16/03/2018	Quarterly	1000	2	4	68
LEP - Minimum Subdivision Lot Size	NSW Planning and Environment	04/04/2018	23/03/2018	Quarterly	0	0	-	-
LEP - Height of Building	NSW Planning and Environment	04/04/2018	23/03/2018	Quarterly	0	1	-	-
LEP - Floor Space Ratio	NSW Planning and Environment	04/04/2018	23/03/2018	Quarterly	0	0	-	-
LEP - Land Application	NSW Planning and Environment	04/04/2018	23/03/2018	Quarterly	0	1	-	-
LEP - Land Reservation Acquisition	NSW Planning and Environment	04/04/2018	09/03/2018	Quarterly	0	0	-	-

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
State Heritage Items	NSW Office of Environment & Heritage	04/04/2018	30/09/2016	Quarterly	1000	0	0	10
Local Heritage Items	NSW Planning and Environment	04/04/2018	23/03/2018	Quarterly	1000	0	1	154
Bush Fire Prone Land	NSW Rural Fire Service	05/02/2018	23/01/2018	Quarterly	1000	0	0	0
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment & Heritage	01/03/2017	16/12/2016	As required	1000	1	1	1
RAMSAR Wetlands	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	0
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	0
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	01/05/2018	01/05/2018	Daily	10000	-	-	-

Aerial Imagery 2016

Upper Campus, University of New South Wales, Sydney, NSW 2052

Scale:
0 25 50 100
Meters

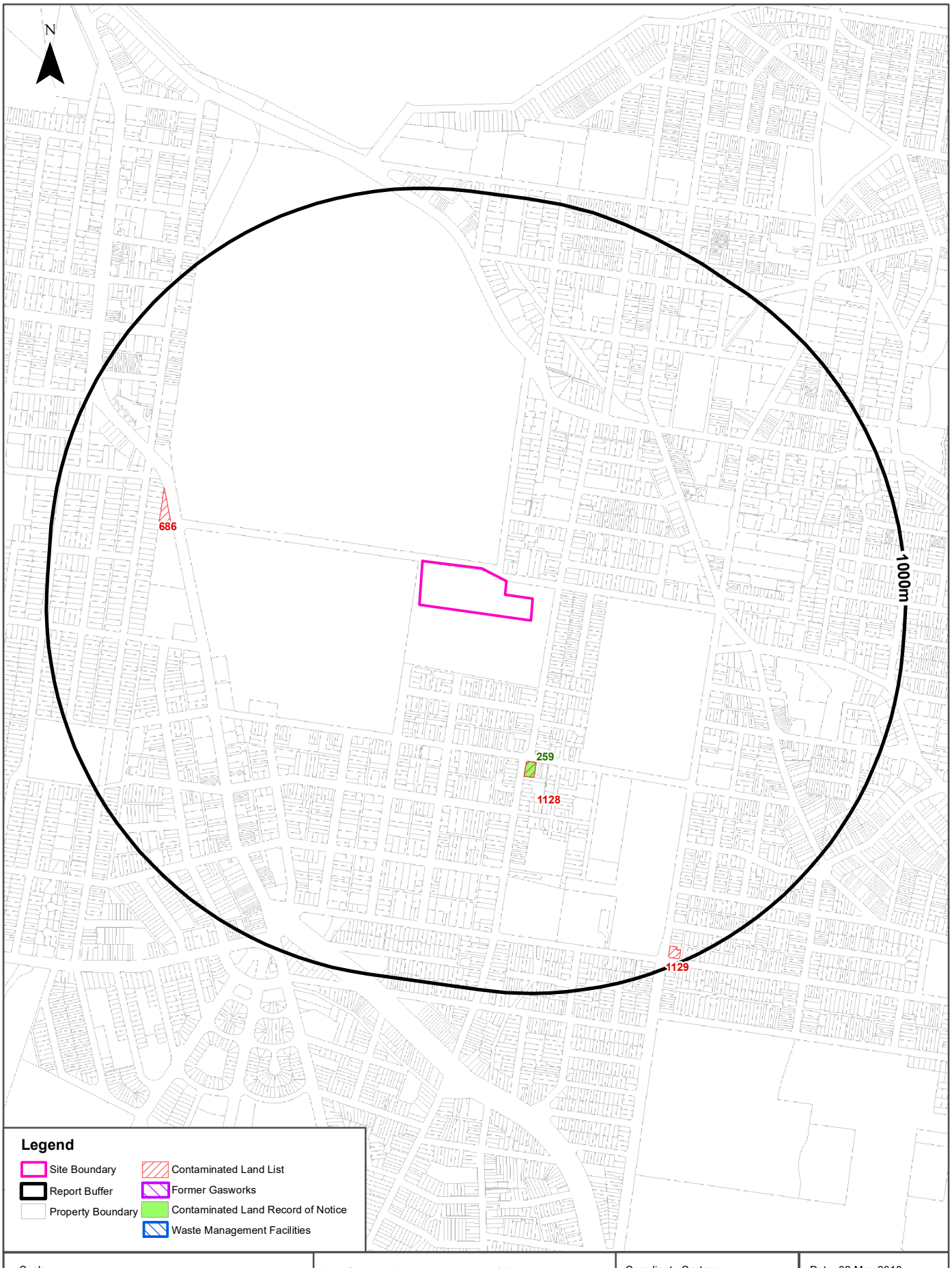
Data Source Aerial Imagery: © 2018 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 30 April, 2018

Contaminated Land & Waste Management Facilities

Upper Campus, University of New South Wales, Sydney, NSW 2052



Contaminated Land & Waste Management Facilities

Upper Campus, University of New South Wales, Sydney, NSW 2052

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
1128	7-Eleven Service Station	126-130 Barker Street	Randwick	Service Station	N/A - Site no longer on EPA Contaminated Land List	Previous EPA List	Premise Match	377m	South
686	Caltex Service Station	211-213 Anzac Parade	Kensington	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	681m	West
1129	Metro Petroleum	345 Avoca Street	Randwick	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	946m	South East

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

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

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

Contaminated Land & Waste Management Facilities

Upper Campus, University of New South Wales, Sydney, NSW 2052

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
259	7-Eleven Service Station	126-130 Barker Street	Randwick	8 current and 3 former	3257	Premise Match	377m	South

Contaminated Land Records of Notice Data Source: Environment Protection Authority

Former Gasworks

Former Gasworks within the dataset buffer:

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

Former Gasworks Data Source: Environment Protection Authority

National Waste Management Site Database

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

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

Waste Management Facilities Data Source: Geoscience Australia

EPA PFAS Investigation Program

Upper Campus, University of New South Wales, Sydney, NSW 2052

EPA PFAS Investigation Program

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

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

EPA PFAS Investigation Program: Environment Protection Authority

EPA Other Sites with Contamination Issues

Upper Campus, University of New South Wales, Sydney, NSW 2052

EPA Other Sites with Contamination Issues

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

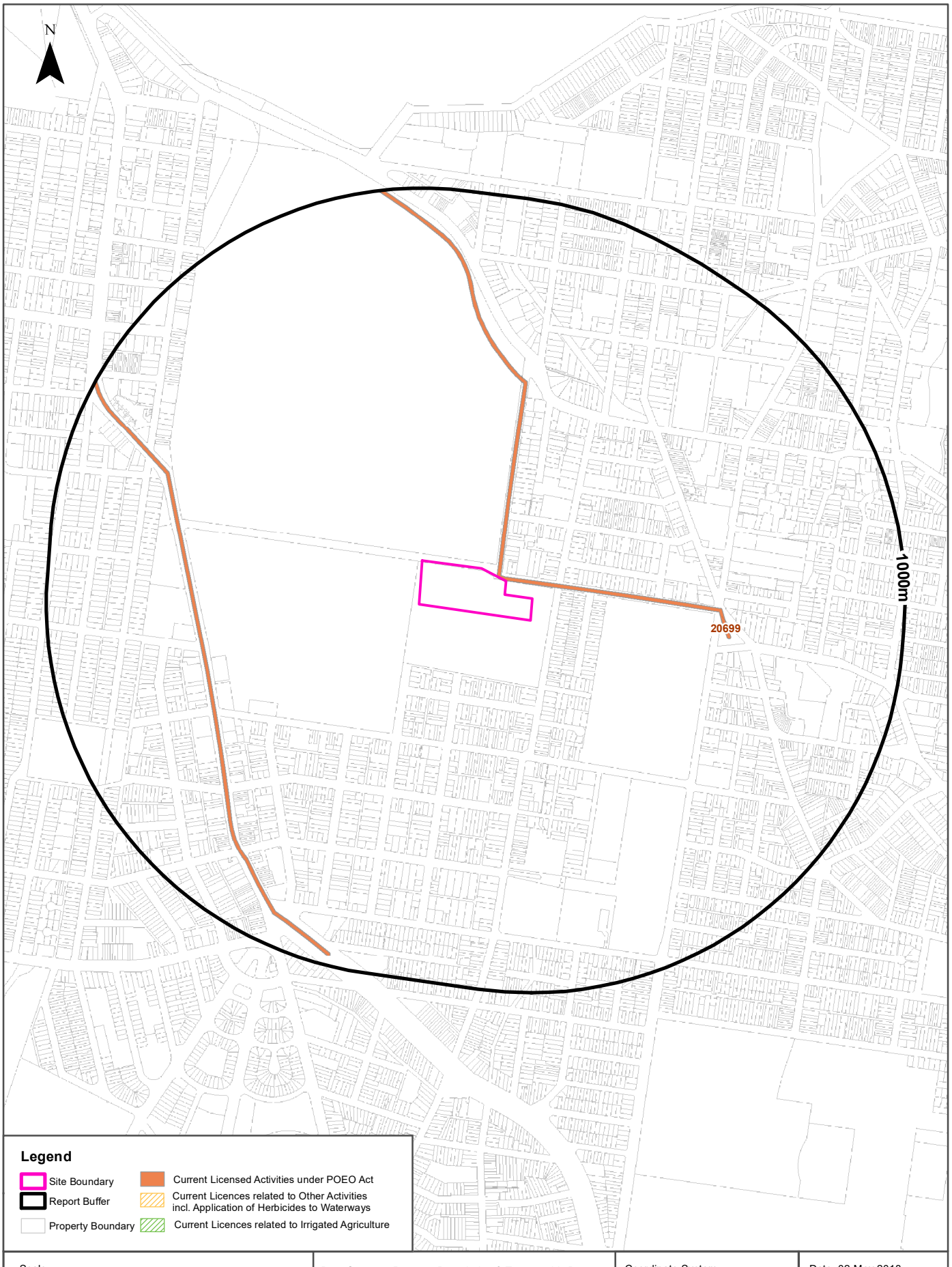
- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill

Sites within the dataset buffer:

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

Current EPA Licensed Activities

Upper Campus, University of New South Wales, Sydney, NSW 2052



EPA Activities

Upper Campus, University of New South Wales, Sydney, NSW 2052

Licensed Activities under the POEO Act 1997

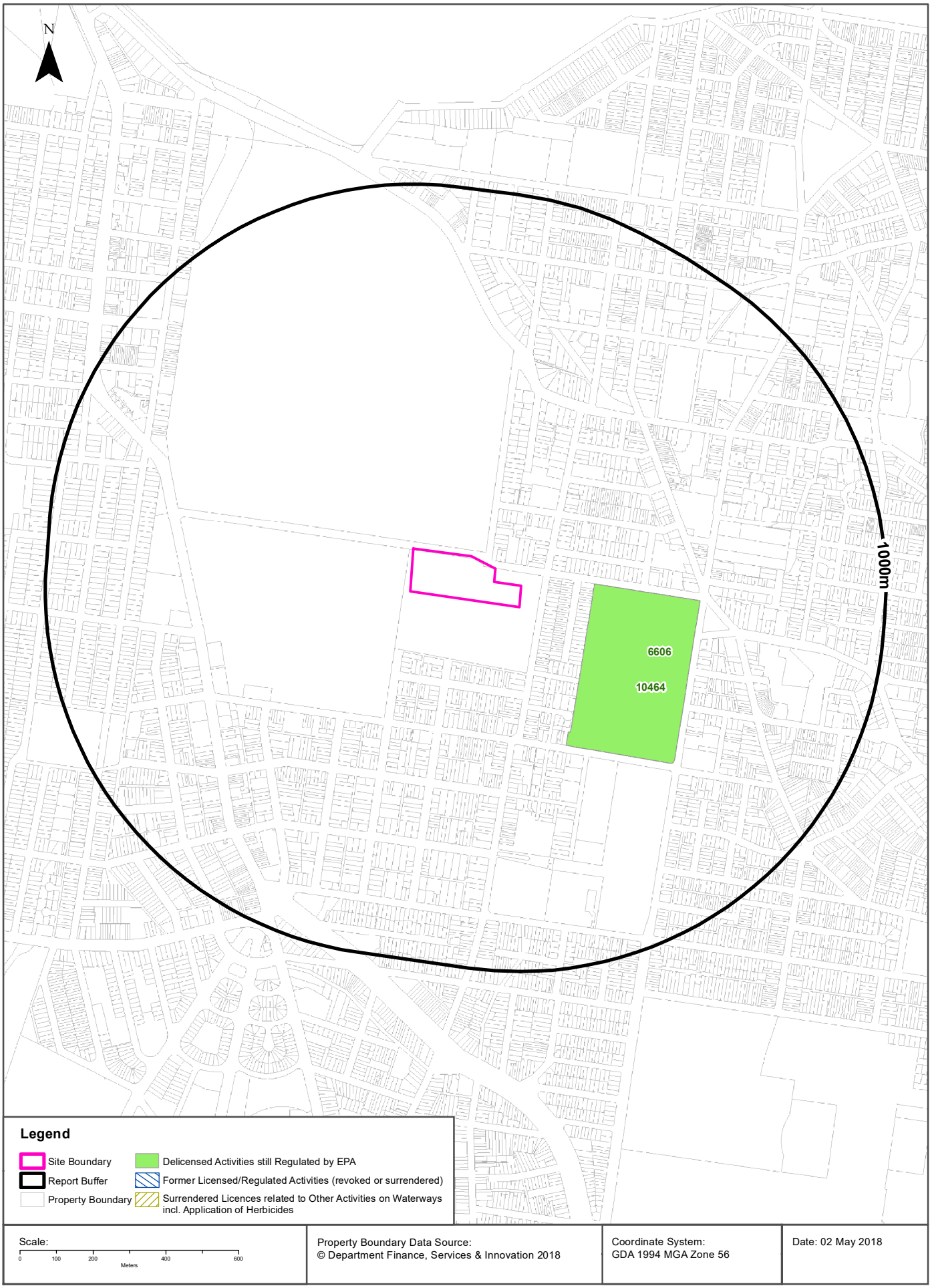
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
20699	ACCIONA INFRASTRUCTURE AUSTRALIA PTY LTD	CBD and South East Light Rail	CBD and South East Light Rail Alignment and Ancillary Sites	SYDNEY	Land-based extractive activity	Road Match	0m	Onsite

POEO Licence Data Source: Environment Protection Authority

Delicensed & Former Licensed EPA Activities

Upper Campus, University of New South Wales, Sydney, NSW 2052



EPA Activities

Upper Campus, University of New South Wales, Sydney, NSW 2052

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
6606	SOUTH EASTERN SYDNEY AND ILLAWARRA AREA HEALTH SERVICE	PRINCE OF WALES HOSPITAL	BARKER STREET	RANDWICK	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	191m	South East
10464	P.O.W. HOSPITAL PTY LIMITED	PRINCE OF WALES PRIVATE HOSPITAL	Barker Street	RANDWICK	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	191m	South East

Delicensed Activities Data Source: Environment Protection Authority

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

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

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

Former Licensed Activities Data Source: Environment Protection Authority

UPSS Sensitive Zones

Upper Campus, University of New South Wales, Sydney, NSW 2052

Historical Business Directories

Upper Campus, University of New South Wales, Sydney, NSW 2052

1991 Business to Business Directory Records Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

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

1991 Business to Business Directory Records Road or Area Matches

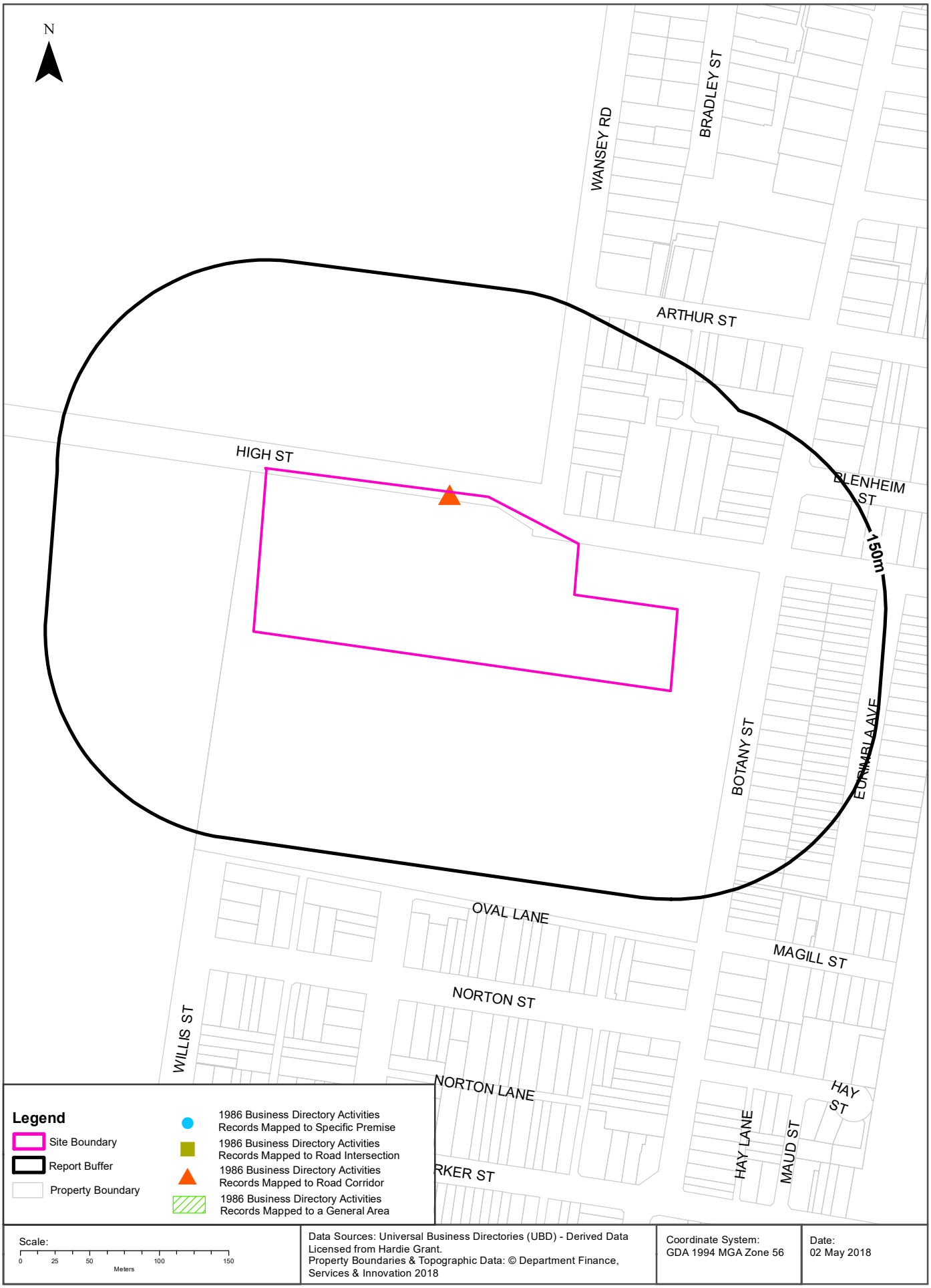
Records from the 1991 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

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

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

1986 Historical Business Directory Records

Upper Campus, University of New South Wales, Sydney, NSW 2052



Data Sources: Universal Business Directories (UBD) - Derived Data Licensed from Hardie Grant.
Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2018

Coordinate System: GDA 1994 MGA Zone 56

Date: 02 May 2018

Historical Business Directories

Upper Campus, University of New South Wales, Sydney, NSW 2052

1986 Business to Business Directory Records Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

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

1986 Business to Business Directory Records Road or Area Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
MEDICAL PRACTITIONERS.	Donnellan, M. J., 65 High St., Randwick.	54581	Road Match	0m

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

Historical Business Directories

Upper Campus, University of New South Wales, Sydney, NSW 2052

1982 Business Directory Records
Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

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

1982 Business Directory Records
Road or Area Matches

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

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

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

Historical Business Directories

Upper Campus, University of New South Wales, Sydney, NSW 2052

1978 Business Directory Records
Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

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

1978 Business Directory Records
Road or Area Matches

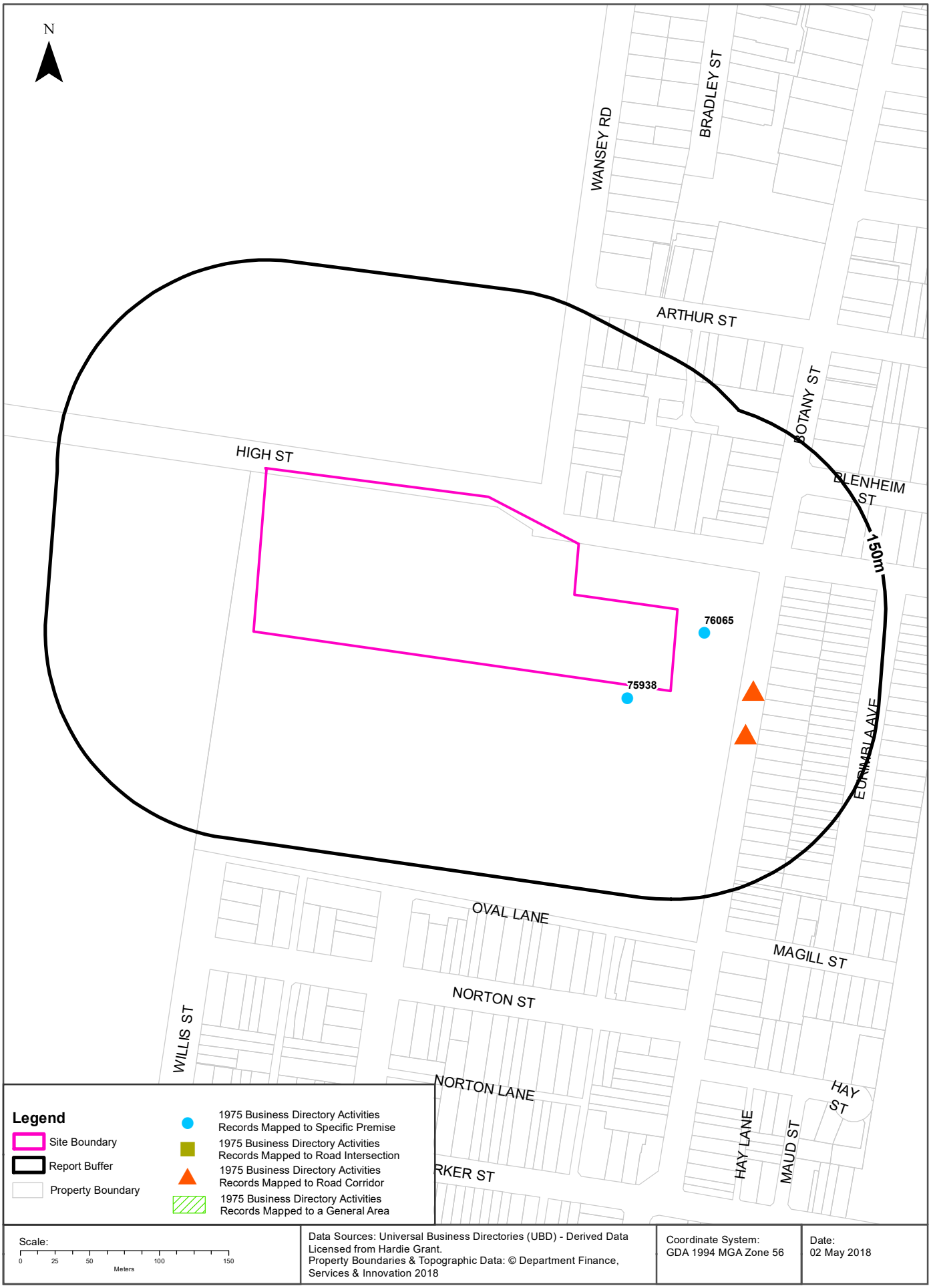
Records from the 1978 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

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

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

1975 Historical Business Directory Records

Upper Campus, University of New South Wales, Sydney, NSW 2052



Historical Business Directories

Upper Campus, University of New South Wales, Sydney, NSW 2052

1975 Business Directory Records
Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
SCHOOLS, COLLEGES., TECHNICAL	School of Biological Sciences, High St., Randwick	75938	Premise Match	9m	South East
SCHOOLS., SPECIAL	Wallace Worth School Medicine, The, High St., Randwick.	76065	Premise Match	21m	East

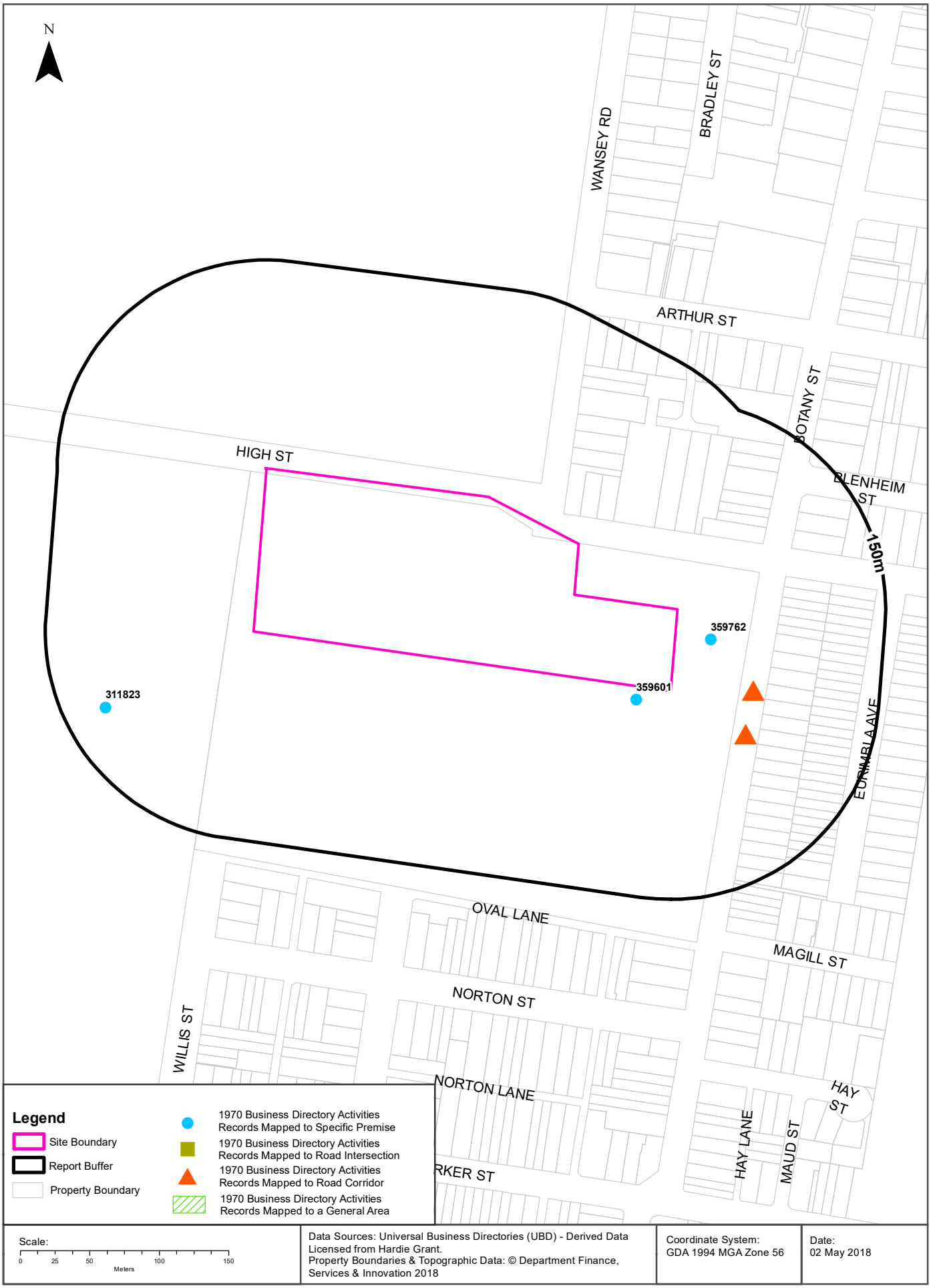
1975 Business Directory Records
Road or Area Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
MOTOR GARAGES &/OR ENGINEERS.	Varsity Auto Centre, Botany St., Randwick.	59716	Road Match	49m
MOTOR SPARE PARTS DEALERS- RETAIL	Varsity Auto Centre, Botany St., Randwick.	62360	Road Match	49m

1970 Historical Business Directory Records

Upper Campus, University of New South Wales, Sydney, NSW 2052



Data Sources: Universal Business Directories (UBD) - Derived Data Licensed from Hardie Grant.
Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2018

Coordinate System: GDA 1994 MGA Zone 56

Date: 02 May 2018

Historical Business Directories

Upper Campus, University of New South Wales, Sydney, NSW 2052

1970 Business Directory Records
Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
SCHOOLS/COLLEGES-TECHNICAL(S146)	School of Biological Sciences,Cnr. High & Botany Sts.,Randwick	359601	Premise Match	10m	South East
SCHOOLS-SPECIAL (S152)	Wallace Worth School of Medicine (The),Cnr. High & Botany Sts.,Randwick	359762	Premise Match	26m	East
GOVT. DEPTS. -STATE (G500)	University of New South Wales.,Anne Pde.,Kensington	311823	Premise Match	120m	West

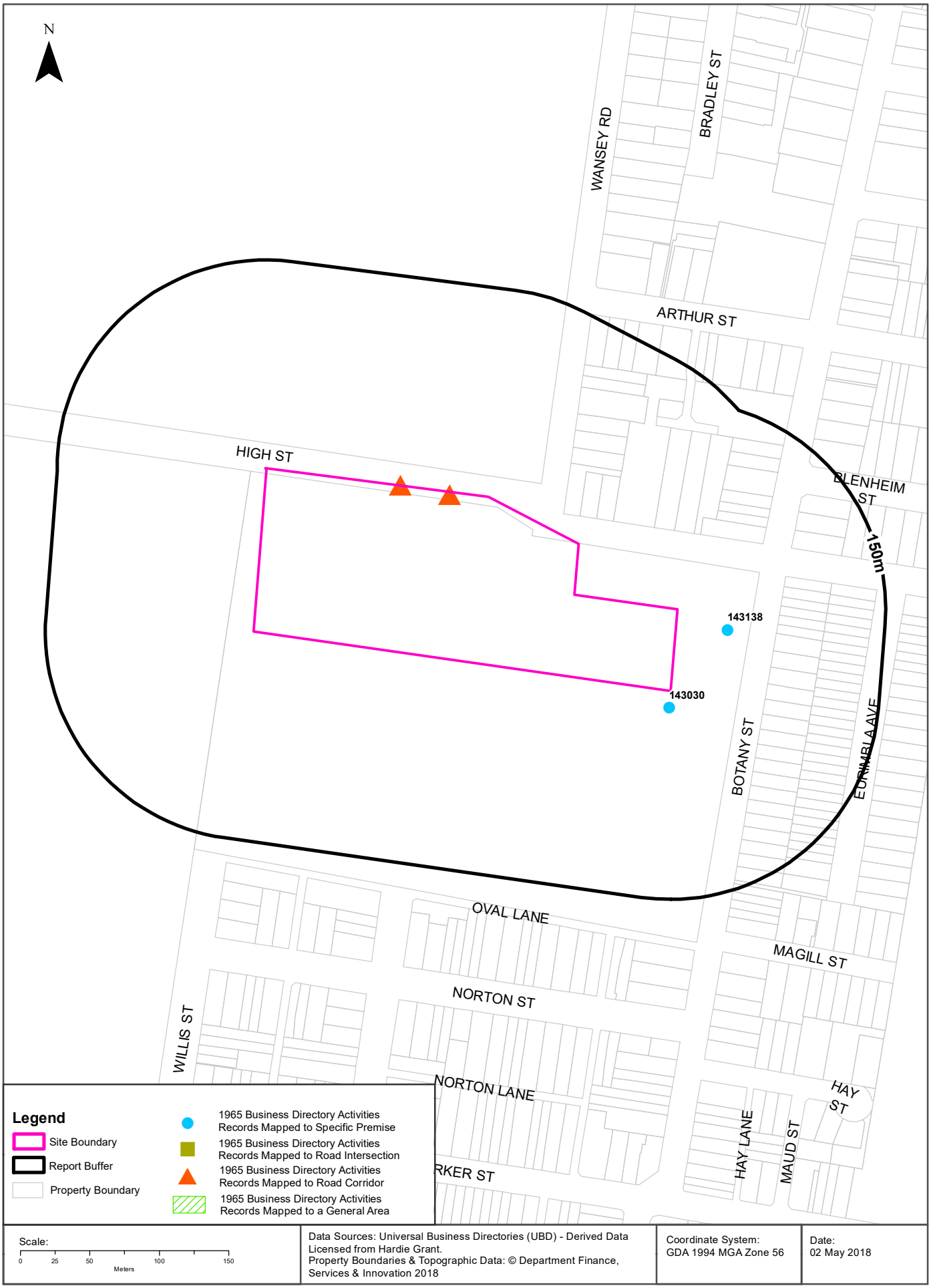
1970 Business Directory Records
Road or Area Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
MOTOR SPARE PARTS DEALERS-RETAIL (M728)	Varsity Auto Centre,Botany St.,Randwick	342055	Road Match	49m
MOTOR GARAGES & ENGINEERS(M6S6)	Varsity Auto Centre,Botany St.RANDWICK	338813	Road Match	49m

1965 Historical Business Directory Records

Upper Campus, University of New South Wales, Sydney, NSW 2052



Historical Business Directories

Upper Campus, University of New South Wales, Sydney, NSW 2052

1965 Business Directory Records
Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
Schools/Colleges - Technical	School of Biological Sciences, , Cnr, High & Botany Sts., Randwick	143030	Premise Match	12m	South East
Schools - Special	Wallace Worth School of Medicine (The), Cnr. High & Botany Sts., Randwick	143138	Premise Match	37m	East

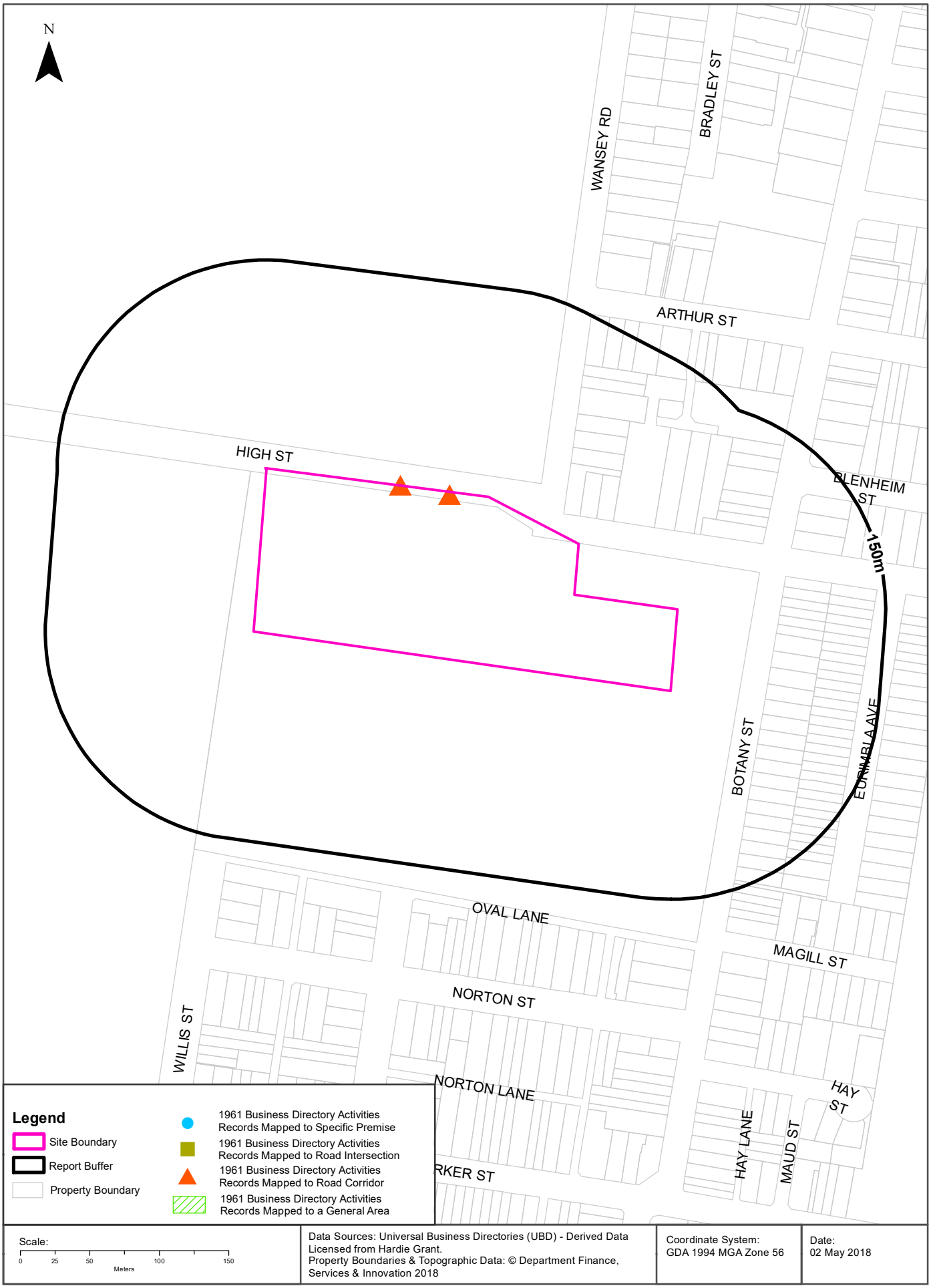
1965 Business Directory Records
Road or Area Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
Piano Tuners &/or Repairers	Continental Piano Co., 22 High St., Randwick	133049	Road Match	0m
Ambulances	Eastern Suburbs Ambulance, , High St., Randwlck	46106	Road Match	0m

1961 Historical Business Directory Records

Upper Campus, University of New South Wales, Sydney, NSW 2052



Historical Business Directories

Upper Campus, University of New South Wales, Sydney, NSW 2052

1961 Business Directory Records
Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

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

1961 Business Directory Records
Road or Area Matches

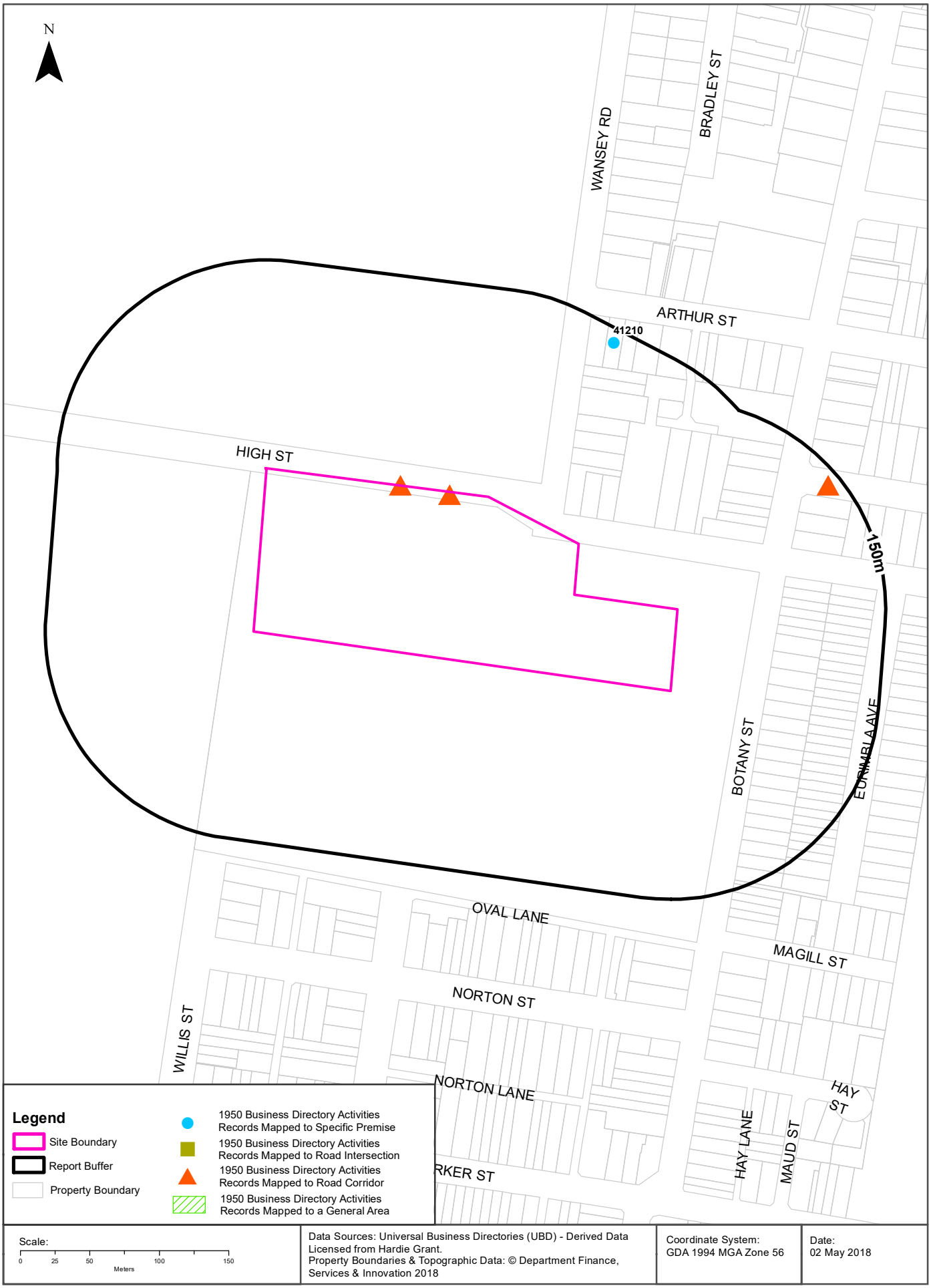
Records from the 1961 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
PIANO TUNERS &/OR REPAIRERS	Continental Piano Co., 22 High St., Randwick	358219	Road Match	0m
AMBULANCES	Eastern Suburbs Ambulance, High St., Randwick	267744	Road Match	0m
CLUBS & SPORTS BODIES	Municipal Golf Links, High St., Randwick	291656	Road Match	0m

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

1950 Historical Business Directory Records

Upper Campus, University of New South Wales, Sydney, NSW 2052



Historical Business Directories

Upper Campus, University of New South Wales, Sydney, NSW 2052

1950 Business Directory Records
Premise or Road Intersection Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Rollex Products, 4 Arthur St., Randwick	41210	Premise Match	140m	North East

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

1950 Business Directory Records
Road or Area Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
FLATS, RESIDENTIALS, Etc.	Deblacam, High St., Randwick	45075	Road Match	0m
ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Donald, A. and Son, 22 High St., Randwick	40635	Road Match	0m
AMBULANCES	Eastern Suburbs Ambulance, High St., Randwick	1715	Road Match	0m
FLATS, RESIDENTIALS, Etc.	Lisrouan, High St., Randwick	45244	Road Match	0m
BOOT & SHOE REPAIRERS	Moffatt, J., Blenheim St., Randwick	10463	Road Match	125m

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

Historical Business Directories

Upper Campus, University of New South Wales, Sydney, NSW 2052

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

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

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
MOTOR GARAGES & ENGINEERS	Gillies, I. D., 15 Arthur St. RANDWICK	347227	1961	Premise Match	278m	North East
MOTOR GARAGES &/OR ENGINEERS	Gillies, I. D., 15 Arthur St., Randwick	83802	1950	Premise Match	278m	North East
Motor Garages & Service Stations	Weidmann Motors Pty Ltd, 129 Botany St., Randwick	53989	1991	Premise Match	356m	South East
MOTOR GARAGES & SERVICE STATIONS.	Weidman Motors Pty. Ltd., 129 Botany St., Randwick.	65693	1986	Premise Match	356m	South East
DRY CLEANERS, PRESSERS & DYERS	Normays Dry Cleaners, 152 Barker St., Randwick	35565	1950	Premise Match	415m	South East
DRY CLEANERS & PRESSERS.	Westley Dry Cleaner, 154 Barker St., Randwick.	25565	1986	Premise Match	418m	South East
DRY CLEANERS & PRESSERS. (D8500)	Westley Dry Cleaner, 154 Barker St., Randwick. 2031.	24092	1982	Premise Match	418m	South East
DRY CLEANERS, PRESSERS &/OR DYERS	Normays Dry Cleaner, 154 Barker St., Randwick.	20894	1978	Premise Match	418m	South East
DRY CLEANERS,PRESSERS/DYERS (D710)	Normays Dry Cleaner,154 Barker St.,Randwick	292425	1970	Premise Match	418m	South East
DRY CLEANERS, PRESSERS&/OR DYERS.	Normay's Dry Cleaner, 154 Barker St., Randwick.	24246	1975	Premise Match	422m	South East
DRY CLEANERS, PRESSERS / DYERS	Normays Pty. Ltd., 152-156 Baker St., Randwick	299204	1961	Premise Match	434m	South East
DRY CLEANERS, PRESSERS / DYERS	Hanava Dry Cleaning, 66 Belmore Rd., Randwick	299129	1961	Premise Match	448m	North East
DRY CLEANERS,PRESSERS/DYERS (D710)	Havana Dry Cleaning 66 Belmore Rd.,Randwick	292337	1970	Premise Match	449m	North East
Dry Cleaners, Pressers/Dyers	Havana Dry Cleaning, 66 Belmore Rd., Randwick	76186	1965	Premise Match	449m	North East
DRY CLEANERS, PRESSERS & DYERS	Hanava Dry Cleaning, 66 Belmore Rd., Randwick	35273	1950	Premise Match	449m	North East
DRY CLEANERS & PRESSERS.	Weldon Dry Cleaners, 103 Belmore Rd., Randwick.	25561	1986	Premise Match	478m	East
DRY CLEANERS & PRESSERS. (D8500)	Weldon Dry Cleaners, 103 Belmore Rd., Randwick. 2031.	24090	1982	Premise Match	478m	East
DRY CLEANERS, PRESSERS & DYERS	Wendon Dry Cleaners Pty. Ltd., 103 Belmore Rd., Randwick.,	35825	1950	Premise Match	478m	East
DRY CLEANERS, PRESSERS / DYERS	Weldon Dry Cleaners, 103 Belmore Rd., Randwick	299316	1961	Premise Match	488m	East
DRY CLEANERS & PRESSERS.	Randwick Dry Cleaners, 125 Belmore Rd., Randwick.	25488	1986	Premise Match	493m	East
DRY CLEANERS & PRESSERS. (D8500)	Randwick Dry Cleaners, 125 Belmore Rd., Randwick. 2031.	24020	1982	Premise Match	493m	East
DRY CLEANERS, PRESSERS &/OR DYERS	Randwick Dry Cleaners, 125 Belmore Rd., Randwick.	20927	1978	Premise Match	493m	East
DRY CLEANERS, PRESSERS&/OR DYERS.	Randwick Dry Cleaners, 125 Belmore Rd., Randwick.	24299	1975	Premise Match	493m	East
DRY CLEANERS,PRESSERS/DYERS (D710)	Randwick Dry Cleaners,131 Belmore Rd.,Randwick	292468	1970	Premise Match	498m	East
Dry Cleaners, Pressers/Dyers	Randwick Dry Cleaners, 131 Belmore Rd., Randwick	76304	1965	Premise Match	498m	East

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
Motor Garages & Engineers - Randwick	Alison Service Station, 140 Alison Rd.	123258	1965	Road Intersection	513m	North East
MOTOR GARAGES & ENGINEERS	Alison Service Station, 140 Alison Rd. RANDWICK	346491	1961	Road Intersection	513m	North East
MOTOR GARAGES &/OR ENGINEERS	Alison Service Station, 140 Alison Rd., Randwick	83369	1950	Road Intersection	513m	North East
MOTOR SERVICE STATIONS-PETROL, Etc.	Alison Service Station, 140 Alison Rd., Randwick	85742	1950	Road Intersection	513m	North East
DRY CLEANERS, PRESSERS & DYERS	Lyke-Nu Dry Cleaning Co. Ltd. 37 Belmore Rd., Randwick	35468	1950	Premise Match	529m	North East
DRY CLEANERS, PRESSERS & DYERS	Sharpe Bros., 5 Belmore Rd., Randwick; Wilkes Ave., Artarmon; 146 Alison Rd., Randwick	35687	1950	Premise Match	539m	North East
DRY CLEANERS, PRESSERS & DYERS	Sharpe Bros., 5 Belmore Rd., Randwick; Wilkes Ave., Artarmon; 146 Alison Rd., Randwick	35688	1950	Premise Match	539m	North East
DRY CLEANERS, PRESSERS & DYERS	Sharpe Bros., 5 Belmore Rd., Randwick; Wilkes Ave., Artarmon; 146 Alison Rd., Randwick	35689	1950	Premise Match	539m	North East
MOTOR GARAGES & ENGINEERS(M6S6)	S. & L. Auto Repairs,9 Cuthill St.RANDWICK	338564	1970	Premise Match	546m	East
Motor Garages & Engineers - Randwick	S. & L. Auto Repairs, 9 Cuthill St.	123271	1965	Premise Match	546m	East
MOTOR GARAGES & ENGINEERS	S. & L. Auto Repairs, 9 Cuthill St. RANDWICK	348085	1961	Premise Match	546m	East
DRY CLEANERS, PRESSERS&/OR DYERS.	Sharpe Bros., 5 Belmore Rd., Randwick.	24327	1975	Premise Match	557m	North East
DRY CLEANERS, PRESSERS & DYERS	Sharpe Bros., 5 Belmore Rd., Randwick; Wilkes Ave., Artarmon; 146 Alison Rd., Randwick	35690	1950	Premise Match	557m	North East
MOTOR GARAGES &/OR ENGINEERS	Avoca Garage, 251 Avoca St., Randwick	83403	1950	Premise Match	589m	South East
Motor Garages & Engineers - Randwick	Nock, G., 190 Alison Rd.	123268	1965	Premise Match	598m	North East
MOTOR SERVICE STATIONS-PETROL, Etc.	Morrow and Smith, 188 Alison Rd., Randwick	86223	1950	Premise Match	598m	North East
MOTOR GARAGES &/OR ENGINEERS	Morrow and Smith, 188 Alison Rd., Randwick	84108	1950	Premise Match	598m	North East
Motor Garages & Engineers - Randwick	Lloyd, Peter Pty. Ltd., Cnr. Avoca & Barker Sts.	123266	1965	Road Intersection	619m	South East
Motor Garages & Service Stations	Shore Petroleum Service Station, 8 Perouse Rd., Randwick	53885	1991	Premise Match	620m	East
MOTOR GARAGES & SERVICE STATIONS.	Esso Randwick Service Station, 8 Perouse Rd., Randwick.	64656	1986	Premise Match	620m	East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Esso Randwick Service Station, 8 Perouse Rd., Randwick. 2031.	56726	1982	Premise Match	620m	East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Esso Servicenter, 8 Perouse Rd,, Randwick.	50022	1978	Premise Match	620m	East
MOTOR GARAGES &/OR ENGINEERS.	Esso Servicenter 8 Perouse Rd. Randwick,	58853	1975	Premise Match	622m	East
MOTOR SERVICE STATIONS - PETROL, OIL	Esso Servicenter 8 Perouse Rd., Randwick.	61734	1975	Premise Match	622m	East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	BP Doncaster Service Station 217 Anzac Pde., Kensington, 2033.	56204	1982	Premise Match	626m	West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Doncaster Service Station. 217 Anzac Pde.. Kensington.	49538	1978	Premise Match	626m	West
MOTOR SERVICE STATIONS - PETROL, OIL	BP Doncaster Service Station, 217 Anzac Pde., Kensington.	61495	1975	Premise Match	626m	West
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	B.P. Doncaster Service Station,217 Anzac Pde.,Kensington,2033KENSINGTON	340797	1970	Premise Match	626m	West
Motor Garages & Engineers - Kensington	Green Frog (The), 217 Anzac Pde.	122803	1965	Premise Match	626m	West
MOTOR GARAGES & ENGINEERS	Green Frog (The), 217 Anzac Pde. KENSINGTON	347271	1961	Premise Match	626m	West
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Green Frog, 217 Anzac Pde. KENSINGTON	350647	1961	Premise Match	626m	West
MOTOR SERVICE STATIONS-PETROL, Etc.	Green Frog (The), 217 Anzac Pde., Kensington	86009	1950	Premise Match	626m	West

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
MOTOR SERVICE STATIONS-PETROL, Etc.	Green Frog (The), 217 Anzac Pde., Kensington	86008	1950	Premise Match	626m	West
MOTOR GARAGES &/OR ENGINEERS	Green Frog (The), 217 Anzac Pde., Kensington	83822	1950	Premise Match	626m	West
MOTOR GARAGES & SERVICE STATIONS.	Caltex Service Station, 219A Anzac Pde., Kensington.	64402	1986	Premise Match	628m	West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Cooneys (Golden Fleece) Service Station, 219 Anzac Pde.,Kensington. 2033.	56565	1982	Premise Match	628m	West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Esso Kensington Service Station, 219A Anzac Pde., Kensington.2033.	56702	1982	Premise Match	628m	West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Cooneys (Golden Fleece) Service Station, 219 Anzac Pde., Kensington.	49840	1978	Premise Match	628m	West
MOTOR GARAGES &/OR ENGINEERS.	Cooney's Service Station Pty. Ltd., 219a Anzac Pde., Kensington.	58696	1975	Premise Match	628m	West
MOTOR GARAGES &/OR ENGINEERS.	Cooney, N., 219 Anzac Pde., Kensington.	58697	1975	Premise Match	628m	West
MOTOR GARAGES & ENGINEERS(M6S6)	Cooneys Service Station Pty. Ltd.,219a Anzac Parade.KENSINGTON	337611	1970	Premise Match	628m	West
Motor Garages & Engineers - Kensington	Golden Fleece Service Station, 219a Anzac Pde.	122802	1965	Premise Match	628m	West
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	University Service Station Pty. Ltd., 219a Anzac Pde. KENSINGTON	351242	1961	Premise Match	628m	West
MOTOR GARAGES & SERVICE STATIONS.	Mannys Service Centre, 380 Anzac Pde., Kingsford.	65036	1986	Premise Match	632m	South West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Mannys Service Centre, 380 Anzac Pde., Kingsford. 2032.	57139	1982	Premise Match	632m	South West
DRYCLEANING MACHINERY & SUPPLIES MFRS. &/OR DISTS.	Auto-Coin-Dry Cleaning Pty. Ltd., 221 Anzac Pde., Kensington.	20998	1978	Premise Match	634m	West
DRY CLEANERS, PRESSERS &/OR DYERS	Peter, Barry Laundries Pty. Ltd., 221 Anzac Pde., Kensington.	20913	1978	Premise Match	634m	West
DRYCLEANING MACHINERY & SUPPLIES MFRS. &/OR DISTS.	Auto-Coin-Dry Cleaning Pty. Ltd., 221 Anzac Pde., Kensington.	24433	1975	Premise Match	634m	West
DRY CLEANERS, PRESSERS&/OR DYERS.	Kensington Norge Village. 221 Anzac Pde., Kensington.	24103	1975	Premise Match	634m	West
DRY CLEANING MACHINERY & SUPPLIES-MFRS.&/OR DISTS. (D720)	Auto-Coin Dry Cleaning Pty.Ltd.,221 Anzac Pde.,Kensington	292584	1970	Premise Match	634m	West
DRY CLEANERS,PRESSERS/DYERS (D710)	Kensington Norge Village,221 Anzac Pde.,Kensington (&Branch)	292360	1970	Premise Match	634m	West
Dry Cleaners, Pressers/Dyers	Kensington Norge Village, 221 Anzac Pde., Kensington (& Branch)	76215	1965	Premise Match	634m	West
MOTOR GARAGES & ENGINEERS	Kingsford Car Sales, 247-249 Anzac Pde. KINGSFORD	347509	1961	Premise Match	639m	South West
Motor Garages & Service Stations	Coogee Bay Road Auto Port, 1 Coogee Bay Rd, Randwick 2031	53661	1991	Premise Match	642m	East
BATTERY SERVICE STATIONS	Randwick Garage (J. B. Williams, Propr.), 1 Coogee Bay Rd., Randwick	6635	1950	Premise Match	642m	East
MOTOR GARAGES &/OR ENGINEERS	Randwick Garage, 1 Coogee Bay Rd., Randwick	84257	1950	Premise Match	642m	East
MOTOR SERVICE STATIONS-PETROL, Etc.	Randwick Garage, 1 Coogee Bay Rd., Randwick	86318	1950	Premise Match	642m	East
MOTOR GARAGES &/OR ENGINEERS	Williams, J. B., 1 Coogee Bay Rd., Coogee	84565	1950	Premise Match	643m	East
MOTOR SERVICE STATIONS - PETROL, OIL	Barringtons Service Station, 245 Anzac Pde., Kingsford.	61430	1975	Premise Match	643m	South West
MOTOR GARAGES & SERVICE STATIONS.	Rob & Robb Automotive, Rear 231 Anzac Pde., Kingsford.	65347	1986	Premise Match	643m	West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	White. Peter Service Station, 241 Anzac Pde., Kensington.	51103	1978	Premise Match	644m	South West
MOTOR GARAGES &/OR ENGINEERS.	White, Peter Service Station, 241 Anzac Pde., Kensington,	59779	1975	Premise Match	644m	South West
MOTOR GARAGES & ENGINEERS(M6S6)	White,Peter Service Station,241 Anzac Pde.KENSINGTON	338880	1970	Premise Match	644m	South West

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
Motor Garages & Engineers - Kensington	White, Peter Service Station, 241 Anzac Pde.	122810	1965	Premise Match	644m	South West
MOTOR GARAGES & ENGINEERS	White, Peter Service Station, 241 Anzac Pde. KILLARA	348441	1961	Premise Match	644m	South West
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	White, Peter, 241 Anzac Pde. KILLARA	351285	1961	Premise Match	644m	South West
MOTOR SERVICE STATIONS-PETROL, Etc.	White, Peter, 241 Anzac Pde., Kensington	86523	1950	Premise Match	644m	South West
MOTOR GARAGES & SERVICE STATIONS.	Boyded (Randwick) Pty. Ltd., 265 Avoca St., Randwick.	64082	1986	Premise Match	645m	South East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Boyded (Randwick) Pty. Ltd., 265 Avoca St., Randwick. 2031,	56156	1982	Premise Match	645m	South East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Boyded (Randwick) Pty. Ltd., 265 Avoca St., Randwick.	49445	1978	Premise Match	645m	South East
MOTOR GARAGES &/OR ENGINEERS.	Boyded (Randwick) Pty. Ltd., 265 Avoea St., Randwick.	58469	1975	Premise Match	645m	South East
MOTOR GARAGES & ENGINEERS(M6S6)	Avoca Garage & Motor Body Works,265 Avoca St.RANDWICK	337229	1970	Premise Match	645m	South East
MOTOR GARAGES & ENGINEERS	Avoca Garage & Motor Body Works, 265 Avoca St. RANDWICK	346573	1961	Premise Match	645m	South East
Motor Garages & Engineers - Kingsford	Barrington's Service Station, 245 Anzac Pde.	122827	1965	Premise Match	646m	South West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Barringtons Service Station, 245 Anzac Pde., Kingsford.	49381	1978	Premise Match	649m	South West
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Barringtons Service Station,245 Anzac Pde.KENSINGTON	340824	1970	Premise Match	649m	South West
Motor Service Stations - Petrol, Oil, Etc. - Kingsford	Barringtons Service Station, 243 Anzac Pde.	125801	1965	Premise Match	651m	South West
MOTOR GARAGES & ENGINEERS	Barrington's Service Station, 243-245 Anzac Pde.	346607	1961	Premise Match	651m	South West
MOTOR GARAGES & ENGINEERS	Randwick Garage, 1 Coogee Bay Rd. RANDWICK	347981	1961	Premise Match	652m	East
MOTOR GARAGES & SERVICE STATIONS.	Amoco Kingsford Service Station, 398 Anzac Pde., Kingsford.	63893	1986	Premise Match	657m	South West
MOTOR SERVICE STATIONS-PETROL, Etc.	Fairway Service Station, 243 Anzac Pde., Kingsford	85950	1950	Premise Match	658m	South West
MOTOR GARAGES & ENGINEERS	Cook, J. S., 198 Alison Rd. RANDWICK	346938	1961	Premise Match	664m	North East
Motor Garages & Service Stations	Randwick Auto Port, 155 Avoca St., Randwick	53801	1991	Premise Match	685m	North East
MOTOR GARAGES & SERVICE STATIONS.	Randwick Auto Port, 155 Avoca St , Randwick.	65324	1986	Premise Match	685m	North East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Randwick Auto Port, 155 Avoca St., Randwick. 2031.	57442	1982	Premise Match	685m	North East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Randwick Auto Port, 155 Avoca St., Randwick.	50720	1978	Premise Match	685m	North East
MOTOR GARAGES &/OR ENGINEERS.	Randwick Auto Port, 155 Avoca St., Randwick.	59445	1975	Premise Match	685m	North East
MOTOR GARAGES & ENGINEERS(M6S6)	Randwick Auto Port,155-159 Avoca St.RANDWICK	338482	1970	Premise Match	685m	North East
Motor Garages & Engineers - Randwick	Randwick Auto Port, 155-159 Avoca St.	123270	1965	Premise Match	686m	North East
MOTOR GARAGES & ENGINEERS(M6S6)	B.P. Garage,211 Anzac Pde.KENSINGTON	337240	1970	Premise Match	707m	West
DRY CLEANERS,PRESSERS/DYERS (D710)	Kingsford Dry Cleaners,432 Anzac Pde.,Kingsford	292362	1970	Premise Match	709m	South West
Dry Cleaners, Pressers/Dyers	Kingsford Dry Cleaners, 432 Anzac Pde., Kingsford	76217	1965	Premise Match	709m	South West
MOTOR GARAGES &/OR ENGINEERS	Destro, L., 273 Anzac Pde., Kingsford	83683	1950	Premise Match	714m	South West
MOTOR GARAGES &/OR ENGINEERS	Kingsford Car Repairs, 273 Anzac Pde., Kingsford	83957	1950	Premise Match	714m	South West
DRY CLEANERS, PRESSERS & DYERS	Randwick Dry Cleaners (R. McKenna, Propr.), 56 Perouse Rd., Randwick	35631	1950	Premise Match	719m	South East

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
MOTOR GARAGES & SERVICE STATIONS.	Kensington Auto Port, 300 Anzac Pde., Kensington.	64939	1986	Premise Match	734m	North West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Kensington Auto Port. 300 Anzac Pde Kensington. 2033.	57039	1982	Premise Match	734m	North West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Kensington Auto Port, 300 Anzac Pde., Kensington.	50320	1978	Premise Match	734m	North West
MOTOR GARAGES &/OR ENGINEERS.	Kensington Auto Port. 300 Anzac Pde., Kensington.	59105	1975	Premise Match	734m	North West
MOTOR GARAGES & ENGINEERS(M6S6)	Kensington Auto Port,300 Anzac Pde.KENSINGTON	338095	1970	Premise Match	734m	North West
Motor Garages & Engineers - Kensington	Kensington Auto Port, 300 Anzac Pde.	122805	1965	Premise Match	734m	North West
DRY CLEANERS, PRESSERS&/OR DYERS.	Star Brite Dry Cleaning, 68 Perouse Rd., Randwick.	24358	1975	Premise Match	734m	South East
DRY CLEANERS, PRESSERS&/OR DYERS.	Weldon Dry Cleaners, 122 Avoca St., Randwick.	24402	1975	Premise Match	737m	North East
DRY CLEANERS & PRESSERS.	Avoca Dry Cleaners, 141 Avoca St., Randwick.	25224	1986	Premise Match	738m	North East
DRY CLEANERS & PRESSERS. (D8500)	Avoca Dry Cleaners. 141 AvocaSt., Randwick. 2031.	23754	1982	Premise Match	738m	North East
DRY CLEANERS, PRESSERS &/OR DYERS	Weldon Dry Cleaners, 141 Avoca St., Randwick.	20985	1978	Premise Match	738m	North East
MOTOR GARAGES & ENGINEERS(M6S6)	Chadwick & Avefy,456 Anzac Pde.KINGSFORD	337557	1970	Premise Match	741m	South West
Motor Service Stations - Petrol, Oil, Etc. - Kingsford	Total Service Station, 456 Anzac Pde.	125808	1965	Premise Match	741m	South West
MOTOR SERVICE STATIONS-PETROL, Etc.	Doncaster Garage, 290 Anzac Pde., Kensington	85927	1950	Premise Match	743m	North West
MOTOR GARAGES &/OR ENGINEERS	Doncaster Garage, 290 Anzac Pde., Kensington	83689	1950	Premise Match	743m	North West
MOTOR GARAGES &/OR ENGINEERS	Wilson, P. F., 290 Anzac Pde., Kensington	84573	1950	Premise Match	743m	North West
Motor Garages & Engineers - Kensington	Grand Prix Garage, Cnr. Day Ave. & Day Lane	122801	1965	Road Intersection	744m	West
MOTOR GARAGES & ENGINEERS	Chadwick & Avery, 456 Anzac Pde. KINGSFORD	346856	1961	Premise Match	751m	South West
MOTOR GARAGES & ENGINEERS	Parade Filling Station, 456 Anzac Pde. KINGSFORD	347844	1961	Premise Match	751m	South West
MOTOR GARAGES & ENGINEERS	Doncaster Garage, 290 Anzac Pde. KENSINGTON	347058	1961	Premise Match	753m	North West
MOTOR GARAGES & ENGINEERS	Reliable Service, 284 Anzac Pde., KENSINGTON	348008	1961	Premise Match	753m	North West
DRY CLEANERS & PRESSERS.	Star Brite Dry Cleaning, 68 Perouse Rd., Randwick. .	25530	1986	Premise Match	756m	South East
DRY CLEANERS & PRESSERS. (D8500)	Star Brite Dry Cleaning, 68 Perouse Rd., Randwick. 2031.	24063	1982	Premise Match	756m	South East
DRY CLEANERS, PRESSERS &/OR DYERS	Star Brite Dry Cleaning, 68 Perouse Rd., Randwick.	20967	1978	Premise Match	756m	South East
Motor Garages & Engineers - Waverly	Waverley Autos, 15 Victoria St.	123512	1965	Premise Match	757m	East
MOTOR GARAGES & SERVICE STATIONS.	Southern Cross Auto Port. 301 Anzac Pde., Kingsford.	65489	1986	Premise Match	760m	South West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Southern Cross Auto Port, 301 Anzac Pde., Kingsford.	50864	1978	Premise Match	760m	South West
MOTOR GARAGES & ENGINEERS(M6S6)	Southern Cross Auto Port,301 Anzac Pde.KINGSFORD	338638	1970	Premise Match	760m	South West
DRY CLEANERS & PRESSERS.	Gemini, 110 Avoca St., Randwick.	25318	1986	Premise Match	761m	North East
DRY CLEANERS & PRESSERS. (D8500)	Gemini, 110 AvocaSt., Randwick. 2031.	23850	1982	Premise Match	761m	North East
DRY CLEANERS, PRESSERS & DYERS	Kleanit Valet Service, 53 Perouse Rd., Randwick	35381	1950	Premise Match	765m	South East
MOTOR GARAGES & ENGINEERS(M6S6)	John's Auto Repairs,295 Houston Lane.KINGSFORD	338068	1970	Premise Match	768m	South West
MOTOR GARAGES &/OR ENGINEERS.	Southern Cross Auto Port, 301 Anzac Pde., Kingsford.	59561	1975	Premise Match	782m	South West

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
Motor Service Stations - Petrol, Oil, Etc. - Kingsford	Southern Cross Auto Port (Shell), 303 Anzac Pde.	125807	1965	Premise Match	783m	South West
DRY CLEANERS, PRESSERS & DYERS	Leo and Co., Military Rd., Watsons Bay and 26a Cowper St., Bondi Junction	35404	1950	Premise Match	812m	North
Motor Garages & Service Stations	Road & Track Automotive Services, 115 Avoca St., Randwick	53816	1991	Premise Match	819m	North East
MOTOR GARAGES & SERVICE STATIONS.	Road & Track Automotive Services, 115 Avoca St., Randwick.	65346	1986	Premise Match	819m	North East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Road & Track Automotive Services. 115 Avoca St., Randwick.2031.	57473	1982	Premise Match	819m	North East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Road & Track Automotive Services. 115 Avoca St., Randwick.	50751	1978	Premise Match	819m	North East
MOTOR GARAGES &/OR ENGINEERS.	Road & Track Automotive Services. 115 Avoca St., Randwick.	59469	1975	Premise Match	819m	North East
MOTOR GARAGES &/OR ENGINEERS.	T.S.W TradingCo. 115 Avoca St. Randwick.	59618	1975	Premise Match	819m	North East
DRY CLEANERS, PRESSERS & DYERS	Coogee Laundry, 115 Avoca St., Randwick	35164	1950	Premise Match	819m	North East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	South Kensington Garage, 12 Rainbow St., Kingsford. 2032.	57598	1982	Premise Match	846m	South West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	South Kensington Garage, 12 Rainbow St., Kingsford.	50857	1978	Premise Match	846m	South West
MOTOR GARAGES &/OR ENGINEERS.	South Kensington Garage, 12 Rainbow St., Kingsford.	59555	1975	Premise Match	846m	South West
MOTOR SERVICE STATIONS - PETROL, OIL	South Kensington Garage. 12 Rainbow St., Kingsford.	61953	1975	Premise Match	846m	South West
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	South Kensington Garage,12 Rainbow St.KINGSFORD	341477	1970	Premise Match	846m	South West
MOTOR GARAGES & ENGINEERS(M6S6)	South Kensington Garage,12 Rainbow St.KINGSFORD	338629	1970	Premise Match	846m	South West
Motor Garages & Engineers - Kingsford	South Kensington Garage, 12 Rainbow St.	122833	1965	Premise Match	846m	South West
Motor Service Stations - Petrol, Oil, Etc. - Kingsford	South Kensington Garage, 12 Rainbow St.	125806	1965	Premise Match	846m	South West
MOTOR GARAGES & ENGINEERS	South Kensington Garage, 12 Rainbow St. KINGSFORD	348167	1961	Premise Match	846m	South West
BATTERY SERVICE STATIONS	South Kensington Garage, 12 Rainbow St., Kingsford	6644	1950	Premise Match	846m	South West
MOTOR SERVICE STATIONS-PETROL, Etc.	South Kensington Garage, 12 Rainbow St., Kingsford	86405	1950	Premise Match	846m	South West
MOTOR GARAGES &/OR ENGINEERS	South Kensington Garage, 12 Rainbow St., Kingsford	84393	1950	Premise Match	846m	South West
MOTOR GARAGES & SERVICE STATIONS.	Lightning Service Station, 72 Alison Rd., Randwick.	64984	1986	Premise Match	879m	North
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Lightning Service Station, 72 Alison Rd., Randwick. 2031.	57089	1982	Premise Match	879m	North
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Lightning Service Station, 72 Alison Rd., Randwick.	50377	1978	Premise Match	879m	North
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Lightning Service Station,72 Alison Rd.RANDWICK	341279	1970	Premise Match	879m	North
Motor Service Stations - Petrol, Oil, Etc. - Randwick	Lightning Service Station, 72 Alison Rd.	126080	1965	Premise Match	879m	North
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Lightning Service Station, 72 Alison Rd. RANDWICK	350788	1961	Premise Match	879m	North
MOTOR SERVICE STATIONS-PETROL, Etc.	Lightning Service Station, 72 Alison Rd., Randwick	86139	1950	Premise Match	879m	North
MOTOR GARAGES & ENGINEERS(M6S6)	Randwick Auto Body,107 Avoca St.RANDWICK	338481	1970	Premise Match	885m	North East
DRY CLEANERS & PRESSERS.	Lawrence Dry Cleaners, 343 Anzac Pde., Kingsford.	25402	1986	Premise Match	891m	South West
DRY CLEANERS & PRESSERS. (D8500)	Lawrence Dry Cleaners, 343 Anzac Pde., Kingsford. 2032.	23923	1982	Premise Match	891m	South West
Motor Garages & Engineers - Randwick	Randwick Auto Body, 107 Avoca St.	123269	1965	Premise Match	894m	North East

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
MOTOR GARAGES & ENGINEERS	Savoy Garage, 107 Avoca St. RANDWICK	348098	1961	Premise Match	894m	North East
DRY CLEANERS & PRESSERS.	Doncaster Co-op Laundry, Doncaster Shopping Centre, 260 Anzac Pde., Kensington.	25282	1986	Premise Match	896m	North West
MOTOR GARAGES & SERVICE STATIONS.	Alison Road Auto Port, 54 Alison Rd., Randwick.	63874	1986	Premise Match	897m	North
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Alison Road Auto Port, 54 Alison Rd., Randwick. 2031.	55944	1982	Premise Match	897m	North
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Alison Road Auto Port, 54 Alison Rd., Randwick.	49224	1978	Premise Match	897m	North
MOTOR GARAGES &/OR ENGINEERS.	Alison Road Auto Port, 54 Alison Rd., Randwick.	58314	1975	Premise Match	897m	North
DRY CLEANERS, PRESSERS & DYERS	Lykes Dry Cleaners, 345 Anzac Pde., Kingsford	35481	1950	Premise Match	898m	South West
DRY CLEANERS, PRESSERS & DYERS	Bestway Dry Cleaners, 359 Anzac Pde., Kingsford	35121	1950	Premise Match	901m	South West
DRY CLEANERS, PRESSERS & DYERS	Jones, Dry Cleaners Pty. Ltd. 357 Anzac Pde., Kingsford	35366	1950	Premise Match	916m	South West
DRY CLEANERS, PRESSERS&/OR DYERS.	Twin Star Dry Cleaners, 240 Anzac Pde., Kensington	24389	1975	Premise Match	921m	North West
DRY CLEANERS,PRESSERS/DYERS (D710)	Twin Star Dry Cleaning & Pressing Service,240 Anzac Pde.,Kensington	292557	1970	Premise Match	921m	North West
Dry Cleaners, Pressers/Dyers	Twin Star Dry Cleaning & Pressing Service, 240 Anzac Pde., Kensington	76369	1965	Premise Match	921m	North West
DRY CLEANERS, PRESSERS / DYERS	Twin Star Dry Cleaning & Pressing Service, 240 Anzac Pde., Kensington	299305	1961	Premise Match	921m	North West
DRY CLEANERS, PRESSERS & DYERS	Brennan, A. C., 240 Anzac Pde., Kensington	35136	1950	Premise Match	921m	North West
DRY CLEANERS, PRESSERS & DYERS	Twin Star, 240 Anzac Pde., Kensington	35805	1950	Premise Match	921m	North West
DRY CLEANERS, PRESSERS & DYERS	Norton, E. I., 78 Houston Rd., Kingsford	35570	1950	Premise Match	932m	South West
DRY CLEANERS, PRESSERS&/OR DYERS.	Westley Dry Cleaners, 161 Anzac Pete., Kensington.	24419	1975	Premise Match	961m	North West
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	South Randwick Service Station, 345 Avoca St. REDFERN	351100	1961	Premise Match	963m	South East
MOTOR GARAGES &/OR ENGINEERS.	South Randwick Service Station Pty. Ltd., 345 Avoca St., Randwick.	59558	1975	Premise Match	972m	South East
MOTOR GARAGES & ENGINEERS(M6S6)	South Randwick Service Station Pty. Ltd.,345 Avoca St.RANDWICK	338632	1970	Premise Match	972m	South East
Motor Garages & Engineers - Randwick	South Randwick Service Station Pty. Ltd., 345 Avoca St.	123272	1965	Premise Match	972m	South East
MOTOR GARAGES & ENGINEERS(M6S6)	Central Service Station,7 Buanerong Rd.KINGSFORD	337554	1970	Premise Match	979m	South West
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Central Service Station,7 Bunnerong Rd.KINGSFORD	340959	1970	Premise Match	979m	South West
MOTOR GARAGES & SERVICE STATIONS.	George Anthony Mechanical Repairs, 16 Alison Rd., Randwick.	64735	1986	Premise Match	990m	North
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Swanson Service Station, 16 Alison Rd., Randwick.	50913	1978	Premise Match	990m	North
MOTOR GARAGES &/OR ENGINEERS.	Swanson Service Station. 16 AlisonRd., Randwick.	59607	1975	Premise Match	990m	North
MOTOR GARAGES & ENGINEERS(M6S6)	Moule,Les,16 Alison Rd.RANDWICK	338301	1970	Premise Match	990m	North
MOTOR GARAGES & ENGINEERS(M6S6)	Swanson Service Station,16 Alison Rd.RANDWICK	338700	1970	Premise Match	990m	North
Motor Garages & Engineers - Randwick	Moule, Les, 16 Alison Rd.	123267	1965	Premise Match	990m	North
Motor Garages & Engineers - Randwick	Swanson Service Station, 16 Alison Rd.	123273	1965	Premise Match	990m	North
MOTOR GARAGES & ENGINEERS	Moule, Les, 16 Alison Rd. RANDWICK	347754	1961	Premise Match	990m	North
MOTOR GARAGES & ENGINEERS	Swanson Service Station, 16 Alison Rd. RANDWICK	348252	1961	Premise Match	990m	North

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
MOTOR GARAGES &/OR ENGINEERS	Swanson, C. O., 16 Alison Rd., Randwick	84448	1950	Premise Match	990m	North
DRY CLEANERS, PRESSERS / DYERS	Park View Dry Cleaning & Pressing, 16 Gardeners Rd., Kingsford	299215	1961	Premise Match	998m	South West

Historical Business Directories

Upper Campus, University of New South Wales, Sydney, NSW 2052

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

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

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
MOTOR GARAGES &/OR ENGINEERS.	Varsity Auto Centre, Botany St., Randwick.	59716	1975	Road Match	49m
MOTOR GARAGES & ENGINEERS(M6S6)	Varsity Auto Centre,Botany St.RANDWICK	338813	1970	Road Match	49m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Varsity Auto Centre, Barker St., Kensington. 2033.	57786	1982	Road Match	353m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Varsity Auto Centre, Barker St;, Kensington.	51034	1978	Road Match	353m
Motor Garages & Service Stations	Varsity Auto Centre Barker St., Randwick	53975	1991	Road Match	360m
MOTOR GARAGES & SERVICE STATIONS.	Varsity Auto Centre, Barker St., Randwick.	65664	1986	Road Match	360m
Motor Garages & Engineers - Randwick	Avoca Garage & Motor Body Works, 265 Avoca St.	123259	1965	Road Match	484m
MOTOR GARAGES & SERVICE STATIONS.	Avoca Rae Service Station, Avoca St., Randwick.	63996	1986	Road Match	484m
Motor Garages & Service Stations	Kensington Auto Port, Anzac Pde, Kensington. 2033	53764	1991	Road Match	575m
MOTOR GARAGES & SERVICE STATIONS.	Vasilas, J. & S. & H. Pty. Ltd. Esso Self Serve, Anzac Pde., Kensington.	65666	1986	Road Match	575m
MOTOR GARAGES &/OR ENGINEERS	B. and H. Motors, Middle Lane, Kingsford	83405	1950	Road Match	595m
MOTOR SERVICE STATIONS-PETROL, Etc.	B. and H. Motors, Middle Lane, Kingsford	85766	1950	Road Match	595m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Grand Prix Garage, Day Ave., Kensington.	50188	1978	Road Match	605m
MOTOR GARAGES & ENGINEERS(M6S6)	Grand Prix Garage,Day Ave.KENSINGTON	337925	1970	Road Match	605m
MOTOR GARAGES &/OR ENGINEERS.	Grand Prix Garage. Day Ave., Kensington.	58985	1975	Road Match	605m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Amoco Kingsford Service Station, Anzac Pde., Kingsford. 2032.	55971	1982	Road Match	612m
Motor Garages & Engineers - Kingsford	Amoco Service Station, Anzac Pde.	122825	1965	Road Match	612m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Kingsford Motor Industries Pty. Ltd., Anzac Pde., Kingsford.	50337	1978	Road Match	612m
MOTOR GARAGES &/OR ENGINEERS.	Kingsford Motor industries Pty. Ltd., Anzac Pde., Kingsford.	59113	1975	Road Match	612m
MOTOR GARAGES &/OR ENGINEERS.	Kingsford Motor Industries, Anzac Pde., Kingsford.	59112	1975	Road Match	612m
MOTOR GARAGES & SERVICE STATIONS.	Mobil Kingsford Service Station, Anzac Pde., Kingsford.	65107	1986	Road Match	612m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Mobil KingsfordService Station, Anzac Pde., Kingsford. 2032.	57221	1982	Road Match	612m
MOTOR GARAGES & SERVICE STATIONS.	Coogee Bay Road Auto Port, Coogee Bay Rd., Randwick.	64502	1986	Road Match	626m
DRY CLEANERS, PRESSERS & DYERS	Tasman Dry Cleaners. 49 Barrowdale Rd., Kingsford	35768	1950	Road Match	826m

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
Motor Garages & Engineers - Kingsford	Central Service Station, 7 Bunnerong Rd.	122828	1965	Road Match	972m
Motor Service Stations - Petrol, Oil, Etc. - Kingsford	Central Service Station, 7 Bunnerong Rd.	125803	1965	Road Match	972m
MOTOR GARAGES & ENGINEERS	Central Service Station, 7 Bunnerong Rd. KINGSFORD	346854	1961	Road Match	972m
MOTOR GARAGES &/OR ENGINEERS.	Central Service Station, 7 Bunnerong Rd., Kingsford.	58649	1975	Road Match	972m
MOTOR SERVICE STATIONS - PETROL, OIL	Central Service Station, 7 Bunnerong Rd., Kingsford.	61637	1975	Road Match	972m

Aerial Imagery 2016

Upper Campus, University of New South Wales, Sydney, NSW 2052

Scale:	Data Sources: Aerial Imagery © Department Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 02 May 2018

0 50 100
Meters

Aerial Imagery 2009

Upper Campus, University of New South Wales, Sydney, NSW 2052

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Coordinate System: GDA 1994 MGA Zone 56

Date: 30 April, 2018

Aerial Imagery 2000

Upper Campus, University of New South Wales, Sydney, NSW 2052

Scale:
0 25 50 100
Meters

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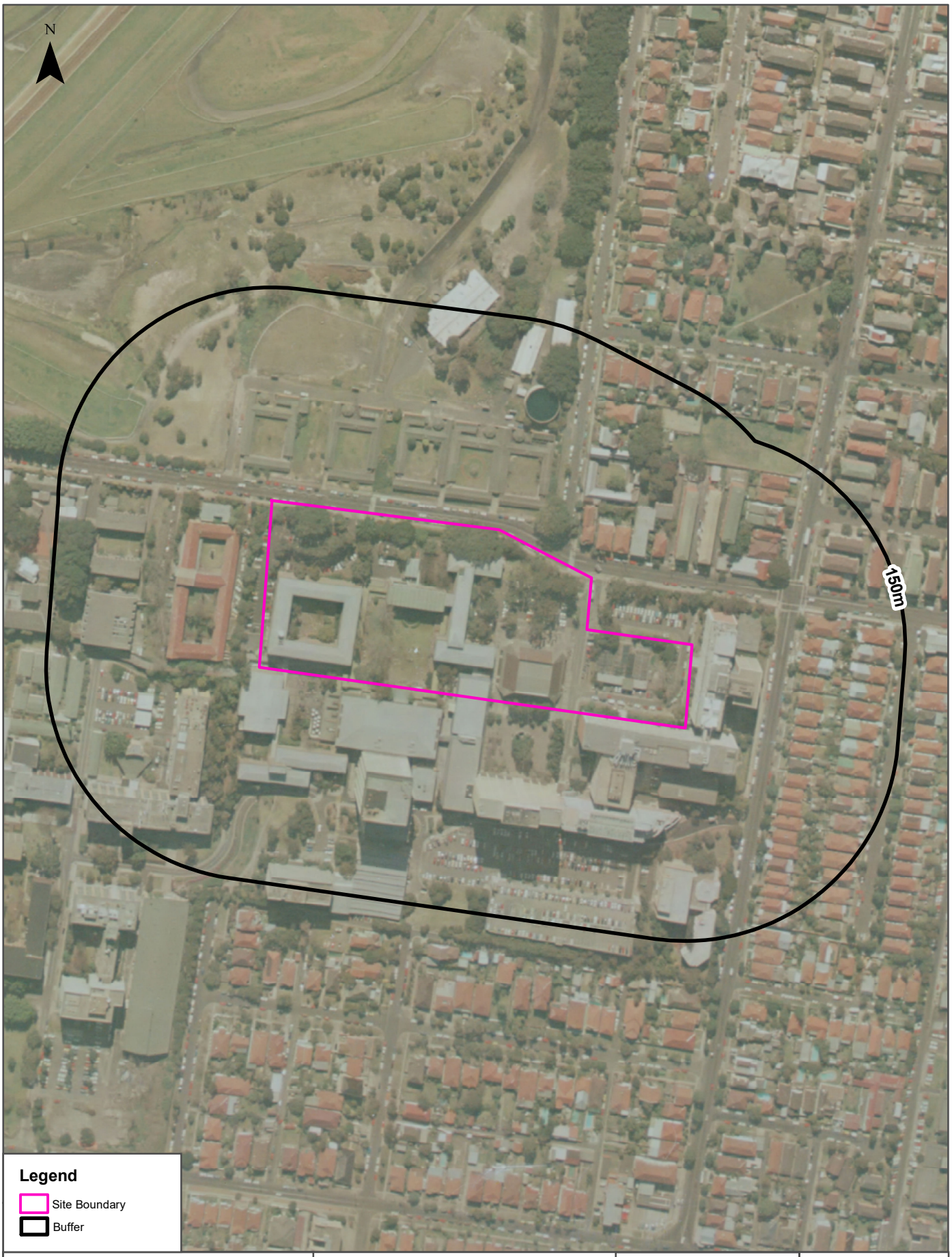
Coordinate System:
GDA 1994 MGA Zone 56

Date: 30 April, 2018

Aerial Imagery 1991

Upper Campus, University of New South Wales, Sydney, NSW 2052

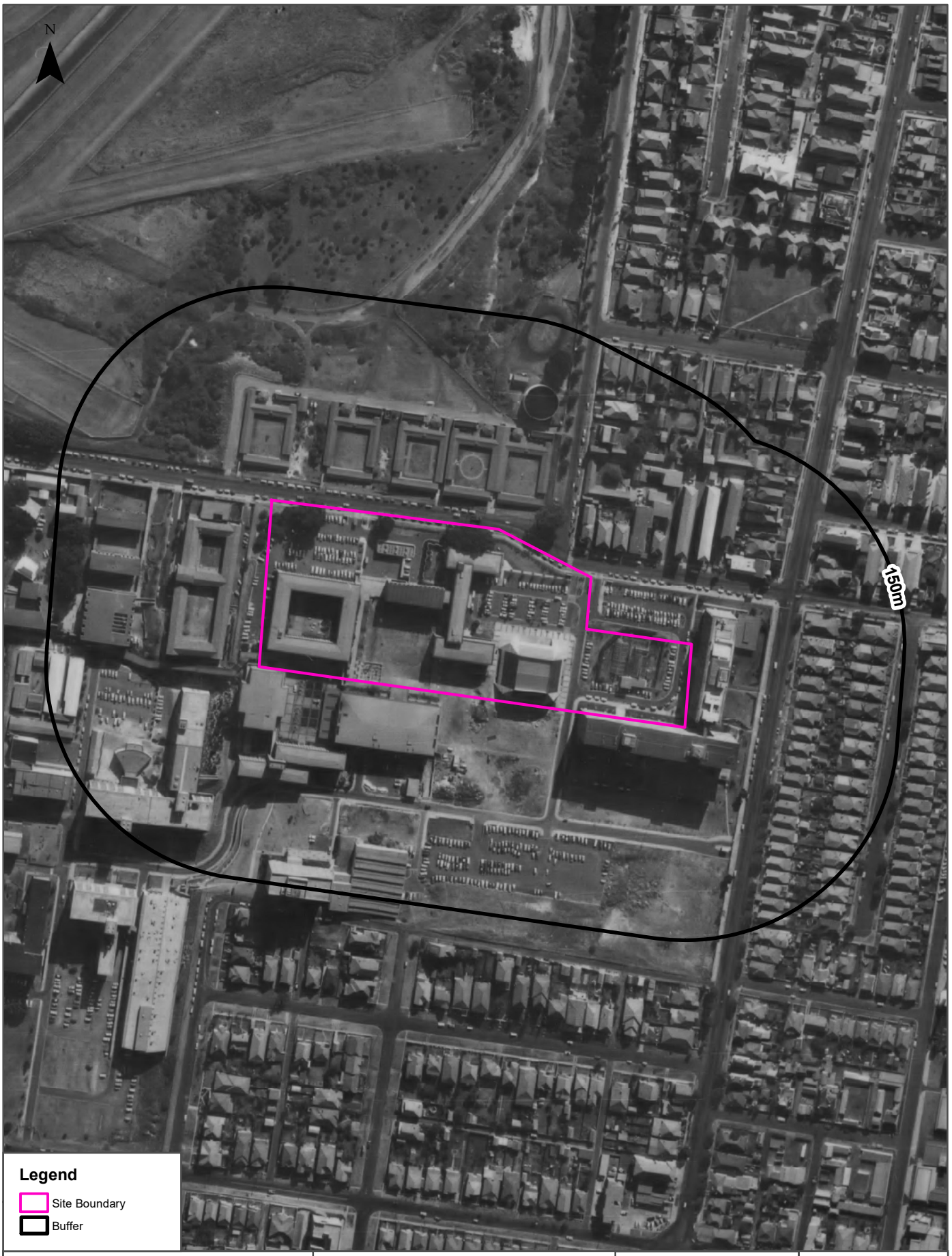


Aerial Imagery 1982

Upper Campus, University of New South Wales, Sydney, NSW 2052

Aerial Imagery 1970

Upper Campus, University of New South Wales, Sydney, NSW 2052



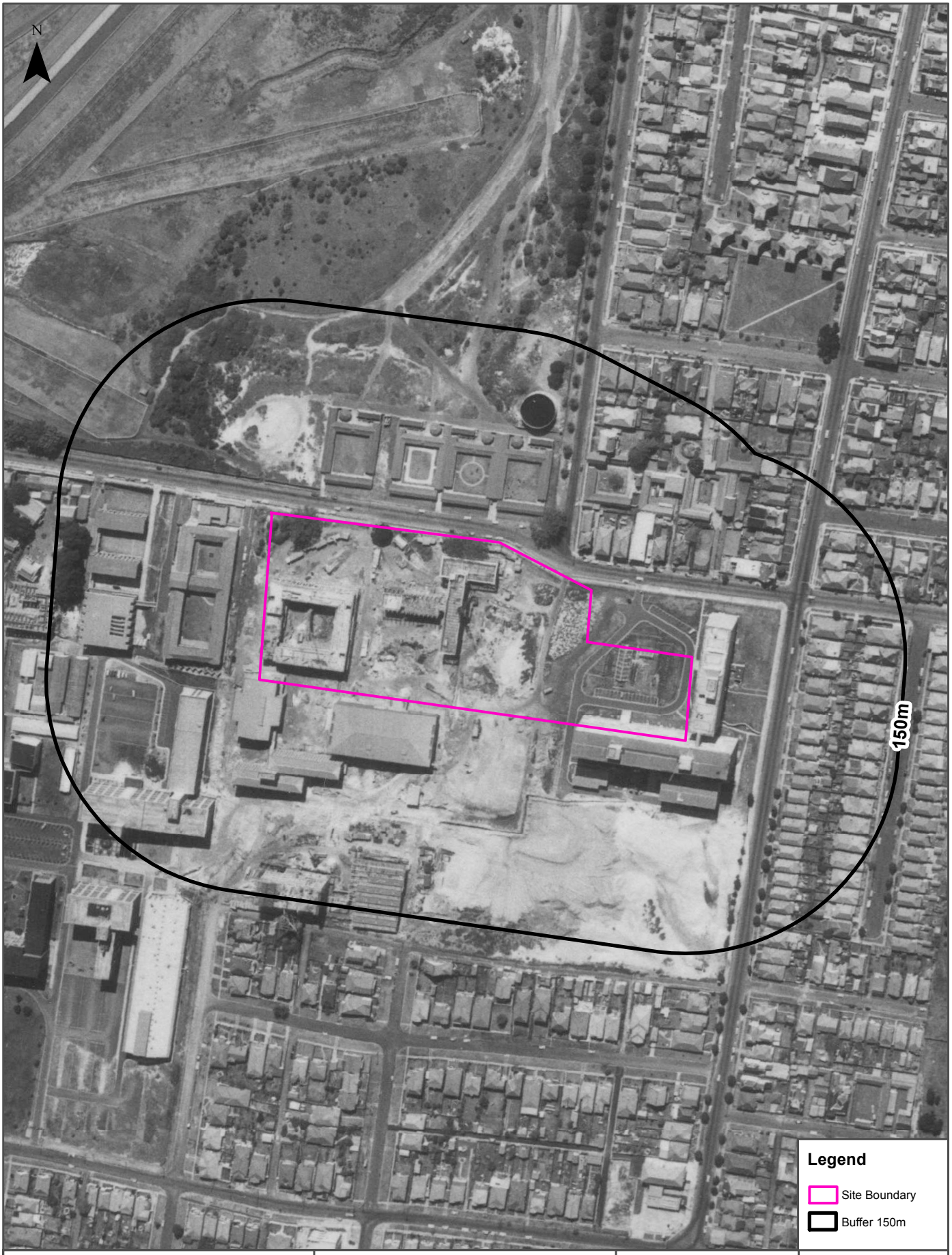
Data Sources: Aerial Imagery © Department Finance, Services & Innovation

Coordinate System: GDA 1994 MGA Zone 56

Date: 02 May 2018

Aerial Imagery 1965

Upper Campus, University of New South Wales, Sydney, NSW 2052



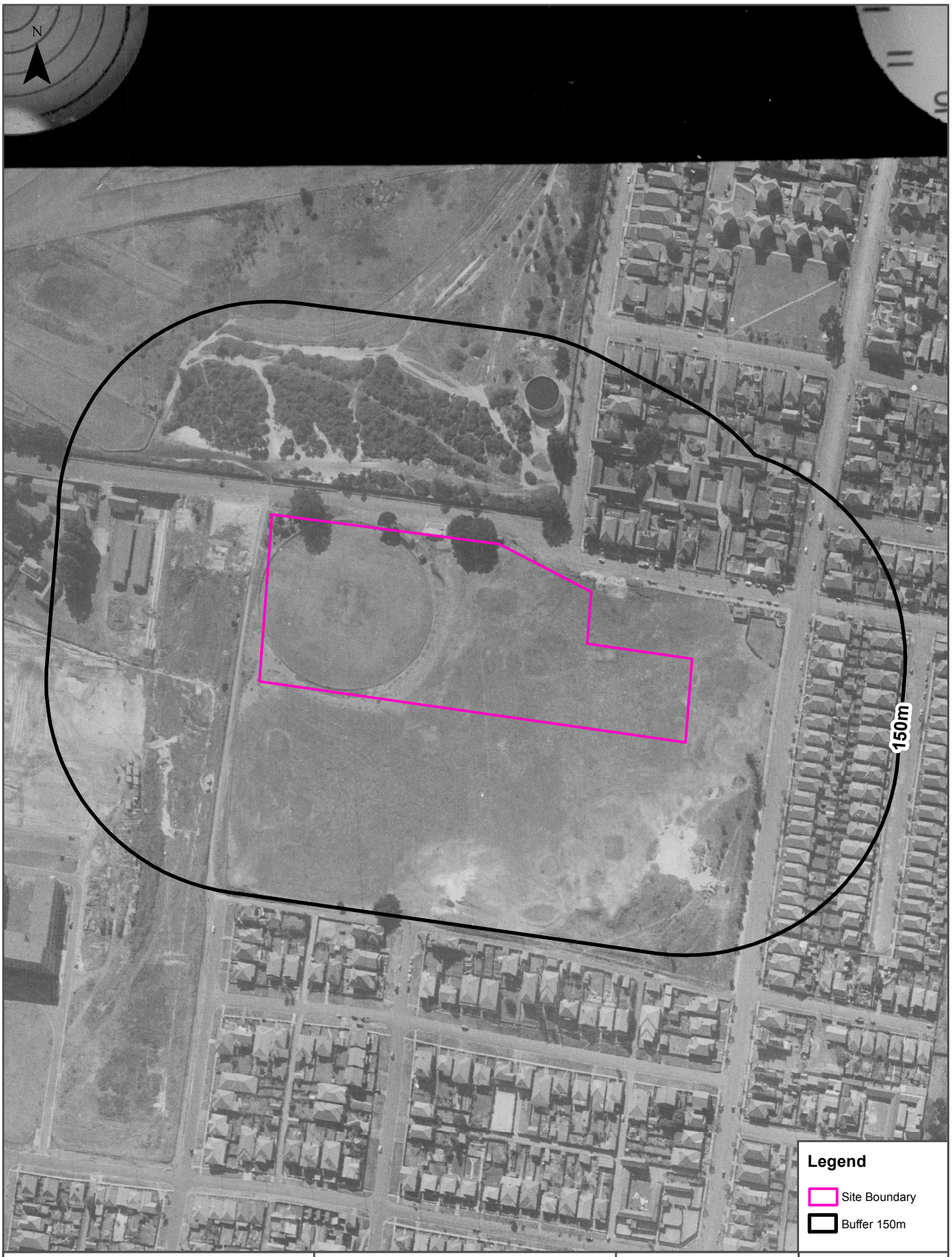
Aerial Imagery 1961

Upper Campus, University of New South Wales, Sydney, NSW 2052

Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 30 April 2018
0 25 50 100 Meters	© NSW Department Finance, Services & Innovation	GDA 1994 MGA Zone 56	

Aerial Imagery 1955

Upper Campus, University of New South Wales, Sydney, NSW 2052



Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 30 April 2018
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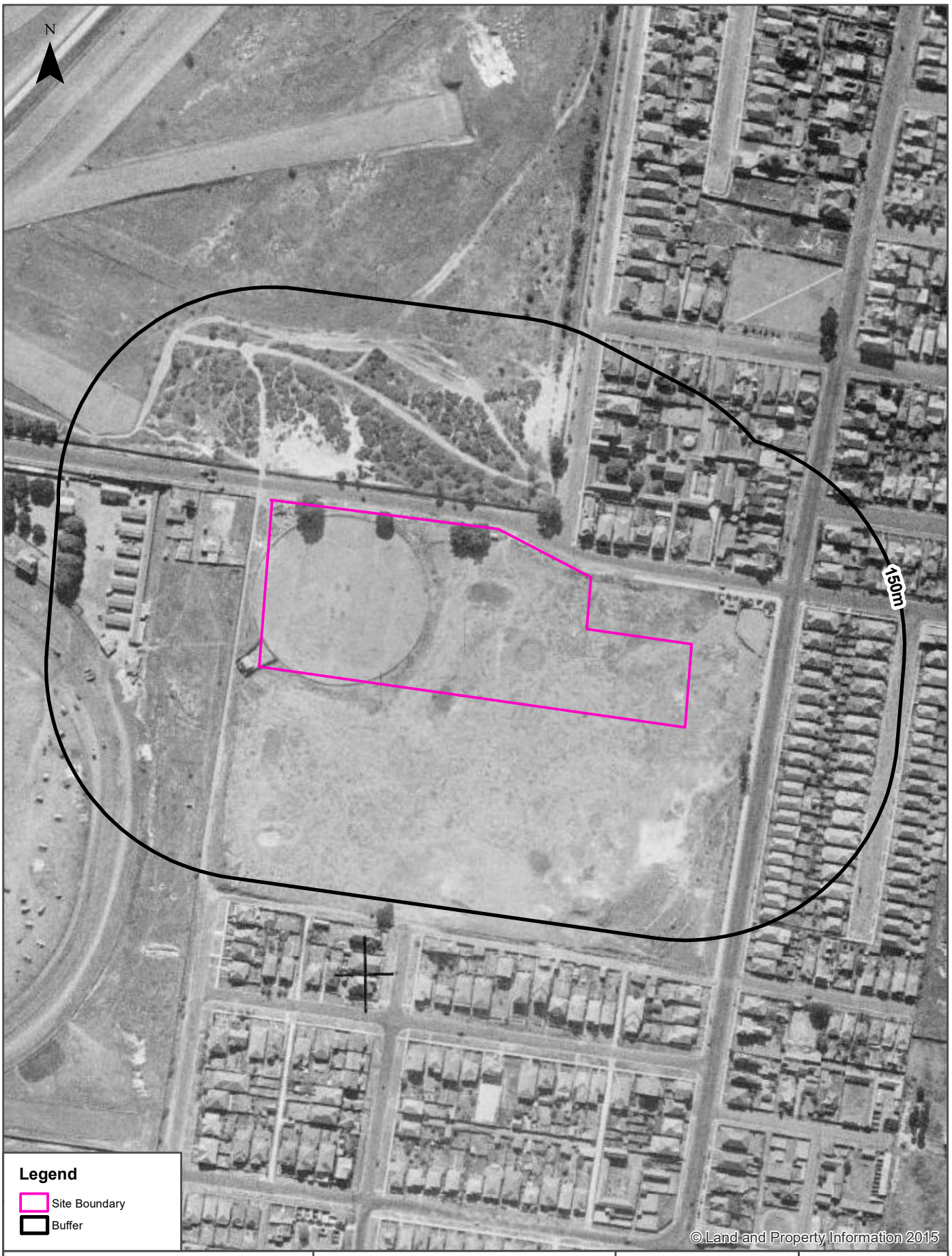
Aerial Imagery 1943

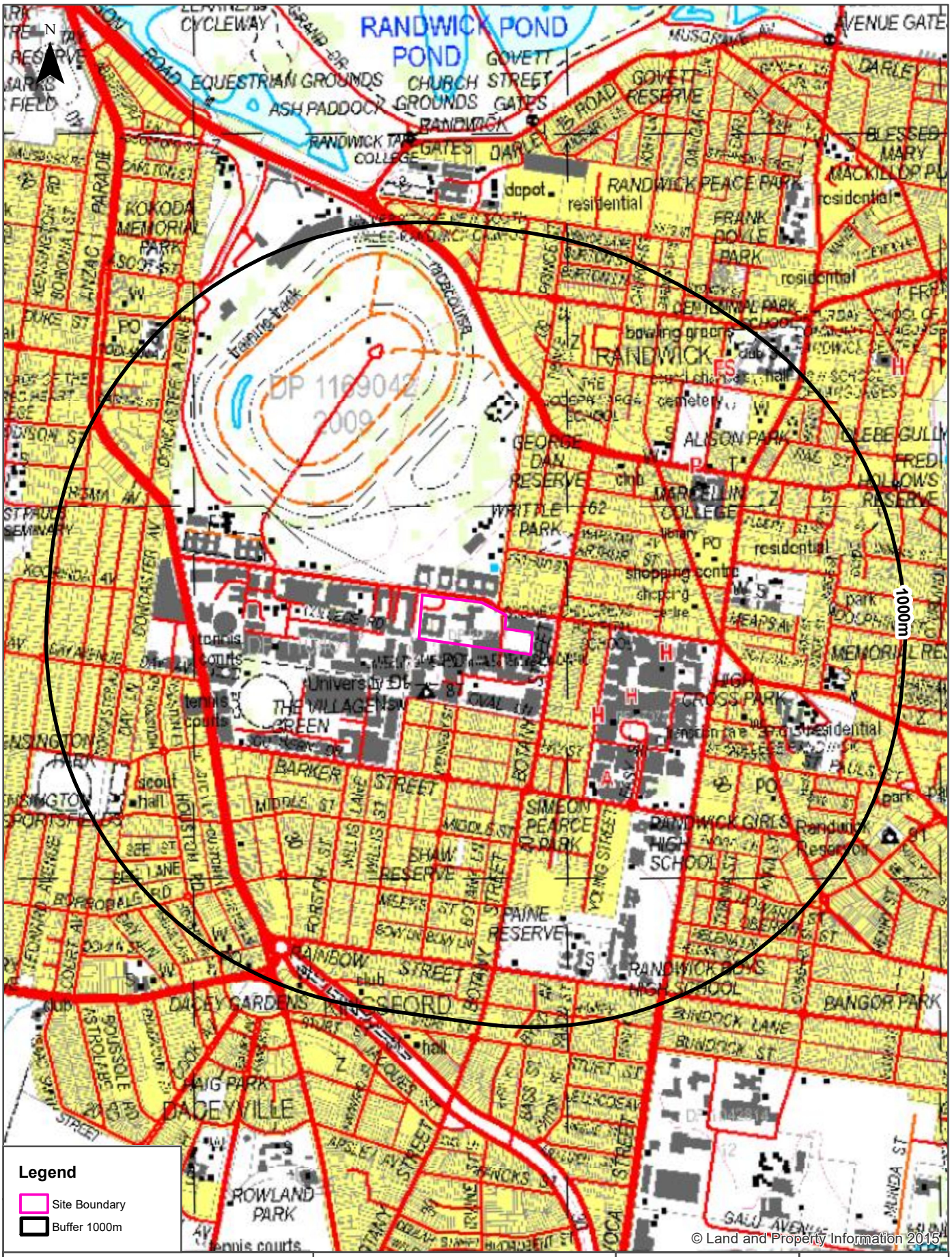
Upper Campus, University of New South Wales, Sydney, NSW 2052



Scale: 0 25 50 100 150 Meters	Data Sources: Aerial Imagery © Department Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 02 May 2018

Topographic Map 2015

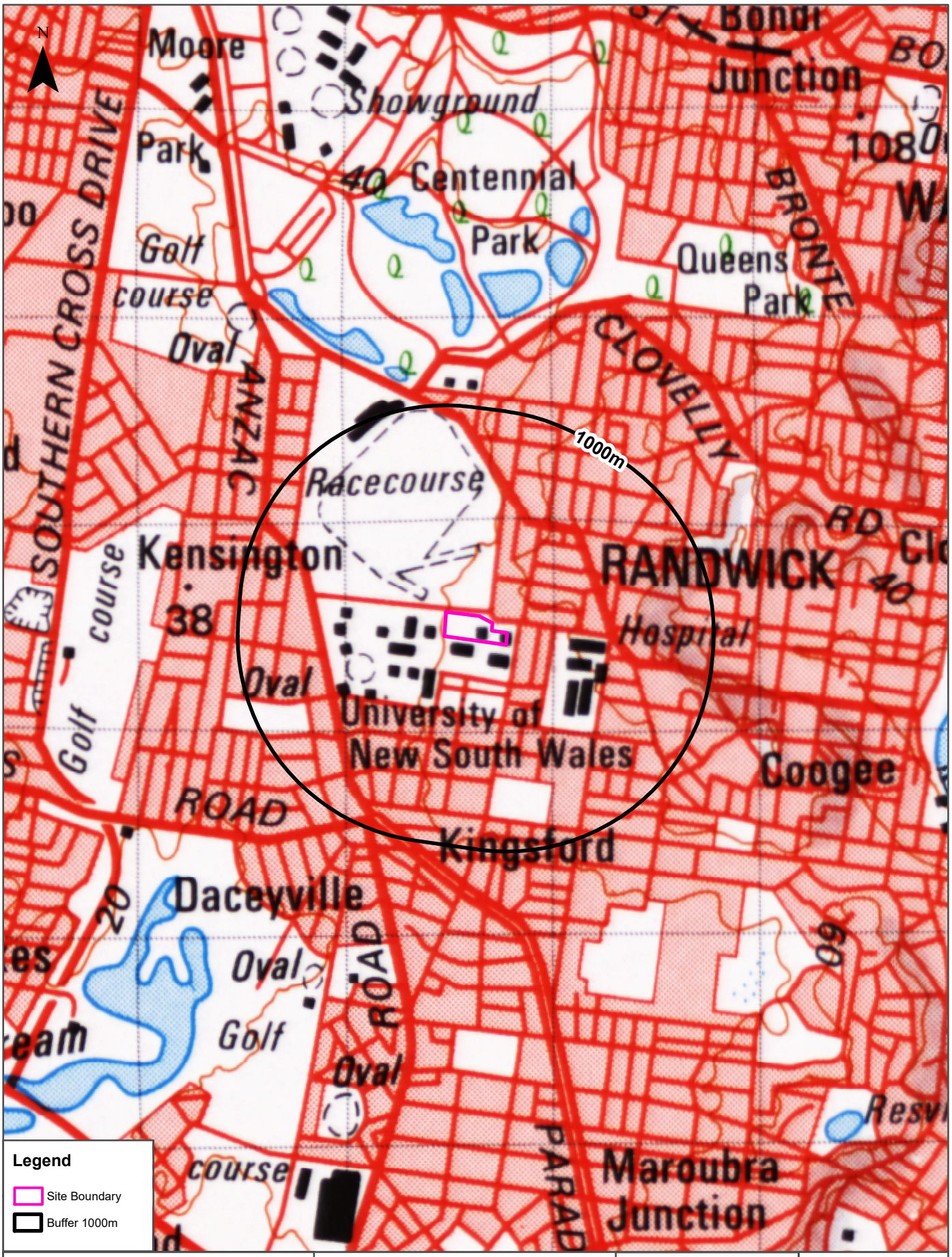
Upper Campus, University of New South Wales, Sydney, NSW 2052



Scale:	Data Sources: Topographic Map Data © NSW Land and Property Information	Coordinate System: GDA 1994 MGA Zone 56	Date: 02 May 2018

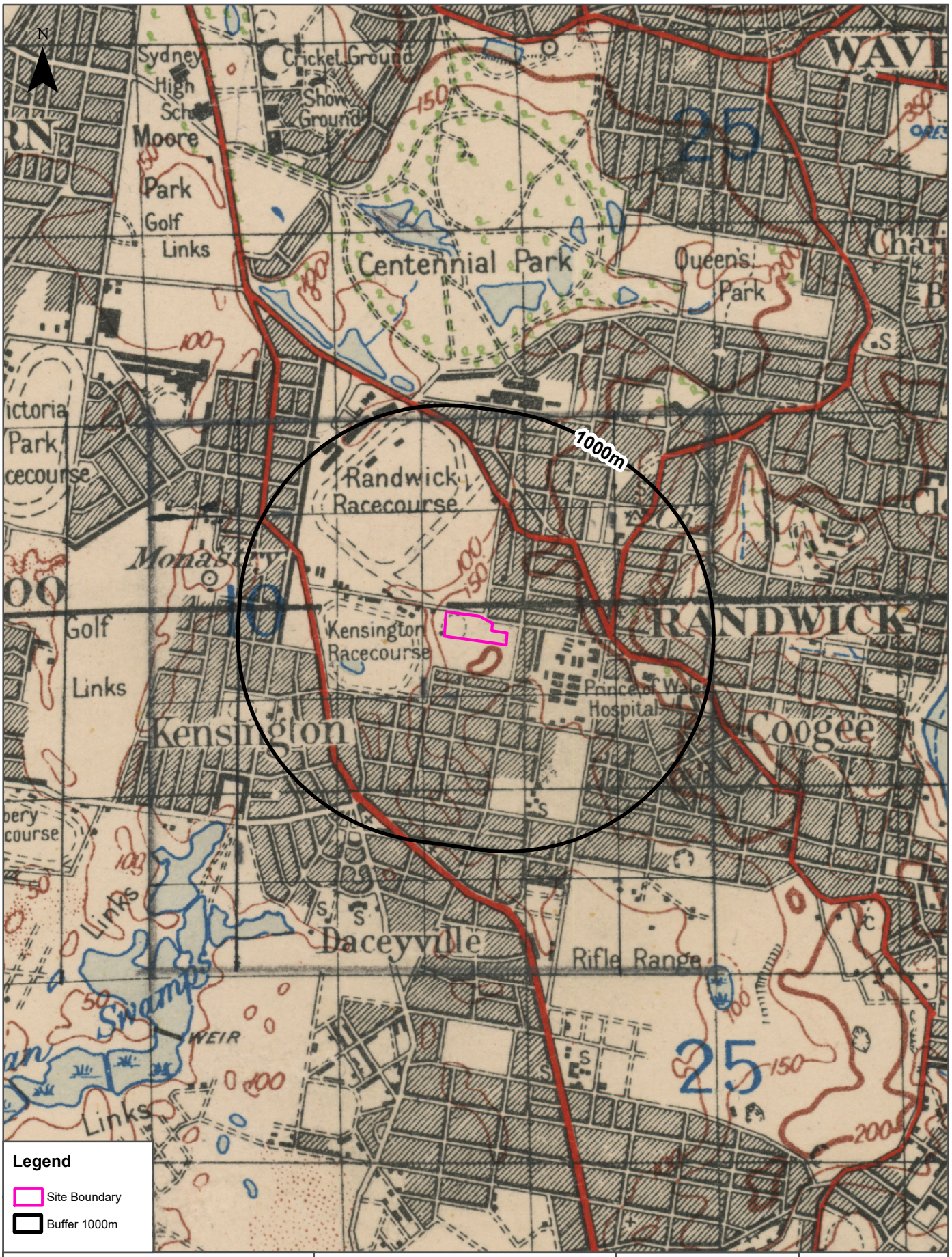
Historical Map 1975

Upper Campus, University of New South Wales, Sydney, NSW 2052



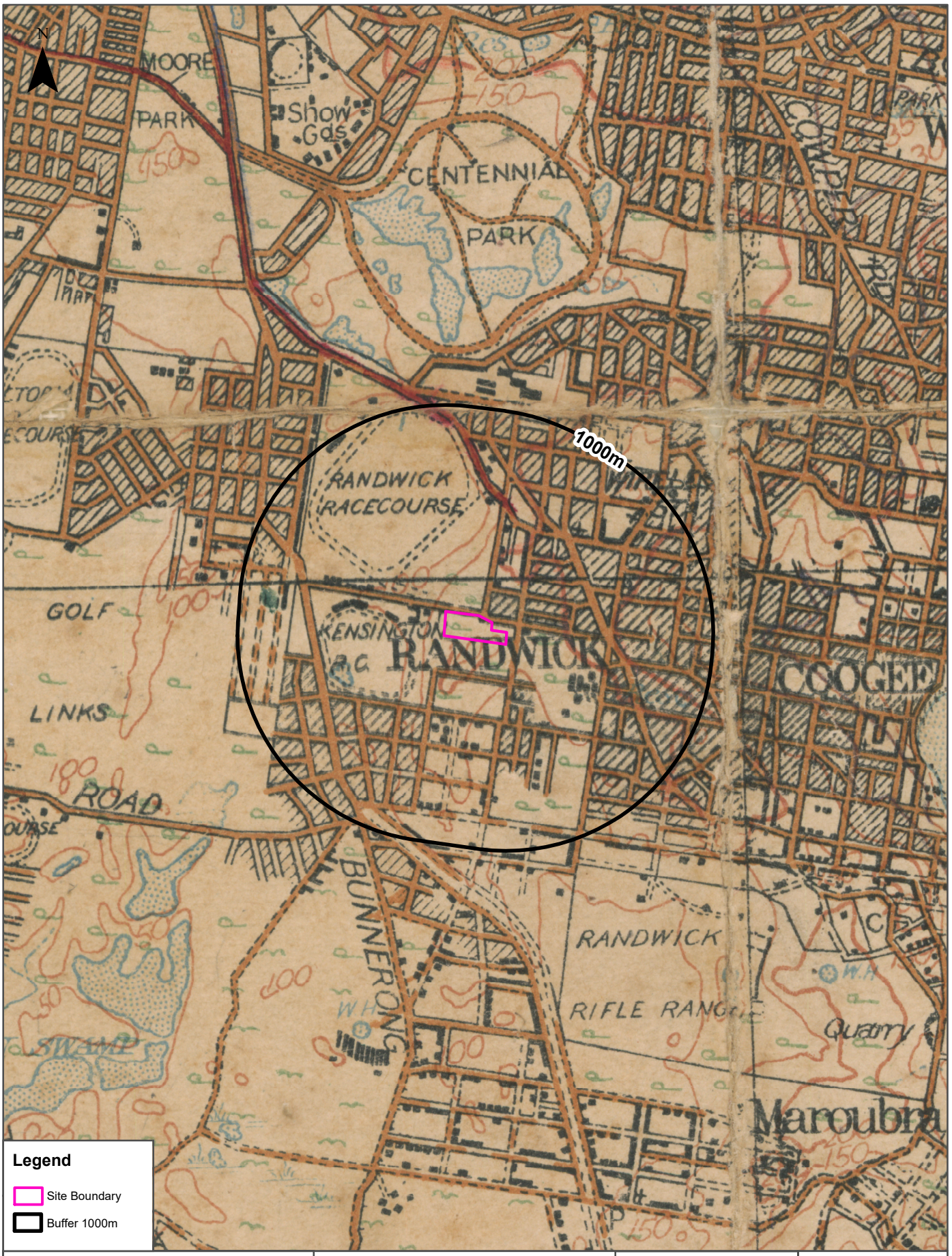
Historical Map 1949

Upper Campus, University of New South Wales, Sydney, NSW 2052



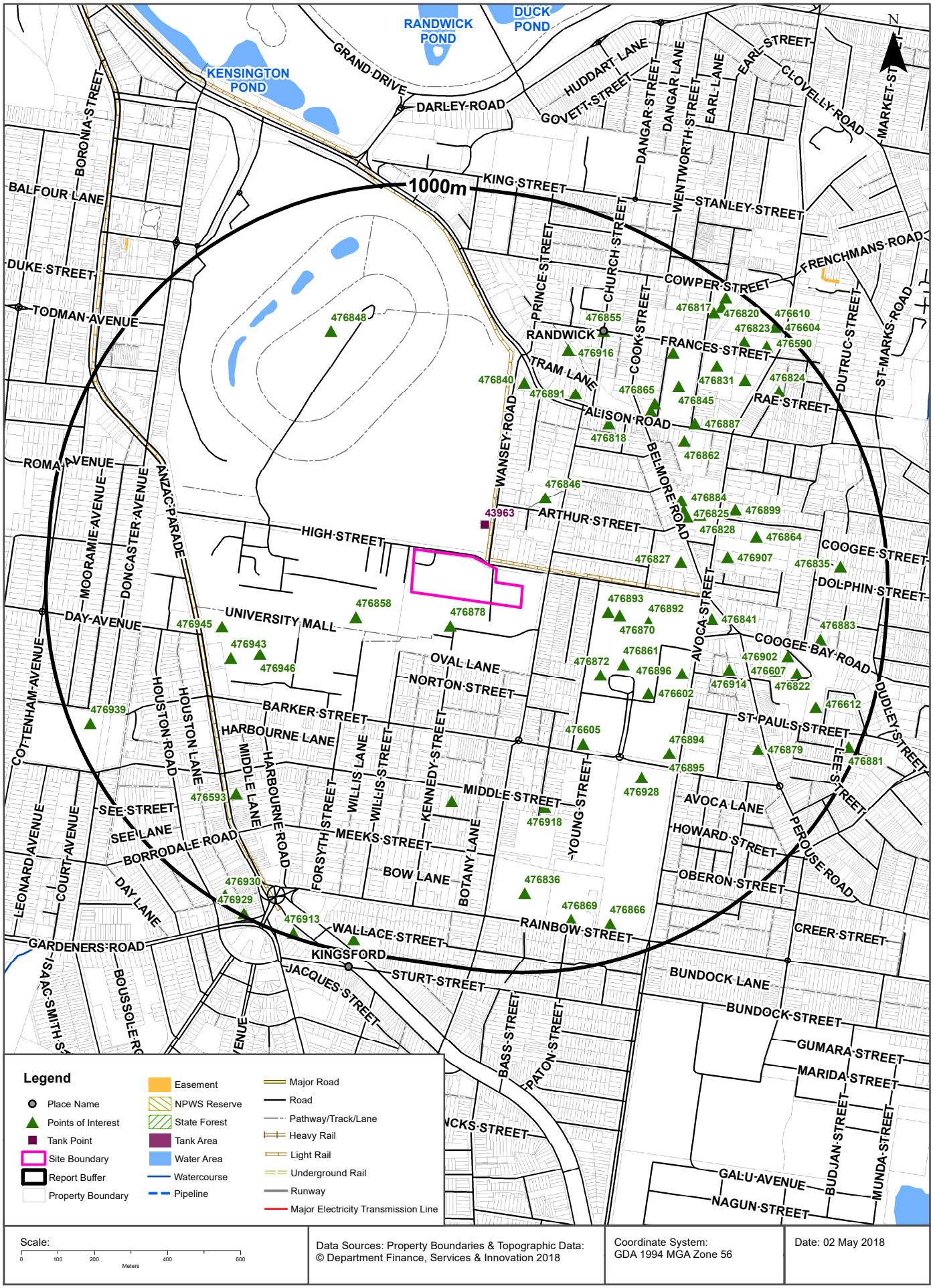
Historical Map 1917

Upper Campus, University of New South Wales, Sydney, NSW 2052



Topographic Features

Upper Campus, University of New South Wales, Sydney, NSW 2052



Topographic Features

Upper Campus, University of New South Wales, Sydney, NSW 2052

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
476878	Post Office	UNIVERSITY OF NSW POST OFFICE	77m	South
476858	University	UNIVERSITY OF NEW SOUTH WALES KENSINGTON CAMPUS	166m	West
476846	Park	WRITTLE PARK	237m	North East
476893	Childrens Hospital	SYDNEY CHILDREN'S HOSPITAL	239m	East
476870	Special School	SYDNEY CHILDRENS HOSPITAL SCHOOL	271m	East
476872	General Hospital	ROYAL HOSPITAL FOR WOMEN	285m	South East
476861	General Hospital	PRINCE OF WALES PRIVATE HOSPITAL	321m	South East
476892	General Hospital	PRINCE OF WALES HOSPITAL	351m	East
476605	Ambulance Station	RANDWICK AMBULANCE STATION	409m	South East
476602	Helipad	Helipad	420m	South East
476827	Shopping Centre	RANDWICK PLAZA	438m	East
476946	Sports Field	THE VILLAGE GREEN	447m	West
476896	Community Home	PRINCE OF WALES COMMUNITY HEALTH SERVICE	476m	South East
476825	Post Office	RANDWICK POST OFFICE	487m	East
476904	Medical Centre	RANDWICK EARLY CHILDHOOD CENTRE	488m	East
476884	Library	MARGARET MARTIN LIBRARY	493m	East
476840	Park	GEORGE DAN RESERVE	498m	North
476818	Club	RANDWICK LABOR CLUB	503m	North East
476828	Shopping Centre	ROYAL RANDWICK SHOPPING CENTRE	523m	East
476841	Park	HIGH CROSS PARK	523m	East
476943	Sports Court	TENNIS COURTS	525m	West
476945	Sports Court	TENNIS COURTS	526m	West
476891	Special School	THE JOSEPH VARGA SCHOOL	526m	North East
476918	Park	SIMEON PEARCE PARK	550m	South
476838	Park	SHAW RESERVE	551m	South
476907	Place Of Worship	OUR LADY OF THE SACRED HEART	566m	East
476894	Medical Centre	RANDWICK DEVELOPMENTAL CLINIC TUMBATIN BUILDING	569m	South East
476895	Medical Centre	SYDNEY CHILDREN'S COMMUNITY HEALTH CENTRE	569m	South East
476928	High School	RANDWICK GIRLS HIGH SCHOOL	570m	South East
476914	Place Of Worship	GRACEPOINT CHRISTIAN CHURCH	594m	East

Map Id	Feature Type	Label	Distance	Direction
476908	Place Of Worship	RANDWICK PRESBYTERIAN CHURCH	595m	North East
476862	High School	MARCELLIN COLLEGE	595m	North East
476865	Primary School	COOGEE BOYS PREPARATORY SCHOOL	617m	North East
476899	Community Home	MILFORD HOUSE NURSING HOME	619m	East
476916	Park	KYNASTON AVENUE RESERVE	624m	North East
476848	Racecourse	ROYAL RANDWICK RACECOURSE	639m	North West
476887	Police Station	RANDWICK POLICE STATION	649m	North East
476864	Primary School	OUR LADY OF THE SACRED HEART SCHOOL	654m	East
476845	Park	ALISON PARK	695m	North East
476855	Suburb	RANDWICK	714m	North East
476822	High School	BRIGIDINE COLLEGE RANDWICK	717m	East
476593	Community Facility	CASTELLORIZIAN CLUB	731m	South West
476902	Retirement Village	STRATHALLEN VILLAGE	743m	East
476879	Post Office	ST PAULS POST OFFICE	756m	South East
476924	Child Care Centre	RANDWICK COOGEE PRE-SCHOOL	761m	North East
476607	Nursing Home	CATHOLIC HEALTHCARE BRIGIDINE HOUSE	776m	East
476836	Park	PAINE RESERVE	783m	South
476831	Cemetery	Cemetery	805m	North East
476883	Primary School	CLAREMONT COLLEGE	823m	East
476906	Place Of Worship	ST JUDE'S ANGLICAN CHURCH	831m	North East
476612	Nursing Home	ST BASILS NURSING HOME	852m	East
476869	Primary School	RAINBOW STREET PUBLIC SCHOOL	866m	South
476835	Park	Park	871m	East
476824	Place Of Worship	UNITING CHURCH	881m	North East
476866	High School	RANDWICK BOYS HIGH SCHOOL	900m	South East
476823	Local Government Chambers	RANDWICK CITY COUNCIL	903m	North East
476820	Fire Station	RANDWICK FIRE STATION	914m	North East
476590	Community Facility	RANDWICK TOWN HALL	937m	North East
476817	Club	RANDWICK BOWLING CLUB	939m	North East
476939	Park	KENSINGTON PARK	949m	West
476819	Club	SOUTH SYDNEY JUNIOR RUGBY LEAGUE CLUB	964m	South
476853	Sports Field	BOWLING GREENS	966m	North East
476930	Place Of Worship	INDONESIAN PRESBYTERIAN CHURCH	974m	South West
476881	Retirement Village	KOINONIA RETIREMENT VILLAGE	974m	South East
476913	Place Of Worship	KINGSFORD CHURCH OF CHRIST	987m	South West
476610	High School	NSW SCHOOL OF LANGUAGES	991m	North East
476604	High School	SATURDAY SCHOOL OF COMMUNITY LANGUAGES RANDWICK CE	991m	North East

Map Id	Feature Type	Label	Distance	Direction
476929	Post Office	KINGSFORD POST OFFICE	992m	South West

Topographic Features

Upper Campus, University of New South Wales, Sydney, NSW 2052

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
43963	Water	Operational		05/10/2000	94m	North East

Major Easements

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

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

Topographic Features

Upper Campus, University of New South Wales, Sydney, NSW 2052

State Forest

What State Forest exist within the dataset buffer?

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

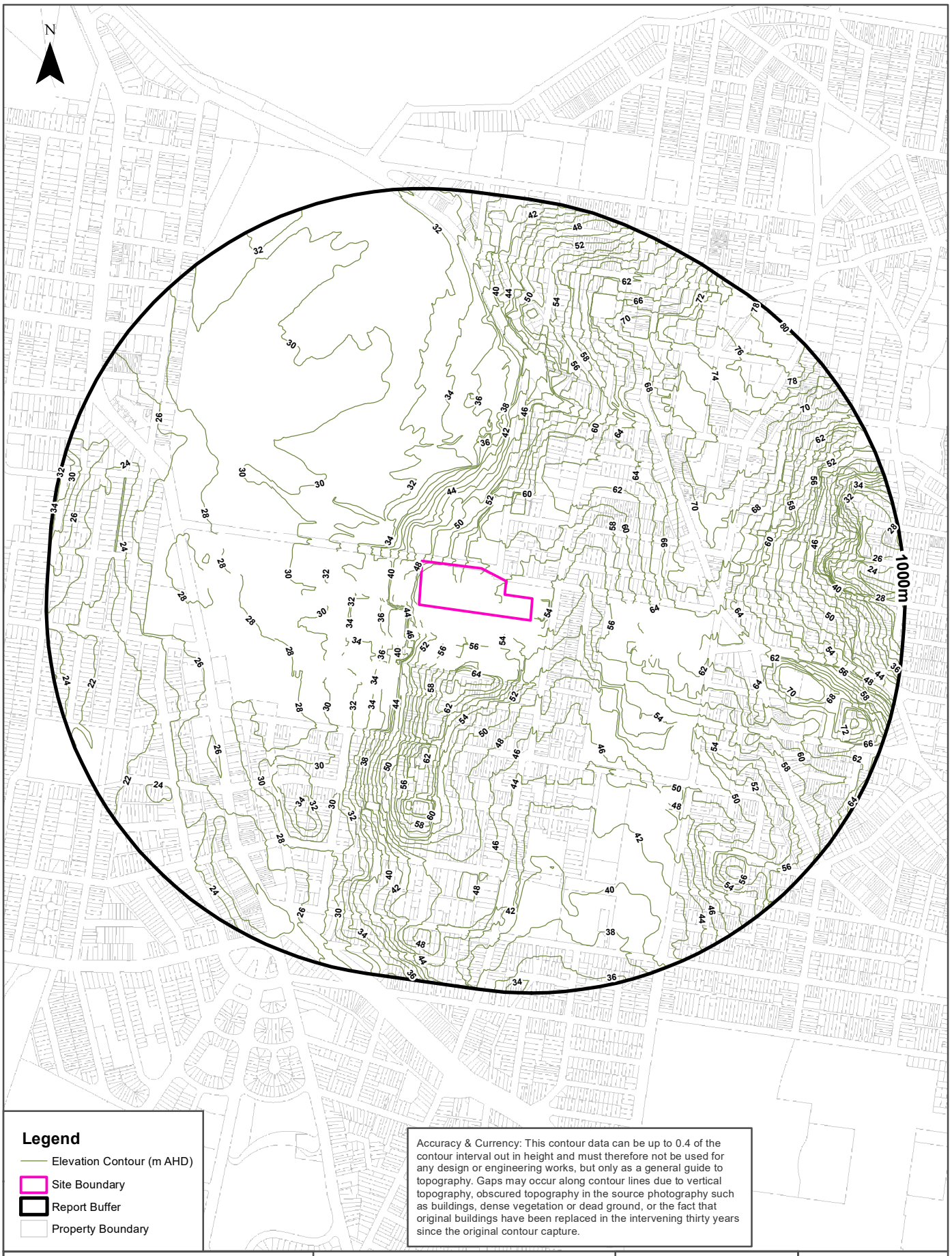
National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

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

Elevation Contours (m AHD)

Upper Campus, University of New South Wales, Sydney, NSW 2052



Hydrogeology & Groundwater

Upper Campus, University of New South Wales, Sydney, NSW 2052

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive highly productive aquifers

Description of aquifers within the dataset buffer:

Description
Porous, extensive highly productive aquifers

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

Botany Groundwater Management Zones

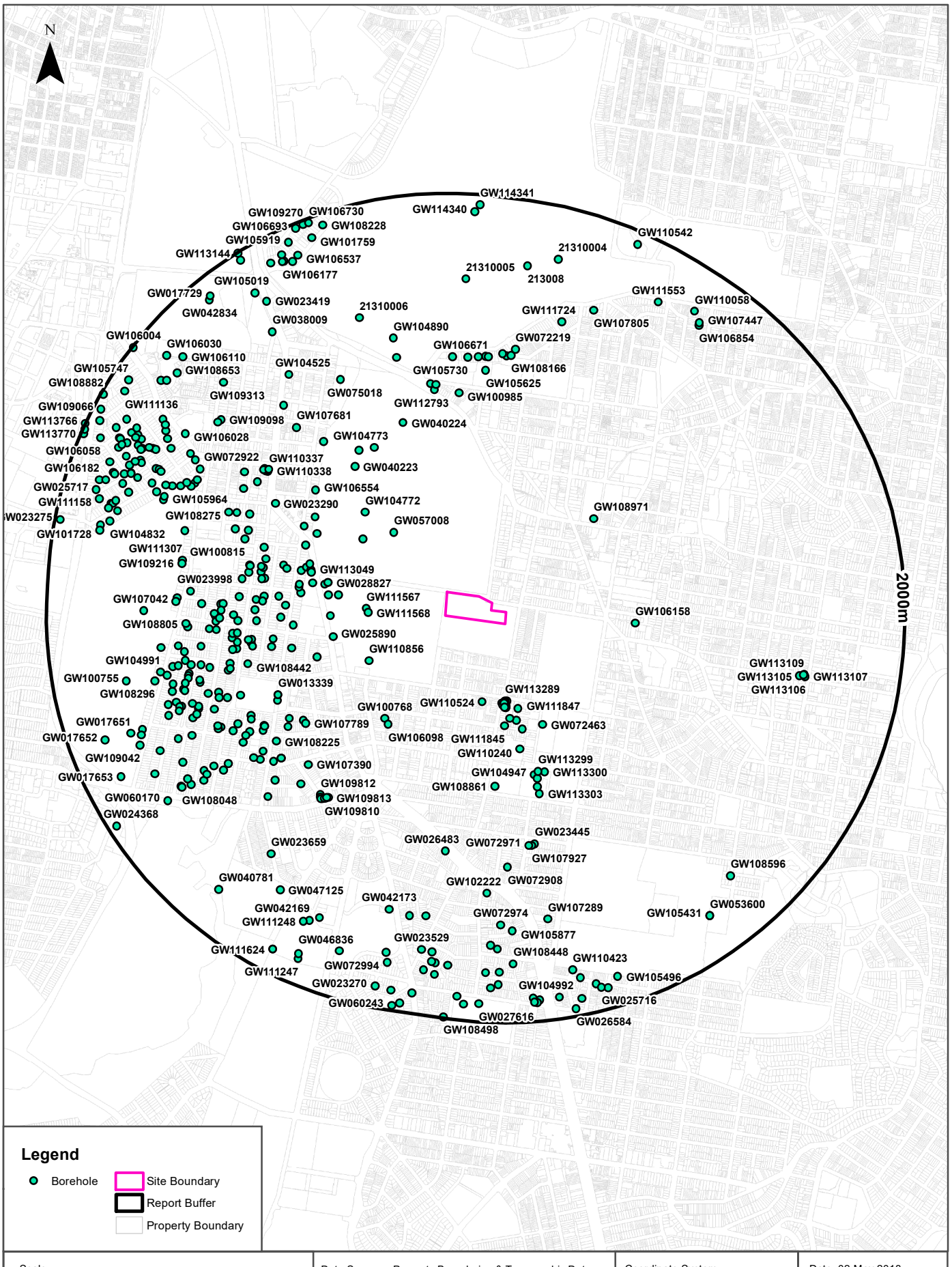
Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

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

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

Groundwater Boreholes

Upper Campus, University of New South Wales, Sydney, NSW 2052



Legend

- Borehole
- Site Boundary
- Report Buffer
- Property Boundary

Scale: 0 100 200 400 600 800 1,000 1,200 Meters

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

Coordinate System: GDA 1994 MGA Zone 56

Date: 02 May 2018

Hydrogeology & Groundwater

Upper Campus, University of New South Wales, Sydney, NSW 2052

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW111568	10BL604946	Bore	Private	Monitoring	Groundtek Drilling	01/08/2011	8.60	8.60	123	5.20			386m	West
GW113289	10BL604337	Bore	Private	Monitoring	Macquarie Drilling	01/05/2010	4.00	4.00					387m	South
GW113287	10BL604337	Bore	Private	Monitoring	Macquarie Drilling	01/05/2010	3.90	3.90		2.50			388m	South
GW109679	10BL602763, 10WA109553	Well	Private	GW Remediation	Macquarie Drilling	13/10/2008	6.00	6.00					391m	South
GW111567	10BL604946	Bore	Private	Monitoring	Groundtek Drilling	01/08/2011	8.00	8.00	145	5.20			395m	West
GW113288	10BL604337	Bore	Private	Monitoring	Macquarie Drilling	01/05/2010	4.00	4.00					395m	South
GW109680	10BL602763, 10WA109553	Well	Private	GW Remediation	Macquarie Drilling	14/10/2008	5.50	5.50					398m	South
GW111554	10BL602666	Bore	Private	Monitoring	Geoprobe	03/09/2008	4.00	4.00		2.58			399m	South
GW057008	10BL124553	Bore	Private	Industrial		01/10/1981	30.00	30.00					400m	North West
GW110524	10BL601622, 10WA109195	Bore	Private	Domestic		18/11/2009	1.50	1.50					404m	South
GW109681	10BL602763, 10WA109553	Well	Private	GW Remediation	Macquarie Drilling	13/10/2008	6.00	6.00					407m	South
GW112858	10BL603083	Bore	Private	Monitoring	TERRATEST	14/05/2009	3.50	3.50					414m	South
GW112855	10BL603083	Bore	Private	Monitoring	TERRATEST	05/05/2009	6.50	6.50		2.23			418m	South
GW112856	10BL603083	Bore	Private	Monitoring	TERRATEST	14/05/2009	5.00	5.00					419m	South
GW112857	10BL603083	Bore	Private	Monitoring	TERRATEST	05/05/2009	5.20	5.20					420m	South
GW111847	10BL602843	Bore	Local Govt	Monitoring		11/08/2009	5.00	5.00		3.77			430m	South East
GW110856	10BL601283	Bore	Private	Monitoring	Water Works	22/07/2004	13.20	13.20	176	10.00	1.000		445m	South West
GW017851	10BL008581	Bore	Private	Commercial		01/03/1958	4.50	4.60					475m	South
GW111846	10BL602843	Bore	Local Govt	Monitoring		11/08/2009	5.60	5.60		2.94			488m	South
GW102419	10BL156872, 10CA114623	Bore		Industrial		01/01/1978	22.00			3.00	10.000		496m	North West
GW111845	10BL602843	Bore	Local Govt	Monitoring		11/08/2009	3.00	3.00		2.69			513m	South
GW111844	10BL602843	Bore	Local Govt	Monitoring		11/08/2009	4.80	4.80		2.67			535m	South East
GW072463	10BL156227, 10WA114625	Bore	Private	Industrial	B & B Drilling Inc	14/11/1994	43.00	43.00		8.60	1.870		539m	South East
GW019634	10BL012859	Bore	Other Govt	Recreation		01/04/1954	32.60	32.60					541m	West
GW104772	10BL161316, 10BL162010, 10CA114623	Bore	Private	Recreation	B & B Drilling Inc	20/02/2003	25.00	25.00	290	4.90	3.000		571m	North West
GW025890	10BL014914, 10BL600316, 10WA112802	Bore	Other Govt	Irrigation		01/07/1965	31.30	31.40	0-500 ppm				572m	West
GW102016	10BL156792, 10WA114637	Bore		Industrial, Recreation	Panorama Drilling Company	11/09/1995	32.00	35.00	Fresh	7.20	18.000		574m	West

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GW101682	10BL156791, 10WA114637	Bore	Private	Industrial, Recreation	Panorama Drilling Company	23/08/1995	33.00	41.00	Fresh				592m	West
GW019635	10BL012860	Bore	Other Govt	Recreation		01/09/1955	28.40	28.50					597m	West
GW028827	10BL022485	Bore	Other Govt	Recreation		01/07/1968	32.60	32.60					597m	West
GW100768	10BL157198, 10WA113124	Bore	Private	Domestic		01/10/1995	17.39	17.39	Good		0.500		600m	South West
GW034992	10BL030088, 10BL156719, 10WA114637	Bore	Private	Industrial, Recreation	Panorama Drilling Company	08/08/1995	41.00	41.00	Fresh	7.50	19.000		611m	West
GW106098	10BL162313, 10WA113401	Bore	Private	Domestic		22/01/2004	9.50	9.50					616m	South West
GW110240	10BL600416, 10BL602332, 10WA114779	Bore	Private	Recreation	Britt's Water Solutions	12/11/2008	150.00	150.00	100	16.50	0.500		633m	South
GW108971	10BL601798, 10BL602256, 10WA109523	Bore	Other Govt	Recreation	Britt's Water Solutions	27/06/2008	216.00	216.00	Fresh	27.00	0.050		644m	North East
GW106158	10BL162658, 10WA113466	Bore				29/06/2005							650m	East
GW019612	10BL012857	Bore	Other Govt	Recreation		01/10/1955	31.30	31.40					674m	West
GW101452	10BL158479, 10WA113247	Spear	Private	Domestic		17/02/1998	6.00	6.00					675m	West
GW113049	10BL602811	Bore	Private	Monitoring	Macquarie Drilling	21/10/2013	8.00	8.00					686m	West
GW113050	10BL602811	Bore	Private	Monitoring	Macquarie Drilling	12/11/2008	10.50	10.50					689m	West
GW113051	10BL602811	Bore	Private	Monitoring	Macquarie Drilling	13/11/2008	7.50	7.50					699m	West
GW047543	10BL110202, 10CA114623	Bore	Private	Industrial, Irrigation		01/01/1978	30.50	30.50					713m	North West
GW113048	10BL602811	Bore	Private	Monitoring		13/11/2008	8.50	8.50					713m	West
GW107651	10BL165685, 10WA114019	Spear	Private	Domestic	B & B Drilling Inc	29/11/2005	7.00	7.00	Good	5.00	0.500		730m	West
GW106378	10BL163862, 10WA113695	Spear	Private	Domestic	B & B Drilling Inc	23/08/2004	7.00	7.00	Good	5.00	0.500		736m	West
GW105676	10BL162667, 10WA113468	Spear	Private	Domestic		08/03/2004	9.15	9.15			1.000		739m	West
GW105978	10BL162744, 10WA113480	Spear	Private	Domestic		29/03/2004	8.23	8.24		5.18	1.000		740m	West
GW024677	10BL018344	Spear	Private	General Use		01/06/1966	4.80	4.90	Good				746m	West
GW047542	10BL110201, 10CA114623	Bore	Private	Industrial, Irrigation		01/01/1978	30.50	30.50					757m	North West
GW113299	10BL604336	Well	Private	Monitoring	Numac	01/11/2010	5.20						758m	South
GW106774	10BL164077, 10WA113723	Spear	Private	Domestic		23/10/2004	8.23	8.24	Good	5.85	1.000		761m	West
GW113300	10BL604336	Bore	School	Monitoring	Numac	01/11/2010	5.20	5.20					768m	South East
GW104947	10BL160513	Bore		Test Bore	B & B Drilling Inc	21/02/2002	5.00	5.00	210	2.71	0.650		772m	South
GW040223		Spear	Private	Recreation			7.00	7.15				28.37	779m	North West
GW108036	10BL600152, 10WA114113	Spear	Private	Domestic	B & B Drilling Inc	27/03/2006	6.00	6.00		3.00	0.500		786m	West
GW104969	10BL160301, 10WA113307	Bore	Private	Domestic		27/11/2001	6.00	6.00		3.00	1.000		786m	North West
GW113301	10BL604336	Bore	School	Monitoring	Numac	01/11/2010	5.20	5.20					793m	South
GW107638	10BL162367, 10WA113415	Spear	Private	Domestic	B & B Drilling Inc	27/10/2005	5.00	5.00	Good	3.00	0.500		801m	West
GW108674	10BL601443, 10WA114349	Spear	Private	Domestic		10/04/2007	8.00	8.00					809m	West

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GW104773	10BL161316, 10BL162009, 10CA114623	Bore	Private	Recreation	B & B Drilling Inc	20/02/2003	25.00	25.00	290	4.90	3.000		810m	North West
GW108861	10BL164832, 10BL601893, 10WA109499	Bore	Local Govt	Recreation	Britt's Water Solutions	08/05/2008	114.00	114.00		20.00	2.210		815m	South
GW105754	10BL162297, 10WA113398	Spear	Private	Domestic		27/11/2003	5.18	5.19		1.52	1.000		823m	West
GW101453	10BL158478, 10WA113246	Spear	Private	Domestic		03/02/1998	6.00	6.00					829m	West
GW106554	10BL162310, 10WA113400	Spear	Private	Domestic	B & B Drilling Inc	13/11/2004	6.00	6.00	Good	3.00	0.500		831m	North West
GW113302	10BL604336	Bore	School	Monitoring		01/11/2010	5.20	5.20					832m	South
GW047544	10BL108893, 10CA114623	Bore	Private	Industrial, Irrigation		01/07/1978	23.00	23.00					836m	North West
GW106797	10BL163649, 10WA113642	Spear	Private	Domestic		11/10/2004	7.00	7.00					837m	West
GW113303	10BL604336	Bore	School	Monitoring	Numac	01/11/2010	5.20	5.20					870m	South
GW107728	10BL165893, 10WA114056	Spear	Private	Domestic		13/01/2006	7.00	7.00					870m	West
GW040224		Spear	Private	Recreation			7.00	7.00				30.04	876m	North
GW108422	10BL600820, 10WA114228	Spear	Private	Domestic		18/01/2007	14.00	14.00					882m	South West
GW101455	10BL158480, 10WA113248	Spear	Private	Domestic		15/02/1998	6.00	6.00					883m	West
GW107789	10BL162853, 10WA113498	Spear	Private	Domestic		01/06/2004	7.00	7.00					885m	South West
GW106973	10BL163973, 10WA113712	Spear	Private	Domestic	B & B Drilling Inc	18/02/2005	6.00	6.00	Good	3.00	0.500		911m	West
GW107614	10BL164804, 10WA113863	Spear	Private	Domestic	B & B Drilling Inc	24/10/2005	6.00	6.00	Good	3.00	0.500		915m	West
GW107641	10BL165333, 10WA113962	Spear	Private	Domestic		01/11/2005	7.50	7.50					916m	West
GW101225	10BL158321, 10WA113222	Spear	Private	Domestic	A Korkadis	09/12/1997	6.00	6.00	Good	3.05	1.000		920m	West
GW103644	10BL159632, 10WA113294	Bore	Private	Domestic		03/04/2000	7.00	7.00					926m	West
GW013339	10BL006742	Bore	Private	Recreation		01/05/1956	16.40	16.50	Good			20.90	928m	South West
GW023179	10BL016742, 10WA114771	Spear	Private	Irrigation			7.60	7.60	Good				928m	South West
GW109117	10BL602224, 10WA114465	Spear	Private	Domestic	Combined Drilling Services	25/07/2008	9.00						929m	West
GW110535	10BL602777, 10WA114536	Bore	Private	Domestic		30/10/2009	12.00	12.00					935m	South West
GW102611	10BL159396, 10WA113286	Bore		Domestic		25/09/1999	6.00	6.00					936m	West
GW113251	10WA118703	Spear	Private	Domestic		01/01/2000	7.50	7.50		4.00	0.200		938m	West
GW026468	10BL019000	Bore	Private	Recreation		01/07/1966	19.60	19.70					942m	South West
GW106249	10BL163304, 10WA113555	Spear	Private	Domestic		02/06/2004	6.00	6.00					943m	West
GW101219	10BL158306, 10WA113218	Spear	Private	Domestic	A Korkadis	02/12/1997	4.88	4.88	Good	2.13	0.750		944m	West
GW107653	10BL165654, 10WA114012	Spear	Private	Domestic		12/12/2005	9.50	9.50					949m	West
GW106862	10BL164871, 10WA113878	Spear	Private	Domestic		10/03/1995	7.63	7.63	Good	4.58	1.000		953m	West
GW107584	10BL165704, 10WA114025	Spear	Private	Domestic		10/10/2005	7.50	7.50					965m	South West
GW023290	10BL016656, 10WA112832	Spear	Private	General Use		01/09/1965	4.20	4.30					966m	North West
GW107342	10BL165349, 10WA113965	Spear	Private	Domestic		25/08/2005	5.18	5.19	Good	3.35	1.000		974m	North West

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GW102598	10BL159410, 10WA113287	Bore		Domestic		09/10/1999	6.00	6.00					975m	West
GW101456	10BL158481, 10WA113249	Bore	Private	Domestic		04/02/1998	6.00	6.00					976m	West
GW101458	10BL158491, 10WA113251	Spear	Private	Domestic		05/03/1998	6.00	6.00					981m	West
GW107142	10BL165146, 10WA113926	Spear	Private	Domestic		20/06/2005	17.80	17.80		11.55	1.000		994m	West
GW107335	10BL165306, 10WA113955	Spear	Private	Domestic	Water Works	17/09/2005	7.00	7.00		3.00	0.500		995m	West
GW107129	10BL164723, 10WA113842	Spear	Private	Domestic		11/05/2005	12.81	12.81	Good	7.32	1.000		996m	West
GW107612	10BL164378, 10WA113786	Spear	Private	Domestic		18/12/2004	12.81	12.81	Good	10.68	1.000		998m	West
GW100985	10BL156951, 10WA113088	Spear	Private	Domestic		28/08/1995	5.18	5.18	Good	2.14	1.000		999m	North
GW112793	10BL602685	Bore	Private	Monitoring	Ability Plus Environmental and Geotechnical Drilling Pty Ltd	03/09/2013	4.80	4.80		2.50			1014 m	North
GW107390	10BL164155, 10WA113740	Spear	Private	Domestic		13/09/2004	7.32	7.32	Good	4.88	1.000		1015 m	South West
GW108442	10BL600983, 10WA114258	Spear	Private	Domestic		06/01/2007	8.00	8.00					1018 m	West
GW108229	10BL600466, 10WA114152	Spear	Private	Domestic		06/08/2006	17.00	17.00					1027 m	West
GW101967	10BL158599, 10WA113257	Bore		Domestic		28/04/1998	7.00	7.00					1035 m	West
GW106766	10BL162335, 10WA113407	Spear	Private	Domestic	B & B Drilling Inc	12/12/2004	6.00	6.00	Good	3.00	0.500		1039 m	West
GW112791	10BL602685	Bore	Private	Monitoring	Ability Plus Environmental and Geotechnical Drilling Pty Ltd	03/09/2013	3.30	3.30		1.90			1040 m	North
GW111445	10BL601938, 10WA114423	Spear	Private	Domestic		09/04/2011	8.00	8.00					1040 m	West
GW100815	10BL156330, 10WA113038	Bore				01/01/1994	14.00			8.00			1045 m	West
GW108918	10BL601790, 10WA114415	Spear	Private	Domestic		17/06/2008	7.93		Good	4.58	1.000		1045 m	West
GW112792	10BL602685	Bore	Private	Monitoring	Ability Plus Environmental and Geotechnical Drilling Pty Ltd	03/09/2013	5.00	5.00		2.50			1046 m	North
GW111615	10BL163626, 10WA113635	Spear	Private	Domestic		01/10/2004	7.00	7.00	good				1049 m	West
GW106297	10BL163795, 10WA113685	Spear	Private	Domestic		10/08/2004	8.23	8.24	Good	5.18	1.000		1055 m	West
GW108225	10BL600443, 10WA114146	Bore	Private	Domestic		19/08/2006	14.00	14.00					1055 m	South West
GW105630	10BL162435, 10WA113427	Spear	Private	Domestic		08/12/2003	5.18	5.19		3.36	1.500		1061 m	West
GW109062	10BL601484, 10WA114362	Bore	Private	Domestic	B & B Drilling Inc	16/07/2008	7.00		Good	5.00	0.500		1062 m	North West
GW106076	10BL163154, 10WA113532	Spear	Private	Domestic		22/06/2004	5.80	5.80		1.83	1.000		1063 m	South West
GW106488	10BL163625, 10WA113634	Spear	Private	Domestic		01/11/2004	6.10	6.10	Good	3.50	1.000		1063 m	South West
GW110874	10BL601374, 10WA114330	Spear	Private	Domestic		10/03/2007	7.93			7.00			1068 m	West
GW114951	10WA119158	Spear	Private	Domestic	B&B Drilling	06/07/2015	6.00	6.00		3.00	0.500		1073 m	West
GW110786	10BL602904, 10WA114555	Spear	Private	Domestic		11/03/2010	8.00	8.00					1078 m	South West

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GW105438	10BL162238, 10WA113373	Bore		Domestic		03/11/2003	7.63	7.63		4.58	1.000		1079 m	West
GW110342	10BL165553	Well	Private	Monitoring		23/11/2004	4.00	4.00	261	2.40			1079 m	North West
GW110338	10BL165553	Well	Private	Monitoring		20/10/2004	4.00	4.00	237	2.24			1081 m	North West
GW110337	10BL165553	Well	Private	Monitoring		20/10/2004	4.00	4.00	136	2.16			1082 m	North West
GW110339	10BL165553	Well	Private	Monitoring		20/10/2004	4.00	4.00	315	2.42			1084 m	North West
GW109813	10BL601905	Well	Private	Monitoring	HLA Enviroscience s	16/05/2007	9.00	9.00					1086 m	South West
GW110336	10BL165553	Well	Private	Monitoring		18/10/2004	4.00	4.00	251	2.57			1088 m	North West
GW108507	10BL600353, 10WA114138	Spear	Private	Domestic		15/07/2006	8.00	8.00					1090 m	South West
GW110341	10BL165553	Well	Private	Monitoring		23/11/2004	4.00	4.00	140	2.51			1090 m	North West
GW109054	10BL602149, 10WA114453	Spear	Private	Domestic		15/07/2008	8.00						1090 m	South West
GW023612	10BL017351, 10WA112893	Spear	Private	General Use		01/01/1966	5.10	5.20	Good				1091 m	South West
GW105307	10BL163293, 10WA113553	Bore		Domestic		01/01/1970							1095 m	South West
GW109812	10BL601905	Well	Private	Monitoring	HLA Enviroscience s	15/04/2007	9.00	9.00					1095 m	South West
GW107431	10BL165301, 10WA113952	Spear	Private	Domestic		08/09/2005	7.63	7.63	Good	3.50	1.000		1097 m	North West
GW109849	10BL601020	Bore	Private	Monitoring	Macquarie Drilling	09/08/2006	8.50	8.50		6.10			1097 m	South West
GW109810	10BL601905	Well	Private	Monitoring	HLA Enviroscience s	17/05/2007	9.00	9.00					1101 m	South West
GW075021		Bore	NSW Office of Water	Monitoring	McDermott Drilling Pty Ltd	13/07/1998	43.00	44.50		3.23		8.54	1102 m	West
GW110340	10BL165553	Well	Private	Monitoring		21/10/2004	4.00	4.00	140	2.36			1103 m	North West
GW109848	10BL601020	Bore	Private	Monitoring	Macquarie Drilling	08/08/2006	8.70	8.70		6.40			1103 m	South West
GW110335	10BL165553	Well	Private	Monitoring		18/10/2004	4.00	4.00	133	2.88			1103 m	North West
GW025781	10BL017054, 10WA112860	Spear	Private	General Use		01/10/1965	4.50	4.60	Good				1103 m	South West
GW109811	10BL601905	Well	Private	Monitoring	HLA Enviroscience s	16/05/2007	9.00	9.00					1105 m	South West
GW111004	10BL604103, 10WA114603	Spear	Private	Domestic		19/07/2010	13.12	13.12	good	4.88	1.000		1105 m	West
GW108212	10BL600131, 10WA114105	Spear	Private	Domestic	Chris Mylonas	18/09/2006	12.00			9.00			1106 m	West
GW105567	10BL162124, 10WA113352	Bore		Domestic	B & B Drilling Inc	30/10/2003	7.00	7.00	Good	4.70	0.500		1108 m	West
GW109809	10BL601905	Well	Private	Monitoring	HLA Enviroscience s	18/05/2007	9.00	9.00					1109 m	South West
GW109847	10BL601020	Bore	Private	Monitoring	Macquarie Drilling	07/08/2006	8.50	8.50		6.80			1112 m	South West
GW023445	10BL016690, 10WA112836, 70WA606910	Spear	Private	Domestic		01/11/1965	4.20	4.30	Good				1113 m	South
GW101645	10BL154344, 10WA113011	Bore		Domestic		01/03/1994	7.00						1114 m	South West
GW107327	10BL165206, 10WA113935	Spear	Private	Domestic	B & B Drilling Inc	22/07/2005	7.00	7.00	Good	5.00	0.500		1114 m	West

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GW107681	10BL163088	Bore				15/12/2006							1116 m	North West
GW072971		Spear	Private	Commercial		27/02/1995	9.00	9.00					1118 m	South
GW107927	10BL600176, 10WA114117	Spear	Private	Domestic	Combined Drilling Services	28/03/2006	10.00						1120 m	South
GW108700	10BL601663, 10WA114403	Spear	Private	Domestic		12/05/2007	7.93	7.93	Good	3.96	1.000		1121 m	West
GW107093	10BL165718, 10WA114030	Bore		Domestic	A Korkadis	02/05/2006	13.73	13.73	Good	5.18	1.000		1122 m	West
GW109035	10BL600556, 10WA114164	Spear	Private	Domestic		14/07/2008	12.00						1124 m	West
GW107417	10BL164727, 10WA113844	Spear	Private	Domestic	B & B Drilling Inc	12/10/2005	7.00	7.00	Good	5.00	0.500		1124 m	West
GW105625	10BL162884, 10BL164953, 10WA114735	Bore		Recreation	Intertec Drilling Services	06/12/2004	13.80	14.00	172	4.60	0.900		1127 m	North
GW103051	10BL159257, 10WA113283	Bore		Domestic	A Korkadis	28/06/1999	5.80	5.80	Good	3.05	1.000		1128 m	South West
GW023117	10BL016870, 10WA112849	Spear	Private	General Use		01/11/1965	6.00	6.10					1131 m	West
GW107296	10BL163785, 10WA113680	Spear	Private	Domestic		16/04/2005	6.00	6.00					1139 m	South West
GW106296	10BL163764, 10WA113672	Spear	Private	Domestic		09/08/2004	6.10	6.10	Good	3.05	1.000		1139 m	South West
GW108428	10BL600893, 10WA114240	Bore	Private	Domestic		08/01/2007	8.00	8.00					1142 m	North West
GW023996	10BL017432, 10WA112897	Spear	Private	Domestic		01/01/1966	4.50	4.60	Good				1149 m	West
GW029637	10BL023577, 10WA112997	Spear	Private	General Use		01/02/1969	4.40	4.40	Good				1149 m	West
GW109052	10BL602180, 10WA114460	Spear	Private	Domestic		15/07/2008	10.00						1150 m	West
GW110448	10BL602895, 10WA114553	Spear	Private	Domestic		28/02/2009	9.00	9.00	Other	5.00	1.000		1157 m	West
GW108275	10BL600132, 10WA114106	Spear	Private	Domestic	Chris Mylonas	01/05/2006	12.00			8.00			1164 m	West
GW109119	10BL602250, 10WA114473	Spear	Private	Domestic		25/07/2008	7.63		Good	13.05	1.000		1167 m	South West
GW105551	10BL162406, 10WA113423	Bore		Domestic		01/02/2003	7.63	7.63		4.58	1.000		1167 m	West
GW026483		Spear	Private	General Use		01/09/1966	4.80	4.90					1170 m	South
GW072280	10BL154860, 10WA113013	Bore	Private	Domestic		02/06/1994	8.00	8.00					1173 m	South West
GW111438	10BL600923, 10WA114246	Spear	Private	Domestic		11/02/2007	6.10	6.10	good	3.50	1.000		1176 m	South West
GW101699	10BL158646, 10WA113259	Bore		Domestic		03/06/1998	7.00	7.00					1179 m	North
GW107336	10BL165316, 10WA113959	Spear	Private	Domestic		15/08/2005	7.00	7.00					1179 m	North West
GW105730	10BL162270, 10WA113386	Bore	Private	Domestic		15/11/2003	8.00	8.00					1182 m	North
GW105717	10BL162470, 10WA113435	Bore	Private	Domestic	B & B Drilling Inc	07/01/2004	6.00	6.00	Good	3.50	0.500		1183 m	West
GW101157	10BL157030, 10WA113099	Spear	Private	Domestic		06/09/1995	6.10	6.10	Good	3.96	1.000		1187 m	South West
GW110099	10BL162241, 10WA113374	Bore	Private	Domestic		01/01/2003	8.00			2.00	2.500		1190 m	North
GW075018		Bore	NSW Office of Water	Monitoring	McDermott Drilling Pty Ltd	08/07/1998	43.00	44.00		0.48		8.59	1191 m	North West
GW106386	10BL163574, 10WA113615	Spear	Private	Domestic		24/09/2004	7.32	7.32		2.13	1.000		1196 m	South West
GW108207	10BL162227, 10WA113369	Spear		Domestic		01/01/2004	9.50			5.00	1.000		1196 m	North

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GW106366	10BL163804, 10WA113690	Spear	Private	Domestic		18/09/2004	5.81	5.81	Good	3.05	1.000		1197 m	South West
GW106671	10BL162426, 10WA113425	Spear	Private	Domestic		15/10/2004	9.50	9.50					1197 m	North
GW107444	10BL165466, 10WA113983	Spear	Private	Domestic	Water Works	10/09/2005	7.00	7.00	430	3.00	0.500		1198 m	West
GW103124	10BL156139, 10CA114621	Excavation		Recreation		01/01/1995	75.00	75.00			40.000		1202 m	North
GW107154	10BL164908, 10WA113883	Spear	Private	Domestic		26/05/2005	7.93	7.93		4.88	1.000		1206 m	West
GW023138	10BL017078, 10WA112863	Spear	Private	General Use		01/09/1965	4.80	4.90	Excellent				1208 m	West
GW108660	10BL164127, 10WA113733	Spear	Private	Domestic		19/04/2007	16.00	16.00					1210 m	South West
GW106087	10BL162976	Spear	Private	Domestic		14/04/2004	7.63	7.63		4.58	1.000		1213 m	North
GW108166	10BL600428, 10WA114145	Spear		Domestic		29/05/2007	8.00				10.000		1218 m	North
GW072908		Spear	Private	Domestic		19/02/1995	8.00	8.00					1221 m	South
GW105969	10BL162735, 10WA113479	Spear	Private	Domestic		25/05/2006	9.46	9.46	Good	7.01	1.000		1221 m	West
GW106078	10BL162975, 10WA113514	Spear	Private	Domestic		14/04/2004	7.32	7.32		4.27	1.000		1221 m	North
GW101162	10BL157033, 10WA113101	Spear	Private	Domestic		06/09/1995	6.10	6.10	Good	3.50	1.000		1233 m	West
GW024367	10BL018457	Spear	Private	General Use		01/07/1966	4.20	4.30	Good				1242 m	North West
GW023572	10BL017647, 10WA112924	Spear	Private	General Use		01/01/1960	3.60	3.70	Good				1247 m	West
GW107668	10BL164166, 10WA113744	Spear	Private	Domestic		12/12/2005	12.81	12.81	Good	6.41	1.000		1248 m	West
GW104966	10BL160279, 10WA113306	Bore	Private	Domestic		29/09/2001	6.00	6.10		3.05	1.000		1250 m	West
GW072219		Spear	Private	Domestic		28/02/1995	8.00	8.00					1252 m	North
GW107906	10BL600188, 10WA114118	Spear	Private	Domestic		01/04/2006	7.50	7.50					1253 m	South West
GW017473	10BL008402	Spear	Private	General Use			7.60	7.60					1267 m	South West
GW102008	10BL158612, 10WA113258	Bore		Domestic		20/04/1998	6.10	6.10	Good	1.83	6.100		1271 m	West
GW105771	10BL162543, 10WA113443	Spear	Private	Domestic		08/12/2004	7.01	7.02			1.000		1271 m	South West
GW106237	10BL163544, 10WA113607	Bore	Private	Domestic	Water Works	24/06/2004	9.00	9.00		6.00	0.500		1272 m	South West
GW106875	10BL164501, 10WA113804	Spear	Private	Domestic		24/01/2005	5.80	5.80		3.05	1.000		1273 m	West
GW023998	10BL016443, 10WA112819	Bore	Private	General Use		01/09/1965	35.90	36.00					1279 m	West
GW110780	10BL601147, 10WA114289	Spear	Private	Domestic		10/02/2010	23.00	23.00		17.00	1.000		1292 m	West
GW100831	10BL157546, 10WA113164	Spear	Private	Domestic		12/03/1996	6.10	6.10	Good	3.50	1.000		1297 m	West
GW108805	10BL601712, 10WA114407	Spear	Private	Domestic		01/01/2007	20.00			15.00	1.000		1300 m	West
GW104890	10BL161843, 10BL162062, 10CA114621	Bore	Other Govt	Irrigation	Intertec Drilling Services	19/06/2003	25.00	25.80	104	0.90	1.000		1300 m	North
GW106146	10BL157102, 10WA113112	Spear	Private	Domestic		21/09/1995	7.32	7.32	Good		1.000		1315 m	West
GW108595	10BL601333, 10WA114322	Spear	Private	Domestic		03/02/2007	8.00	8.00					1316 m	South West
GW107593	10BL165651, 10WA114011	Spear	Private	Domestic		29/11/2005	12.20	12.20	Good	6.41	1.000		1317 m	West
GW103325	10BL159870, 10WA113297	Bore		Domestic		16/09/2000	7.00	7.00					1318 m	West

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GW107804	10BL165841, 10WA114048	Spear	Private	Domestic		20/01/2006	13.42	13.42	Good	7.63	1.000		1320 m	West
GW108942	10BL601904, 10WA114422	Spear	Private	Domestic		19/06/2008	7.32		Good	3.96	1.000		1321 m	West
GW073459		Bore	Private	Domestic		24/10/1995	7.00	7.00	Good				1322 m	West
GW106106	10BL163269, 10WA113550	Spear	Private	Domestic		02/06/2004	7.01	7.02		3.96	1.000		1325 m	West
GW111307	10BL600465, 10WA114151	Bore	Private	Domestic		25/05/2010	18.00	18.00		14.00	1.000		1335 m	West
GW109216	10BL602549, 10WA114523	Spear	Private	Domestic		15/08/2008	30.00						1335 m	West
GW106132	10BL162281, 10WA113391	Spear	Private	Domestic		27/04/2004	10.37	10.37	Good		1.000		1338 m	West
GW111279	10BL600619, 10WA114180	Spear	Private	Domestic	B&B Drilling	14/11/2001	6.00	6.00					1342 m	West
GW108705	10BL601552, 10WA114372	Spear	Private	Domestic		27/03/2004	13.72	13.73	Good	4.58	1.000		1345 m	West
GW110193	10BL600021, 10WA114081	Bore	Private	Domestic		22/02/2006	24.00	24.00	Good	18.00	1.000		1346 m	West
GW107041	10BL162902, 10WA113509	Spear	Private	Domestic	Water Works	29/04/2004	20.00		370	15.00	1.000		1347 m	West
GW104525	10BL160923	Bore	Private	Monitoring	Intertec Drilling Services	13/11/2002	17.65	17.65	Good	2.00	7.000		1347 m	North West
GW108433	10BL600969, 10WA114253	Spear	Private	Domestic		29/01/2007	12.81	12.81	Good	8.10	1.000		1348 m	West
GW107042	10BL162901, 10WA113508	Spear	Private	Domestic	Water Works	29/04/2004	20.00		370	15.00	1.000		1351 m	West
GW102222	10BL159077, 10WA113275	Spear	Private	Domestic		11/03/1999	9.50	9.50					1354 m	South
GW106178	10BL163264, 10WA113549	Spear	Private	Domestic	B & B Drilling Inc	03/07/2004	7.00	7.00		5.00	0.500		1355 m	South West
GW108998	10BL601009, 10WA114263	Spear	Private	Domestic		09/07/2008	13.72		Good	4.58	1.000		1358 m	West
GW104646	10BL161240, 10WA113332	Bore	Private	Domestic		17/01/2003	10.00	10.00					1361 m	West
GW108286	10BL600521, 10WA114159	Spear	Private	Domestic		13/11/2006	15.25	15.25		4.88	1.000		1363 m	West
GW111465	10BL604400, 10WA114613	Spear	Private	Domestic	B&B Drilling	17/05/2011	9.00	9.00	good	7.00	0.500		1364 m	West
GW107137	10BL164534, 10WA113808	Spear	Private	Domestic		03/05/2005	7.63	7.63		3.96	1.000		1371 m	North West
GW107430	10BL165324, 10WA113961	Spear	Private	Domestic		12/09/2005	9.15	9.15	Good	3.10	1.000		1376 m	North West
GW107534	10BL165409, 10WA113973	Spear	Private	Domestic		05/09/2005	6.10	6.10	Good	2.44	1.000		1381 m	North West
GW107514	10BL163864, 10WA113697	Spear	Private	Domestic		01/09/2005	7.50	7.50					1383 m	South West
GW104928	10BL160633, 10WA113319	Bore	Private	Domestic	B & B Drilling Inc	28/10/2002	9.00	9.00		5.80	0.400		1385 m	North West
GW111585	10WA114280	Bore	Private	Domestic		01/01/2007	21.00	21.00					1389 m	West
GW105770	10BL162554, 10WA113446	Spear	Private	Domestic		07/01/2004	7.01	7.02		4.58	1.000		1398 m	West
GW111452	10BL601572, 10WA114378	Spear	Private	Domestic		01/01/1962	9.00	9.00					1404 m	South West
GW110778	10BL601234, 10WA114305	Spear	Private	Domestic		25/01/2010	23.00	23.00		18.00	1.000		1406 m	West
GW106031	10BL162808, 10WA113487	Spear	Private	Domestic		31/03/2004	5.80	5.80			1.000		1406 m	West
GW105999	10BL162445, 10WA113429	Spear	Private	Domestic		22/03/2004	10.68	10.68			1.000		1414 m	North West
GW108837	10BL163015, 10WA113519	Spear	Private	Domestic		21/01/2006	7.50	7.50					1416 m	West
GW101783	10BL157374, 10WA113152	Bore		Domestic		18/12/1995	5.00	5.00					1417 m	West

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GW073445		Spear	Private	Domestic		20/10/1995	10.00						1420 m	West
GW109098	10BL162923, 10WA113510	Spear	Private	Domestic		23/07/2008	10.68			6.10	1.000		1423 m	North West
GW072922		Spear	Private	Domestic		22/02/1995	6.70	6.70					1423 m	North West
GW111696	10BL164365, 10WA113782	Bore	Private	Domestic		01/10/2008	22.00	22.00		16.00	1.000		1425 m	West
GW027462	10BL020600	Bore	Private	General Use		01/07/1967	20.70	20.70	Other				1428 m	North West
GW109490	10BL164954, 10WA113897	Bore	Private	Domestic	B & B Drilling Inc	21/04/2005	18.00	18.00	Good	12.00	0.400		1433 m	West
GW107348	10BL165062, 10WA113911	Spear	Private	Domestic		19/07/2005	13.42	13.42		9.15	1.000		1435 m	North West
GW111724	10BL165065, 10WA113914	Spear	Private	Domestic		01/01/2008	6.00	6.00		4.50	1.000		1436 m	North
GW108640	10BL165794, 10WA114042	Spear	Private	Domestic		01/03/2006	7.50	7.50					1436 m	South West
GW109922	10BL602855, 10WA114547	Spear	Private	Domestic		20/01/2009	4.58	4.58		2.44	1.000		1437 m	South West
21310006				UNK								31.69	1442 m	North
GW104991	10BL160432, 10WA113314	Bore	Private	Domestic		04/04/2002	9.00	9.00		6.50	1.000		1455 m	West
GW104984	10BL160373, 10WA113310	Bore	Private	Domestic		24/01/2002	9.00	9.00		7.00	1.000		1458 m	West
GW107391	10BL163366, 10WA113565	Spear	Private	Domestic		10/12/2004	7.01	7.02	Good	3.66	1.000		1459 m	North West
GW106915	10BL164684, 10WA113830	Spear	Private	Domestic		03/04/2005	7.50	7.50					1466 m	South West
GW107738	10BL165938, 10WA114063	Spear	Private	Domestic	B & B Drilling Inc	05/01/2006	7.00	7.00	Good	5.00	0.500		1473 m	West
GW107760	10BL165566, 10WA113995	Bore	Private	Domestic		19/01/2007	6.00						1474 m	South West
GW105964	10BL162729, 10WA113478	(Unknown)	Private	Domestic		01/06/2004	9.50	9.50					1474 m	West
GW023659	10BL018050, 10WA112936	Spear	Private	General Use		01/01/1966	4.80	4.90	Good				1481 m	South West
GW108296	10BL600618, 10WA114179	Spear	Private	Domestic		05/11/2006	16.00	16.00					1491 m	West
GW042159		Bore	NSW Office of Water	Monitoring			24.00					24.82	1493 m	West
GW075017		Bore	NSW Office of Water	Monitoring	McDermott Drilling Pty Ltd	07/07/1998	28.50	29.50	Fresh	1.75		8.56	1494 m	West
GW107289	10BL165159, 10WA113928	Spear	Private	Domestic		17/07/2005	14.03	14.03	Good	10.37	1.000		1496 m	South
GW113105	10BL602800	Bore	Private	Monitoring	Macquarie Drilling	18/11/2008	4.90	4.90					1499 m	East
GW042173		Spear	Local Govt	Stock								24.70	1502 m	South
GW106945	10BL164837, 10WA113867	Spear	Private	Domestic		15/04/2005	9.50	9.50					1507 m	West
GW106661	10BL164001, 10WA113719	Spear	Private	Domestic		10/10/2004	15.25	15.25		8.23	1.000		1507 m	South
GW106069	10BL163194, 10WA113537	Spear	Private	Domestic		31/05/2004	7.01	7.02		4.58	1.000		1508 m	South West
GW017341	10BL008542, 10CA114657	Bore	Private	Recreation			18.20						1509 m	West
GW072974		Bore	Private	Domestic		06/05/1995	10.00	10.00					1510 m	South
GW106005	10BL163101, 10WA113526	Spear	Private	Domestic		20/05/2004	12.29	12.29		7.93	1.000		1516 m	South
GW113109	10BL602800	Bore	Private	Monitoring	Macquarie Drilling	23/07/2009	3.50	3.50					1519 m	East

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GW113108	10BL602800	Bore	Private	Monitoring	Macquarie Drilling	23/07/2009	7.00	7.00					1522 m	East
GW113107	10BL602800	Bore	Private	Monitoring	Macquarie Drilling	20/07/2009	8.50	8.50					1528 m	East
GW106863	10BL164867, 10WA113877	Spear	Private	Domestic		15/03/2005	16.47	16.47	Good	7.93	1.000		1528 m	South West
GW113106	10BL602800	Bore	Private	Monitoring	Macquarie Drilling	18/11/2008	5.50	5.50					1529 m	East
GW107132	10BL164682, 10WA113829	Spear	Private	Domestic		23/05/2005	14.64	14.64	Good	7.32	1.000		1530 m	South West
GW106028	10BL162949, 10WA113511	Spear	Private	Domestic	B & B Drilling Inc	21/06/2004	5.00	5.00	Good	3.00	0.500		1531 m	North West
GW109313	10BL602424, 10WA114510	Spear	Private	Domestic	Ultra Drilling	09/09/2008	84.00		200	23.00	1.000		1534 m	North West
GW107643	10BL164000, 10WA113718	Spear	Private	Domestic	B & B Drilling Inc	19/07/2005	7.00	7.00	Good	5.00	0.500		1538 m	West
GW105877	10BL162678, 10WA113472	Bore				09/05/2005							1540 m	South
GW107805	10BL165702, 10WA114024	Bore	Private	Domestic	Combined Drilling Services	27/02/2006							1543 m	North
GW110538	10BL603119, 10WA114570	Spear	Private	Domestic		08/09/2009	8.00	8.00					1554 m	North West
GW105040	10BL161099, 10WA113326	Bore		Domestic		20/03/2003	8.00	8.00		5.00	1.000		1557 m	North West
GW108703	10BL601650, 10WA114398	Bore	Private	Domestic		01/01/1982	8.00				40.000		1567 m	North West
GW038009	10BL101948	Bore	Private	Recreation		01/09/1969	21.30	22.90	Good				1571 m	North West
21310005				UNK								37.92	1571 m	North
GW105492	10BL162700, 10WA113474	Bore		Domestic		15/04/2004	6.71	6.71		4.58	1.000		1574 m	West
GW108048	10BL600304, 10WA114134	Spear	Private	Domestic		12/06/2006	16.16	16.17		8.24	1.000		1575 m	South West
GW108046	10BL600288, 10WA114132	Spear	Private	Domestic		17/06/2006	15.86	15.86		8.23	1.000		1577 m	South West
GW028289	10BL018447, 10WA112950	Spear	Private	General Use		01/09/1966	6.00	6.10	Very Good				1581 m	South West
GW109118	10BL602249, 10WA114472	Bore	Private	Domestic		25/07/2008	7.63		Good	3.05	1.000		1582 m	North West
GW108400	10BL600676, 10WA114193	Spear	Private			15/10/2007	7.01		Good	3.96	1.000		1597 m	North West
GW047125	10BL105641, 10BL601141	Bore	Local Govt	Recreation		01/05/1976	24.40	24.40		4.00			1605 m	South West
GW108443	10BL600984, 10WA114259	Spear	Private	Domestic	Combined Drilling Services	12/01/2007	14.50			8.00			1614 m	South
GW106021	10BL162581, 10WA113452	Spear	Private	Domestic		22/03/2003	16.47	16.47		7.32	1.000		1621 m	West
GW112397	10WA118646	Spear	Private	Domestic		16/04/2013	7.32	7.32	Good	3.05	1.000		1624 m	North West
GW103774	10BL156600, 10WA113072	Bore		Domestic		12/03/1995	6.00			4.00			1625 m	North West
GW100755	10BL157572, 10CA114657	Bore	Private	Irrigation, Recreation	B & B Drilling Inc	30/10/1996	19.50	19.50		3.40	12.500		1630 m	West
GW109774	10BL165829, 10WA114047	Spear	Private	Domestic		01/01/2005	10.00			3.00	0.500		1632 m	South
GW111238	10BL600173, 10WA114116	Bore	Private	Domestic		11/10/2010	12.00	12.00					1636 m	West
GW101933	10BL156973, 10WA113092	Bore		Domestic		11/01/1996	2.20			2.10			1638 m	North West
GW110539	10BL601395, 10WA114336	Spear	Private	Domestic		07/10/2009	10.00	10.00					1640 m	North West
GW106165	10BL163192, 10WA113536	Bore				29/06/2005							1642 m	South West
GW105508	10BL162631, 10WA113462	Bore		Domestic		01/01/2000	7.00				0.050		1651 m	West

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW107741	10BL165165, 10WA113929	Spear	Private	Domestic		05/01/2006	9.00	9.00					1658 m	South West
GW113310	10BL163382, 10WA113571	Spear	Private	Domestic		01/01/2004	9.00	9.00			4.000		1659 m	North West
GW106772	10BL157060, 10WA113107	Spear	Private	Domestic		10/09/1995	5.00	5.00					1659 m	North West
GW109042	10BL602008, 10WA114429	Spear	Private	Domestic		14/07/2008	17.69		Good	8.54	1.000		1662 m	West
GW106602	10BL163744, 10WA113670	Spear	Private	Domestic		28/08/2004	6.10	6.10		3.50	1.000		1664 m	North West
GW105575	10BL162490, 10WA113436	Bore	Private	Domestic		04/01/2004	7.00	7.00					1671 m	North West
GW108734	10BL601448, 10WA114352	Spear	Private	Domestic		19/03/2007	6.10	6.10	Good		1.000		1672 m	West
GW060170	10BL131560, 10WA114635	Bore	Private	Industrial			20.00	20.00	Good				1672 m	South West
213008				UNK								39.12	1674 m	North
GW042169		Bore - Nested (2)	NSW Office of Water	Monitoring			29.80	29.80				20.20	1674 m	South West
GW023529	10BL016955, 10WA112853	Spear	Private	General Use		01/12/1965	6.70	6.70	Good				1677 m	South
GW108472	10BL601127, 10WA114288	Spear	Private	Domestic		06/01/2007	16.00	16.00					1680 m	South
GW017651	10BL008543, 10BL159954, 10CA114657	Bore	Private	Recreation		01/02/1954	29.20	29.30					1683 m	West
GW110270	10BL165643, 10WA114008	Bore	Private	Domestic	B & B Drilling Inc	16/01/2006	6.00	6.00	Good	4.00	0.500		1686 m	North West
GW105440	10BL162159, 10WA113357	Bore		Domestic		20/10/2003	5.19	5.19		2.75	1.000		1690 m	West
GW107213	10BL164994, 10WA113901	Spear	Private	Domestic	B & B Drilling Inc	05/07/2005	6.00	6.00		2.00	0.500		1690 m	West
GW111248	10BL162151, 10BL601857, 10WA114799	Bore	Private	Recreation	STD	20/01/2004	30.00	30.00		6.00			1690 m	South West
GW025718	10BL016426, 10WA112816	Spear	Private	General Use		01/11/1965	3.60	3.70	Good				1691 m	North West
GW107551	10BL165618, 10WA114005	Spear	Private	Domestic		18/11/2005	6.71	6.71	Good	3.50	1.000		1693 m	North West
GW108596	10BL601365, 10WA114327	Spear	Private	Domestic		20/02/2007	16.00	16.00					1696 m	South East
GW104945	10BL160495, 10WA113317	Bore	Private	Domestic		08/02/2000	7.32	7.32		4.27	1.000		1698 m	West
GW108448	10BL601046, 10WA114271	Spear	Private	Domestic		19/01/2007	16.00	16.00					1706 m	South
GW106364	10BL163835, 10WA113691	Bore				23/08/2005							1709 m	North West
GW111621	10BL164152, 10WA113739	Spear	Private	Domestic		01/01/2004	6.00	6.00		4.00			1712 m	North West
GW108440	10BL165741, 10WA114037	Spear	Private	Domestic	B & B Drilling Inc	03/11/2005	5.00	5.00	Good	3.00	0.500		1712 m	West
GW106093	10BL162896, 10WA113507	Spear	Private	Domestic		18/04/2004	5.18	5.19		2.13	1.000		1713 m	North West
GW023419	10BL017015, 10WA112858	Spear	Private	Domestic		07/08/1974					0.080		1715 m	North West
GW075025		Bore	NSW Office of Water	Monitoring	McDermott Drilling Pty Ltd	20/07/1998	24.20	25.50		9.13		8.52	1715 m	South
GW107881	10BL600088, 10WA114098	Spear		Domestic		20/03/2006	7.00						1720 m	West
GW107603	10BL162349, 10WA113411	Spear	Private	Domestic		15/10/2004	7.00	7.00					1722 m	West
GW111553	10BL165565, 10WA113994	Bore	Private	Domestic		01/01/2005	14.00	14.00					1723 m	North East

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW104832	10BL161176, 10WA113329	Bore	Private	Domestic		07/12/2000	7.32	7.32		3.96	1.250		1726 m	West
GW106752	10BL164167, 10WA113745	Spear	Private	Domestic		30/10/2004	9.50	9.50					1728 m	South
GW108403	10BL600688, 10WA114196	Spear	Private	Domestic		15/12/2006	5.00	5.00					1730 m	West
GW108822	10BL165672, 10WA114016	Spear	Private	Domestic		12/12/2006	14.00	14.00	Good		1.000		1731 m	South
GW023144	10BL016800, 10WA112845	Spear	Private	General Use		01/01/1942	4.80		Good				1734 m	North West
GW106854	10BL163505, 10WA113597	Spear	Private	Domestic		15/02/2005	7.00	7.00					1735 m	North East
21310004				UNK								42.05	1735 m	North
GW025540	10BL016659, 10WA112833	Spear	Private	General Use		01/12/1965	4.80	4.90	Good				1736 m	South
GW111557	10BL600797, 10WA114224	Spear	Private	Domestic		25/01/2007	8.00	8.00					1740 m	West
GW100359	10BL157618, 10WA113170	Spear	Private	Domestic		12/09/1995	5.50	5.50	Good	2.74	1.000		1742 m	North West
GW108653	10BL601557, 10WA114374	Spear	Private	Domestic		17/04/2007	12.00	12.00					1743 m	North West
GW105736	10BL162854, 10WA113499	Bore				19/04/2005							1744 m	North West
GW107447	10BL163858, 10WA113693	Spear	Private	Domestic		17/06/2004	8.23	8.24	Good	5.49	1.000		1745 m	North East
GW108418	10BL600796, 10WA114223	Spear	Private	Domestic		30/01/2007	6.00	6.00					1747 m	West
GW109769	10BL165796, 10WA114044	Spear	Private	Domestic		01/01/2005	8.00			2.00	2.500		1748 m	South
GW101883	10BL157490, 10WA113161	Bore		Domestic		26/02/1996	10.00	10.00					1752 m	South
GW106856	10BL163087, 10WA113524	Spear	Private	Domestic		21/12/2004	7.93	7.93	Good	2.13	1.000		1757 m	North West
GW106083	10BL162811, 10WA113488	Bore	Private	Domestic	Intertec Drilling Services	23/03/2004	18.90	20.10	295	1.70	3.500		1761 m	North West
GW072994	10BL156371, 10WA113044	Bore	Private	Domestic		20/08/1995	9.50	9.50					1764 m	South
GW046836	10BL107197, 10BL132425, 10WA114639	Bore	Local Govt	Industrial, Recreation		01/10/1970	37.80	37.80					1765 m	South
GW104834	10BL161173, 10WA113328	Bore	Private	Domestic	A Korkadis	07/12/2002	5.80	5.80		2.44	1.000		1767 m	North West
GW101728	10BL157144, 10WA113118	Bore		Domestic		10/10/1995	4.58	4.58	Good	1.52	1.000		1767 m	West
GW105134	10BL157056, 10WA113105	Bore	Private	Domestic		11/09/1995	5.00	5.00					1767 m	West
GW109946	10BL602187, 10WA114462	Spear	Private	Domestic	B & B Drilling Inc	05/02/2009	5.00	5.00	Good	2.00	0.500		1768 m	West
GW110423	10BL602943, 10WA114561	Spear	Private	Domestic		19/03/2009	12.00	12.00	Other	7.50	1.000		1769 m	South
GW100939	10BL156892, 10WA113082	Bore	Private	Domestic		21/08/1995	5.50	5.50	Good	2.44	1.000		1769 m	North West
GW106110	10BL162824, 10WA113493	Bore	Private	Domestic	Intertec Drilling Services	19/03/2004	20.50	23.20	239	4.40	2.000		1772 m	North West
GW072787		Spear	Private	Domestic		14/01/1995	5.50	5.50	Good				1775 m	West
GW110956	10BL601399, 10WA114338	Spear	Private	Domestic		01/01/2007	12.19	12.19					1776 m	South
GW110058	10BL600038, 10WA114085	Spear	Private	Domestic		01/01/2006	8.00			2.00	2.200		1780 m	North East
GW105019	10BL153144, 10CA114621	Bore	Private	Recreation		26/05/1993	30.00	30.00		7.80	1.890		1781 m	North West
GW040781		Bore	Private				3.29						1782 m	South West

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GW013629	10BL009006	Bore	Private	General Use		01/11/1955	21.90	21.90	0-500 ppm				1782 m	North West
GW108632	10BL165385, 10WA113969	Spear	Private	Domestic		15/08/2005	7.32	7.32	Good	3.96	1.000		1787 m	North West
GW105431	10BL163345, 10BL164439, 10BL604809, 10WA114723, 10WA117789	Bore		Recreation	Southern Tablelands Drilling	02/08/2004	30.00	30.00		8.10	10.000		1789 m	South East
GW053600	10BL120842, 10BL604569, 10BL604809, 10BL605130, 10WA114691, 10WA117791	Bore	Local Govt	Recreation		01/04/1981	29.00	30.50	0-500 ppm				1789 m	South East
GW108394	10BL600558, 10WA114165	Bore	Private	Domestic		26/10/2006	16.00	16.00					1790 m	South
GW108491	10BL600658, 10WA114191	Spear	Private	Domestic	B & B Drilling Inc	08/01/2007	7.00	7.00	Good	5.00	0.500		1797 m	North West
GW112385	10WA118623	Spear	Private	Domestic		17/03/2013	5.49	5.49		3.05	1.000		1798 m	West
GW111158	10BL600566, 10WA114169	Spear	Private	Domestic		01/01/2003	14.00	14.00					1802 m	West
GW023585	10BL017518, 10WA112912	Spear	Private	General Use		01/03/1966	4.50	4.60					1807 m	North West
GW102294	10BL159092, 10WA113276	Spear	Private	Domestic		06/03/1999	10.00	10.00					1809 m	South
GW114917	10WA119150	Spear	Private	Domestic		04/03/2015	9.15	9.15		5.49	1.000		1810 m	West
GW108846	10BL601652	Bore	Private	Domestic		20/04/2006	8.00	8.00					1813 m	North West
GW017653	10BL008545, 10CA114657	Bore	Private	Recreation		01/11/1957	25.60	25.60					1814 m	South West
GW024024	10BL018394, 10WA112945	Spear	Private	General Use		01/12/1965	6.00	6.10	Good				1815 m	South
GW017652	10BL008544, 10CA114657	Bore	Private	Recreation			24.60						1815 m	West
GW105940	10BL162321, 10WA113403	Bore				20/05/2005							1821 m	North West
GW107578	10BL164156, 10WA113741	Spear	Private	Domestic		10/11/2004	16.47	16.47	Good	12.81	1.000		1829 m	South
GW107509	10BL163643, 10WA113640	Spear	Private	Domestic		25/08/2005	10.00	10.00					1829 m	North West
GW106182	10BL162821, 10WA113491	Spear	Private	Domestic	B & B Drilling Inc	14/07/2004	4.00	4.00	Good	2.00	0.500		1830 m	West
GW025717	10BL016557, 10WA112825	Spear	Private	General Use		01/10/1965	3.60						1830 m	West
GW106030	10BL162823, 10WA113492	Bore	Private	Domestic	Intertec Drilling Services	17/03/2004	20.00	20.50	220	4.10	2.000		1838 m	North West
GW106537	10BL163696, 10WA113653	Spear	Private	Domestic		09/10/2004	10.00	10.00					1846 m	North West
GW106177	10BL163428, 10BL600644, 10WA114187	Spear	Private	Domestic	B & B Drilling Inc	01/01/2007	8.00	8.00		2.00	2.500		1848 m	North West
GW019633	10BL012858	(Unknown)	Other Govt	Recreation		01/11/1961	35.00	35.10					1849 m	South West
GW111592	10BL165354, 10WA113966	Bore	Private	Domestic		01/01/2005	20.00	20.00					1849 m	North West
GW106435	10BL163960, 10WA113708	Spear	Private	Domestic		20/09/2004	12.81	12.81		8.23	1.000		1849 m	North West
GW105496	10BL162469, 10WA113434	Bore		Domestic		06/10/2003	10.00						1856 m	South
GW024206	10BL018634, 10WA112963	Spear	Private	General Use		01/08/1966	5.40	5.50	Good				1861 m	South
GW106798	10BL163600, 10WA113627	Spear	Private	Domestic		19/12/2004	10.00	10.00					1869 m	North West
GW111247	10BL162151, 10BL601856, 10WA114799	Bore	Private	Recreation	STD	14/04/2004	36.00	36.00		7.00			1874 m	South West

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW104057	10BL160241, 10WA113304	Bore		Domestic	Southern Tablelands Drilling	02/11/2000	14.00	14.00					1880 m	North West
GW113243	10BL602802	Bore	Private	Monitoring	Macquarie Drilling	10/11/2008	13.00	13.00					1883 m	South
GW111600	10BL604978	Bore	Private	Monitoring	UNSW	29/09/2011	20.00	20.00		5.00			1883 m	South West
GW111624	10BL165365	Bore	Private	Monitoring		05/08/2005	36.00	36.00		5.00			1883 m	South West
GW112525	10BL600682, 10BL602307, 10WA118709	Bore	Private	Industrial	B&B Drilling	16/10/2008	30.00	30.00		10.60			1883 m	South
GW025716	10BL016548, 10WA112823	Spear	Private	General Use		01/01/1945	4.80						1885 m	South
GW042834	10BL105619, 10BL162081, 10CA114621	Bore	Local Govt	Irrigation, Recreation		01/11/1976	31.10	31.10					1886 m	North West
GW023270	10BL016732, 10WA112840	Spear	Private	General Use			7.00	7.00					1890 m	South
GW104992	10BL160433, 10WA113315	Bore	Private	Domestic		24/01/2002	9.00	9.00		6.50	1.000		1892 m	South
GW113245	10BL602802	Bore	Private	Monitoring	Macquarie Drilling	10/11/2008	13.00	13.00					1894 m	South
GW023841	10BL017496, 10WA112903	Spear	Private	General Use		01/03/1966	4.50	4.60	Good				1896 m	South
GW023991	10BL018144, 10WA112940	Spear	Private	General Use		01/05/1966	5.70	5.80	Good				1898 m	South
GW101759	10BL157335	Bore		Domestic		12/11/1995	10.98	10.98	Good	8.24	1.000		1899 m	North West
GW106058	10BL162559, 10WA113447	Spear	Private	Domestic		06/02/2004	7.50	7.50					1899 m	North West
GW101072	10BL158251, 10WA113211	Spear	Private	Domestic		11/11/1997	10.00	10.00					1900 m	South
GW017729	10BL008396	Bore	Local Govt	Recreation		01/01/1942	30.40	30.50	Good				1900 m	North West
GW111136	10BL600564, 10WA114167	Spear	Private	Domestic	Combined Drilling Services	17/12/2006	11.00	11.00		3.50			1903 m	North West
GW113242	10BL602802	Bore	Private	Monitoring	Macquarie Drilling	10/11/2008	13.00	13.00					1903 m	South
GW113244	10BL602802	Bore	Private	Monitoring	Macquarie Drilling	10/11/2008	13.00	13.00					1906 m	South
GW114340	10BL604956	Bore	Other Govt	Monitoring	Total Drilling	12/09/2011	5.55	5.55		3.42			1911 m	North
GW027616	10BL019784, 10WA112992	Bore	Private	Industrial		01/08/1967	32.60	32.60					1911 m	South
GW105747	10BL162263, 10WA113382	Spear	Private	Domestic		15/12/2003	8.23	8.24		4.88	1.000		1916 m	North West
GW029355	10BL019786	Bore	Private	Industrial		01/07/1968	28.90	29.00					1919 m	South
GW105962	10BL163248, 10WA113544	Bore				24/05/2005	14.00						1919 m	South
GW105919	10BL161675, 10WA113341	Bore				13/05/2005							1923 m	North West
GW110542	10BL603341, 10WA114577	Bore	Private	Domestic	Intertec Drilling Services	12/10/2009	27.80	28.00	134	12.20	0.600		1934 m	North East
GW024118	10BL018436, 10WA112948	Spear	Private	General Use		01/01/1966	3.00	3.00	Good				1940 m	North West
GW108228	10BL600464, 10WA114150	Spear	Private	Domestic		02/09/2006	17.00	17.00					1941 m	North
GW114341	10BL604956	Bore	Other Govt	Monitoring	Total Drilling	12/09/2011	2.72	2.72		1.41			1949 m	North
GW024368	10BL018351	Bore	Private	Recreation		01/02/1966	12.90	13.00				20.50	1955 m	South West
GW101069	10BL158216, 10WA113205	Spear	Private	Domestic		11/10/1997	10.00	10.00					1957 m	South
GW113145	10BL604599	Bore	Private	Monitoring	Total Drilling	13/05/2011	9.70	9.74					1959 m	North West

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GW109066	10BL601956, 10WA114425	Spear	Private	Domestic		16/07/2008	7.50						1960 m	North West
GW026584	10BL019542, 10WA112986	Spear	Private	General Use		01/11/1966	6.00	6.10					1962 m	South
GW023275	10BL016918	Spear	Local Govt	General Use		01/09/1965	5.70	5.80					1970 m	West
GW106693	10BL164313, 10WA113773	Spear	Private	Domestic		21/11/2004	11.29	11.29	Good	7.93	1.000		1974 m	North West
GW060243	10BL132429, 10WA114645	Bore	Local Govt	Industrial, Recreation		01/05/1973	33.50						1975 m	South
GW106730	10BL164248, 10WA113765	Spear	Private	Domestic	Water Works	28/10/2004	15.00	15.00	334	12.00	1.000		1975 m	North West
GW109270	10BL164852, 10WA113871	Bore	Private	Domestic		26/08/2008	11.00			2.00	2.500		1977 m	North West
GW113770	10BL601746	Bore	Private	Monitoring		06/02/2014	5.00	5.00					1986 m	North West
GW108882	10BL163403, 10WA113575	Bore	Private	Domestic		30/05/2008	6.00						1986 m	North West
GW113768	10BL601746	Bore	Private	Monitoring		06/11/2006	5.00	5.00					1988 m	North West
GW106004	10BL162812, 10WA113489	Bore	Private	Domestic	Intertec Drilling Services	25/03/2004	19.50	23.20	305	4.10	2.000		1992 m	North West
GW113144	10BL604599	Bore	Private	Monitoring	Total Drilling	12/05/2011	9.75	9.75					1996 m	North West
GW108498	10BL164824	Spear	Private	Domestic		22/01/2006	18.00	18.00					1996 m	South
GW113766	10BL601746	Bore	Private	Monitoring		09/11/2006	5.50	5.50					1998 m	North West

Hydrogeology & Groundwater

Upper Campus, University of New South Wales, Sydney, NSW 2052

Driller's Logs

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

Groundwater No	Drillers Log	Distance	Direction
GW111568	0.00m-0.03m ASPHALT 0.03m-0.10m SAND AND GRAVEL 0.10m-1.20m SAND,YELLOW AND BROWN,F/GRAINED 1.20m-8.60m SAND,LIGHT YELLOW BROWN F/GRAINED	386m	West
GW109679	0.00m-0.10m CONCRETE 0.10m-1.00m FILL, MOIST,SAND, GRAVEL 1.00m-4.00m SAND, MOIST GREY BROWN 4.00m-6.00m SANDSTONE,ORANGE BROWN	391m	South
GW111567	0.00m-0.03m ASPHALT 0.03m-0.10m SAND AND GRAVEL 0.10m-0.50m FILLING,DARK GREY SAND,TRACE OF GRAVEL 0.50m-0.70m FILLING,BROWN SAND 0.70m-4.00m SAND,ORANGE AND DARK BROWN,F/GRAINED 4.00m-4.50m SAND,LIGHT BROWN,F/GRAINED 4.50m-8.00m SANDMLIGHT YELLOW BROWN,F/GRAINED	395m	West
GW109680	0.00m-0.50m CONCRETE 0.50m-0.70m FILL,PALE,ORANGE 0.70m-1.50m SAND 1.50m-1.90m SANDSTONE 1.90m-3.90m SAND 3.90m-5.50m SANDSTONE,MOIST,PALE,GREY	398m	South
GW057008	0.00m-0.20m Topsoil 0.20m-3.00m Sand Grey 3.00m-13.50m Sand 13.50m-18.30m Sand Grey 13.50m-18.30m Peat Seams Clay Bands 18.30m-27.50m Sand Yellow 27.50m-30.00m Clay Grey	400m	North West
GW110524	0.00m-1.50m ROCK	404m	South
GW109681	0.00m-1.00m CONCRETE,FILL,MOIST ORANGE 1.00m-1.30m SAND 1.30m-2.10m SANDSTONE,MOIST,DARK 2.10m-3.50m SAND,WET,PALE 3.50m-6.00m SANDSTONE,SLIGHLY MOIST,WEATHERED	407m	South
GW111847	0.00m-0.50m FILL,SLIGHTLY MOIST,PALE PINK,DENSE,SANDSTONE,SAND 0.50m-3.00m SAND,MOIST,PALE GREYS,BROWN,COARSE 3.00m-5.00m SAND,WET,PALE BROWN,MEDIUM GRAINED	430m	South East
GW110856	0.00m-13.00m SAND 13.00m-13.20m ROCKS	445m	South West
GW017851	0.00m-4.57m Sand Water Supply	475m	South
GW111846	0.00m-0.20m BITUMEN 0.20m-0.50m FILL,MOIST,BROWN,DENSE,SAND,MINOR ASPHALT 0.50m-5.60m SAND,DENSE,MOIST,ORANGE,BROWN,SANDSTONE	488m	South
GW111845	0.00m-0.20m BITUMEN 0.20m-1.00m FILL, MOIST,ORANGE BROWN AND BLACK 1.00m-3.00m SAND MOIST,PALE,M/DENSE,COARSE	513m	South
GW111844	0.00m-0.15m FILL,MOIST,GREY BROWN,LOOSE,SAND 0.15m-3.00m SAND,MEDIUM DENSE,MOIST,GREY,M/GRAINED 3.00m-4.80m SAND,WET,PALE BROWN,COARSE GRAINED	535m	South East

Groundwater No	Drillers Log	Distance	Direction
GW072463	0.00m-7.00m GREY SAND 7.00m-8.00m GREY CLAY 8.00m-10.50m BROWN SANDSTONE 10.50m-11.00m BROWN SOFT SANDSTONE 11.00m-17.00m GREY SANDSTONE 17.00m-17.50m GREY CLAY 17.50m-43.00m WHITE SANDSTONE	539m	South East
GW019634	0.00m-0.91m Sand Made Ground 0.91m-1.21m Ash Made Ground 1.21m-1.82m Sand Hard Cemented 1.82m-6.70m Sand Packed 6.70m-9.14m Sand Light Brown 9.14m-10.97m Sand Yellow 9.14m-10.97m Peat Bands 10.97m-20.11m Peat Some 10.97m-20.11m Sand Grey 20.11m-23.16m Sand Grey Coarse 20.11m-23.16m Peat Bands 23.16m-26.21m Sand Yellow 26.21m-31.39m Sand White 31.39m-32.61m Sand Yellow 31.39m-32.61m Clay Bands 32.61m-32.62m Peat	541m	West
GW104772	0.00m-0.50m TOP FILL 0.50m-2.10m LIGHT BROWN SAND 2.10m-9.70m YELLOW SAND 9.70m-9.90m BROWN CLAY 9.90m-14.20m YELLOW SAND 14.20m-15.20m SILTY SAND/CLAY 15.20m-16.80m BROWN SAND 16.80m-20.50m WHITE SILTY SAND/CLAY 20.50m-24.10m DECOMPOSED SANDSTONE 24.10m-25.00m L/YELLOW HARD SANDSTONE	571m	North West
GW025890	0.00m-0.30m Sand Grey 0.30m-10.05m Sand 10.05m-10.21m Sand Peaty 10.21m-10.97m Sand Dirty Wet 10.97m-12.19m Sand Wet 10.97m-12.19m Clay Bands 12.19m-13.71m Sand Dirty Wet 13.71m-15.24m Sand Water Supply 15.24m-16.76m Sand Grey Water Supply 16.76m-18.28m Sand Grey Peaty Water Supply 18.28m-19.81m Sand Grey Water Supply 19.81m-21.33m Sand Dark Brown Water Supply 19.81m-21.33m Clay Bands 21.33m-22.86m Sand Dark Brown Water Supply 22.86m-25.90m Sand Water Supply 25.90m-29.56m Sand Yellow Water Supply 29.56m-31.39m Sand Yellow Peat 29.56m-31.39m Clay Seams	572m	West
GW102016	0.00m-1.00m Topsoil 1.00m-3.00m Fill material - ash and slag 3.00m-4.00m Light Brown Sand F.G., trace organic matter 4.00m-8.00m Light Brown Sand F.G. 8.00m-11.00m Yellow/Brown Sand F.G. 11.00m-14.00m Sand F.G. with thin peat stringers 14.00m-20.00m Light Brown Sand with trace peat 20.00m-33.00m White Sand F.G. 33.00m-35.00m Peat and Clay	574m	West
GW101682	0.00m-1.00m Topsoil 1.00m-3.00m Fill - ash and slag material 3.00m-12.00m Yellow/Brown Sand F.G. 12.00m-15.00m A/A with thin Peat and trace Clay 15.00m-17.00m Yellow/Brown Sand F.G. 17.00m-21.00m White Sand F.G. 21.00m-29.00m Light Brown Sand F.G. 29.00m-33.00m White Sand F.G. 33.00m-41.00m Peat, Clayey, black and oily	592m	West

Groundwater No	Drillers Log	Distance	Direction
GW019635	0.00m-2.43m Ash Clay 0.00m-2.43m Sand 2.43m-11.58m Sand Clay 11.58m-11.88m Peat Bands 11.88m-14.93m Peat Sandy Wet 14.93m-17.37m Sand Water Supply 17.37m-19.81m Sand White Water Supply 19.81m-21.33m Peat Sandy 21.33m-24.38m Sand Water Supply 24.38m-24.68m Peat Sandy Water Supply 24.68m-25.60m Sand White Coarse 25.60m-28.49m Sand Yellow Water Supply	597m	West
GW028827	0.00m-3.65m Sand Dirty 3.65m-11.58m Sand Light Brown Clean 11.58m-13.10m Sand Peaty Water Supply 13.10m-18.89m Sand Grey Water Supply 18.89m-26.51m Sand Dark Brown Peaty Water Supply 26.51m-27.73m Sand Grey Clayey Silty Water Supply 27.73m-32.61m Sand Light Grey Water Supply 32.61m-32.62m Clay Grey Stiff Water Supply	597m	West
GW100768	0.00m-17.39m UNCOSOLIDATED ALL SANDS	600m	South West
GW034992	0.00m-1.00m SANDY SOIL,GREY/BROWN 1.00m-2.00m SAND,F.G. LT. BROWN 2.00m-3.00m SAND 3.00m-4.00m SAND, F.G. YELLOW/BROWN 4.00m-7.00m SAND/F.G. 7.00m-12.00m SAND F.G. 12.00m-13.00m A/A WITH THIN PEAT BED 13.00m-14.00m A/A MIN OR PEAT 14.00m-17.00m SAND F.G. WITH YELLOW MIN.PEAT 17.00m-20.00m SAND F.G WH. 20.00m-21.00m A/A WITH PEAT 21.00m-27.00m SAND F.G WITH SL COARSE AT BASE 27.00m-29.00m SAND F.G WITH 10-20 % CLAY 29.00m-34.00m SAND F.G. WITH MIN CLAY AT COARSE 34.00m-36.50m PEAT MASSIVE, OILY 36.50m-38.00m CLAY WITH MIN PEAT 38.00m-41.00m PEAT & CLAY WITH 50:50	611m	West
GW106098	0.00m-9.50m sand	616m	South West
GW110240	0.00m-0.50m TOPSOIL 0.50m-10.70m SAND COLOURED 10.70m-17.00m SOFT SANDSTONE 17.00m-150.00m HARD SANDSTONE	633m	South
GW108971	0.00m-0.30m TOPSOIL 0.30m-1.80m SANDY CLAY 1.80m-3.50m WHITE CLAY 3.50m-9.00m COLOURED SANDSTONE 9.00m-39.00m WHITE SANDSTONE 39.00m-41.00m BLACK SANDSTONE 41.00m-208.00m WHITE SANDSTONE 208.00m-216.00m GREY SHALE	644m	North East
GW019612	0.00m-11.58m Sand Clay 11.58m-14.32m Sand Peaty Coloured 14.32m-15.24m Sand Wet 15.24m-19.50m Sand White Water Supply 19.50m-19.81m Peat 19.81m-20.42m Sand Peaty 20.42m-25.90m Sand Dark Brown Water Supply 25.90m-26.82m Sand Water Supply 26.82m-26.97m Clay 26.97m-31.39m Sand White Water Supply	674m	West
GW101452	0.00m-6.00m SAND	675m	West
GW047543	0.00m-30.48m Sand Water Supply	713m	North West
GW107651	0.00m-0.30m topsoil 0.30m-4.50m sand, yellow 4.50m-7.00m sand, grey	730m	West
GW106378	0.00m-0.30m topsoil 0.30m-2.20m sand, yellow 2.20m-2.60m sand, dark brown 2.60m-7.00m sand, yelllow	736m	West
GW105676	0.00m-9.15m sand, unconsolidated	739m	West

Groundwater No	Drillers Log	Distance	Direction
GW105978	0.00m-8.23m sand, unconsolicated	740m	West
GW024677	0.00m-4.87m Sand Yellow Water Supply	746m	West
GW047542	0.00m-0.61m Loam Sandy 0.61m-1.22m Sand 1.22m-2.13m Sand Hard Cemented 2.13m-7.62m Sand 7.62m-10.06m Sand 10.06m-12.19m Sand Peaty 12.19m-14.02m Sand White 14.02m-15.24m Sand White Clayey 15.24m-17.37m Sand White 17.37m-20.73m Sand Peaty 20.73m-21.34m Sand White 21.34m-22.25m Sand Peaty 22.25m-23.16m Sand White Peaty 23.16m-24.38m Sand Slightly Peaty 24.38m-30.18m Sand White Clean 30.18m-30.48m Clay	757m	North West
GW106774	0.00m-8.23m sand, unconsolidated	761m	West
GW104947	0.00m-0.30m TOPSOIL 0.30m-1.20m WHITE SAND 1.20m-1.40m ROCK COFFEE 1.40m-4.80m YELLOW SAND MG. 4.80m-5.00m YELLOW SILTY SAND	772m	South
GW104969	0.00m-6.00m SAND	786m	North West
GW108036	0.00m-0.30m topsoil 0.30m-4.30m sand, yellow 4.30m-6.00m sand, white	786m	West
GW107638	0.00m-0.30m topsoil 0.30m-5.00m sand, yellow	801m	West
GW108674	0.00m-8.00m sand	809m	West
GW104773	0.00m-0.50m TOP FILL 0.50m-2.10m LIGHT BROWN SAND 2.10m-9.70m YELLOW SAND 9.70m-9.90m BROWN CLAY 9.90m-14.20m YELLOW SAND 14.20m-15.20m SILTY SAND/CLAY 15.20m-16.80m BROWN SAND 16.80m-20.50m WHITE SILTY SAND 20.50m-24.10m DECOMPOSED SANDSTONE 24.10m-25.00m LIGHT YELLOW SANDSTONE	810m	North West
GW108861	0.00m-0.10m TOPSOIL 0.10m-0.80m SANDY CLAY 0.80m-0.90m GREY CLAY 0.90m-4.00m RED YELLOW SANDSTONE 4.00m-114.00m WHITE SANDSTONE	815m	South
GW105754	0.00m-5.18m sand, uncosolicated	823m	West
GW101453	0.00m-6.00m SAND	829m	West
GW106554	0.00m-0.30m topsoil 0.30m-4.20m sand, brown 4.20m-6.00m sand, yellow	831m	North West
GW047544	0.00m-2.20m Sand 2.20m-3.50m Sand Yellow 3.50m-4.50m Sand White Water Supply 4.50m-7.50m Sand Water Supply 7.50m-16.20m Sand Yellow Water Supply 16.20m-17.00m Sand White Peaty Clay Water Supply 17.00m-18.00m Sand White Water Supply 18.00m-22.00m Sand Yellow Water Supply 22.00m-23.00m Sandstone Red Soft Water Supply	836m	North West
GW106797	0.00m-7.00m sand	837m	West
GW107728	0.00m-7.00m sand	870m	West

Groundwater No	Drillers Log	Distance	Direction
GW108422	0.00m-14.00m Sand	882m	South West
GW101455	0.00m-6.00m SAND	883m	West
GW107789	0.00m-7.00m sand	885m	South West
GW106973	0.00m-0.30m Topsoil 0.30m-1.50m Sand, brown 1.50m-4.50m Sand, yellow 4.50m-6.00m Sand, grey	911m	West
GW107614	0.00m-0.30m topsoil 0.30m-4.20m sand, yellow 4.20m-6.00m sand, dark yellow	915m	West
GW107641	0.00m-7.50m sand	916m	West
GW101225	0.00m-6.00m Unconsolidated - all sand.	920m	West
GW103644	0.00m-7.00m SAND	926m	West
GW013339	0.00m-16.45m Sand Nominal Water Supply 0.00m-16.45m Mud Marine Nominal	928m	South West
GW023179	0.00m-1.21m Sand 1.21m-1.52m Sand Hard Cemented 1.52m-7.62m Sand Water Supply	928m	South West
GW110535	0.00m-12.00m SAND	935m	South West
GW102611	0.00m-6.00m SAND	936m	West
GW026468	0.00m-0.91m Topsoil 0.91m-3.04m Sand Hard Cemented 3.04m-6.70m Clay Sandy 6.70m-7.31m Peat Wood 7.31m-9.14m Sand White Clean Water Supply 9.14m-10.05m Sand Yellow Clean Water Supply 10.05m-14.93m Sand White Clean Water Supply 14.93m-15.24m Sand Yellow Water Supply 15.24m-15.54m Sand Grey Water Supply 15.54m-19.66m Sand Grey Pete Water Supply 19.66m-19.67m Peat Water Supply	942m	South West
GW106249	0.00m-6.00m sand	943m	West
GW101219	0.00m-4.88m Unconsolidated - all sand.	944m	West
GW107653	0.00m-9.50m sand	949m	West
GW106862	0.00m-7.63m Sand, unconsolidated	953m	West
GW107584	0.00m-7.50m sand	965m	South West
GW023290	0.00m-3.96m Sand Water Supply 3.96m-4.26m Sand Hard Cemented	966m	North West
GW107342	0.00m-5.18m Sand, unconsolidated	974m	North West
GW102598	0.00m-6.00m SAND	975m	West
GW101456	0.00m-6.00m SAND	976m	West
GW101458	0.00m-6.00m SAND	981m	West
GW107142	0.00m-17.05m sand	994m	West
GW107335	0.00m-7.00m sand	995m	West
GW107129	0.00m-12.81m Sand, unconsolidated	996m	West
GW107612	0.00m-12.81m Sand, unconsolidated	998m	West
GW100985	0.00m-5.18m UNCONSOLIDATED ALL SANDS	999m	North

Groundwater No	Drillers Log	Distance	Direction
GW107390	0.00m-7.32m Sand, unconsolidated	1015m	South West
GW108442	0.00m-8.00m Sand	1018m	West
GW108229	0.00m-17.00m sand	1027m	West
GW101967	0.00m-7.00m Sand	1035m	West
GW106766	0.00m-0.30m topsoil 0.30m-4.50m sand, yellow 4.50m-6.00m sand, brown	1039m	West
GW111445	0.00m-8.00m SAND	1040m	West
GW106297	0.00m-8.23m sand	1055m	West
GW108225	0.00m-14.00m sand	1055m	South West
GW105630	0.00m-5.18m sand, uncolsolidated	1061m	West
GW106076	0.00m-5.79m SAND, UNCONSOLIDATED	1063m	South West
GW106488	0.00m-6.10m sand	1063m	South West
GW110874	0.00m-7.93m UNCONSOLIDATED ALL SANDS	1068m	West
GW114951	0.00m-0.50m TOPSOIL 0.50m-4.00m SAND YELLOW 4.00m-6.00m SAND WHITE	1073m	West
GW110786	0.00m-8.00m SAND	1078m	South West
GW105438	0.00m-7.63m UNCONSOLIDATED ALL SANDS	1079m	West
GW110342	0.00m-0.20m CONCRETE 0.20m-0.60m FILL 0.60m-4.00m SAND	1079m	North West
GW110338	0.00m-0.50m FILL 0.50m-1.00m FILL POSSIBLY NATURAL SAND 1.00m-4.00m SAND	1081m	North West
GW110337	0.00m-1.00m FILL 1.00m-4.00m SAND	1082m	North West
GW110339	0.00m-0.50m FILL 0.50m-4.00m SAND	1084m	North West
GW109813	0.00m-1.00m GRAVELLY SILTY SAND,LOOSE,DRY,DARK GREY,PIECES OF RUBBLE 1.00m-9.00m SAND,MOIST,L/GREY,DARK BROWN,D/ORANGE,CREAM,SATURATED	1086m	South West
GW110336	0.00m-0.50m FILL 0.50m-1.90m FILL,(POSSIBLY NATURAL) 1.90m-4.00m SAND	1088m	North West
GW108507	0.00m-8.00m sand	1090m	South West
GW110341	0.00m-0.20m CONCRETE 0.20m-0.30m FILL 0.30m-4.00m SAND	1090m	North West
GW023612	0.00m-5.18m Sand Water Supply	1091m	South West
GW109812	0.00m-0.10m CONCRETE 0.10m-0.30m SILTY SAND,LOOSE,DRY,BROWN/GREY,SANDSTONE BRICK PIECES 0.30m-9.00m SAND,LOOSE,DRY,MOIST,ORANGE,BECOMES SATURATED	1095m	South West
GW107431	0.00m-7.63m Sand, unconsolidated	1097m	North West
GW109849	0.00m-0.20m CONCRETE 0.20m-1.00m FILL 1.00m-8.50m SAND	1097m	South West
GW109810	0.00m-0.80m GRAVELLY SILTY SAND,FILL, LOOSE,DRY MOIST,DARK,BROWN,GREY 0.80m-9.00m SAND,MEDIUM DENSE,V/DARK BROWN/BLACK BECOMES SATURATED	1101m	South West

Groundwater No	Drillers Log	Distance	Direction
GW075021	0.00m-2.00m SAND,FINE GRAINED,WHITE 2.00m-6.00m SAND,MED GRAINED,YELLOW BROWN 6.00m-7.00m SILTY SAND 7.00m-13.00m SAND,MED TO FINE GRAINED 13.00m-19.00m SAND,VERY FINE GRAINED 19.00m-20.50m PEAT,FIRM 20.50m-24.00m PEAT FIRM,BLACK 24.00m-25.00m SAND,WHITE 25.00m-32.00m PEATY SAND 32.00m-34.00m CLAYEY SAND,FINE GRAINED 34.00m-35.00m SAND,MED GRAINED 35.00m-41.00m SILTY SAND,GREY WITH SILT 41.00m-44.00m SANDY CLAY,FINE TO MED GRAINED 44.00m-44.50m SANDY CLAY	1102m	West
GW025781	0.00m-4.57m Sand Water Supply	1103m	South West
GW109848	0.00m-0.20m CONCRETE 0.20m-1.70m FILL 1.70m-8.70m SAND	1103m	South West
GW110335	0.00m-0.20m CONCRETE 0.20m-0.80m FILL 0.80m-4.00m SAND	1103m	North West
GW110340	0.00m-0.80m FILL 0.80m-4.00m SAND	1103m	North West
GW109811	0.00m-0.30m SILTY SAND,DRY,BROWN,GREY,MINOR GLASS 0.30m-9.00m SAND,DRY,L/GREY,BROWN/COPPER,MOIST,BECOMES SATURATED	1105m	South West
GW111004	0.00m-13.12m UNCONSOLIDATED ALL SAND	1105m	West
GW105567	0.00m-0.30m TOPSOIL 0.30m-2.30m BROWN SAND 2.30m-7.00m WHITE SAND	1108m	West
GW109809	0.00m-0.20m CONCRETE 0.20m-0.60m GRAVELLY SILTY SAND,LOOSE,DRY 0.60m-9.00m SAND,MEDIUM DENSE/YELLOW,ORANGE,GRADES TO CREAM	1109m	South West
GW109847	0.00m-1.00m FILL 1.00m-8.50m SAND	1112m	South West
GW023445	0.00m-0.30m Sand 0.30m-3.35m Sand White Water Supply 3.35m-3.65m Loam 3.65m-4.26m Sand White	1113m	South
GW107327	0.00m-0.30m topsoil 0.30m-4.50m sand, yellow 4.50m-6.00m sand, white	1114m	West
GW072971		1118m	South
GW108700	0.00m-7.93m sand	1121m	West
GW107093	0.00m-12.43m UNCONSOLIDATED ALL SANDS	1122m	West
GW107417	0.00m-0.30m topsoil 0.30m-5.50m sand, yellow 5.50m-7.00m sand, brown	1124m	West
GW105625	0.00m-1.00m SILTY SAND 1.00m-6.50m L/BROWN SAND 6.50m-8.00m SAND,SMALL CLAY BANDS 8.00m-10.00m W. L/BROWN SAND 10.00m-13.50m W. CREAM SAND 13.50m-13.80m DIRTY YELLOW SAND 13.80m-14.00m RED CLAY	1127m	North
GW103051	0.00m-5.79m UNCONSOLIDATED ALL SAND	1128m	South West
GW023117	0.00m-1.21m Sand 1.21m-1.52m Sand Hard Cemented 1.52m-6.09m Sand Water Supply	1131m	West
GW106296	0.00m-6.10m sand	1139m	South West
GW107296	0.00m-6.00m sand	1139m	South West

Groundwater No	Drillers Log	Distance	Direction
GW108428	0.00m-8.00m Sand	1142m	North West
GW023996	0.00m-3.04m Sand White 3.04m-3.65m Sand Black Water Supply 3.65m-4.57m Sand White	1149m	West
GW029637	0.00m-4.41m Sand Water Supply	1149m	West
GW110448	0.00m-9.00m UNCONSOLIDATE ALL SANDS	1157m	West
GW105551	0.00m-7.63m UNCONSOLIDATED ALL SANDS	1167m	West
GW026483	0.00m-4.87m Sand	1170m	South
GW072280	0.00m-8.00m SAND	1173m	South West
GW111438	0.00m-6.10m UNCONSOLIDATED ALL SAND	1176m	South West
GW101699	0.00m-7.00m Sand	1179m	North
GW107336	0.00m-7.00m sand	1179m	North West
GW105730	0.00m-8.00m sand	1182m	North
GW105717	0.00m-0.30m topsoil 0.30m-4.20m sand, light brown 4.20m-6.00m sand, yellow	1183m	West
GW101157	0.00m-6.10m UNCONSOLIDATED, ALL CLEAN SAND	1187m	South West
GW075018	0.00m-0.50m FILLING MATERIAL 0.50m-5.00m SAND,MED GRAINED YELLOW 5.00m-15.20m SAND,FINE GRAINED YELLOW 15.20m-19.50m SILTY SAND FINE GRAINED,GREY 19.50m-26.00m SANDY SILT 26.00m-26.50m SAND,MED GRAINED 26.50m-27.50m PEATY SAND 27.50m-29.00m CLAYEY SAND 29.00m-32.00m CLAY,SOFT,FINE 32.00m-39.50m SANDY CLAY,SOFT,MED TO FINE GRAINED 39.50m-43.00m SANDY SILT 43.00m-44.00m SANDY CLAY,SOFT	1191m	North West
GW106386	0.00m-7.32m mud sand	1196m	South West
GW106366	0.00m-5.81m sand	1197m	South West
GW106671	0.00m-9.50m sand	1197m	North
GW107444	0.00m-7.00m sand	1198m	West
GW107154	0.00m-7.93m sand	1206m	West
GW023138	0.00m-4.87m Sand Water Supply	1208m	West
GW108660	0.00m-16.00m sand	1210m	South West
GW106087	0.00m-7.63m sand, unconsolidated	1213m	North
GW072908		1221m	South
GW105969	0.00m-9.46m sand, unconsolidated	1221m	West
GW106078	0.00m-7.32m sand, unconsolidated	1221m	North
GW101162	0.00m-6.10m UNCONSOLIDATED. ALL CLEAN SAND.	1233m	West
GW024367	0.00m-2.43m Sand 2.43m-4.26m Clay Sandy Water Supply	1242m	North West
GW023572	0.00m-3.65m Sand Water Supply	1247m	West
GW107668	0.00m-12.81m Sand, unconsolidated	1248m	West

Groundwater No	Drillers Log	Distance	Direction
GW104966	0.00m-6.10m UNCONSOLIDATED ALL SAND	1250m	West
GW072219		1252m	North
GW107906	0.00m-7.50m sand	1253m	South West
GW017473	0.00m-7.62m Sand	1267m	South West
GW102008	0.00m-6.10m Sand	1271m	West
GW105771	0.00m-7.01m sand, unconsolidated	1271m	South West
GW106237	0.00m-9.00m sand	1272m	South West
GW106875	0.00m-5.79m Sand, unconsolidated	1273m	West
GW023998	0.00m-14.63m Sand Yellow 14.63m-15.39m Sand Grey Clean 15.39m-15.54m Sand Hard Cemented 15.54m-17.06m Sand Dark Brown Peaty 17.06m-19.50m Sand Grey 19.50m-24.38m Sand Light Brown Water Supply 24.38m-25.29m Sand Slightly Peaty Water Supply 25.29m-29.10m Sand Light Brown Clean Water Supply 29.10m-30.48m Sand Grey Clean Water Supply 30.48m-34.74m Sand Clean Water Supply 34.74m-35.96m Sand Slightly Clayey Water Supply 35.96m-35.98m Sandstone	1279m	West
GW110780	0.00m-23.00m SAND	1292m	West
GW100831	0.00m-6.10m UNCONSOLIDATED ALL SAND	1297m	West
GW104890	0.00m-10.50m SAND,BROWN TO GREY 10.50m-13.50m SAND,L/GREY 13.50m-13.60m SANDY CLAY 13.60m-17.00m SAND/L/GREY 17.00m-21.00m SAND L/GREY 21.00m-22.00m SAND/PEAT 22.00m-25.80m L/GREY	1300m	North
GW106146	0.00m-7.32m sand, unconsolidated	1315m	West
GW108595	0.00m-8.00m sand	1316m	South West
GW107593	0.00m-12.20m sand	1317m	West
GW103325	0.00m-7.00m SAND	1318m	West
GW107804	0.00m-13.42m Sand, unconsolidated	1320m	West
GW073459	0.00m-7.02m Unconsolidated Sand	1322m	West
GW106106	0.00m-7.01m sand, unconsolidated	1325m	West
GW111307	0.00m-0.10m SOIL 0.10m-18.00m SAND	1335m	West
GW106132	0.00m-10.37m sand, unconsolidated	1338m	West
GW108705	0.00m-13.72m sand	1345m	West
GW110193	0.00m-24.00m UNCONSOLIDATE ALL SAND	1346m	West
GW104525	0.00m-0.50m FILL S/S CEMENT 0.50m-4.50m SAND/ GREY TO BROWN 4.50m-4.90m SANDY PEAT / D/BROWN 4.90m-16.80m SAND:YELLOW BROWN 16.80m-17.65m PEAT D/ BROWN WITH CEMENTED SAND	1347m	North West
GW108433	0.00m-12.81m Sand, unconsolidated	1348m	West
GW102222	0.00m-9.50m Sand	1354m	South

Groundwater No	Drillers Log	Distance	Direction
GW106178	0.00m-0.30m topsoil 0.30m-5.00m sand,yellow 5.00m-7.00m sand, yellow with some shells	1355m	South West
GW104646	0.00m-10.00m SAND	1361m	West
GW108286	0.00m-15.25m sand	1363m	West
GW111465	0.00m-6.00m YELLOW SAND 6.00m-9.00m GREY SAND	1364m	West
GW107137	0.00m-7.63m Sand, unconsolidated	1371m	North West
GW107430	0.00m-9.15m Sand, unconsolidated	1376m	North West
GW107534	0.00m-6.10m Sand, unconsolidated	1381m	North West
GW107514	0.00m-7.50m sand	1383m	South West
GW104928	0.00m-0.20m TOPSOIL 0.20m-4.50m LIGHT BROWN SAND 4.50m-9.00m LIGHT YELLOW SAND	1385m	North West
GW105770	0.00m-7.01m sand, unconsolidated	1398m	West
GW106031	0.00m-5.79m sand, unconsolidated	1406m	West
GW110778	0.00m-23.00m SAND	1406m	West
GW105999	0.00m-10.68m sand, unconsolidated	1414m	North West
GW108837	0.00m-7.50m sand	1416m	West
GW101783	0.00m-5.00m Sand	1417m	West
GW072922	0.00m-6.70m Unconsolidated Sand	1423m	North West
GW111696	0.00m-22.00m SAND	1425m	West
GW027462	0.00m-0.60m Topsoil Sandy 0.60m-1.21m Sand 1.21m-2.13m Sand White 2.13m-6.40m Sand 6.40m-8.83m Sand Dark Brown Peaty 8.83m-13.10m Sand Water Supply 13.10m-14.93m Sand Grey Water Bearing 14.93m-15.84m Sand Water Supply 15.84m-16.76m Sand Clay Seams Water Supply 16.76m-19.50m Sand Water Supply 19.50m-20.72m Peat Fossils:wood	1428m	North West
GW109490	0.00m-0.30m TOPSOIL 0.30m-13.00m YELLOW SAND 13.00m-18.00m WEATHERED SAND	1433m	West
GW107348	0.00m-13.42m Sand, unconsolidated	1435m	North West
GW108640	0.00m-7.50m sand	1436m	South West
GW109922	0.00m-4.58m UNCONSOLIDATED ALL SANDS	1437m	South West
GW104991	0.00m-9.00m SAND	1455m	West
GW104984	0.00m-9.00m SAND	1458m	West
GW107391	0.00m-7.01m Sand, unconsolidated	1459m	North West
GW106915	0.00m-7.50m Sand	1466m	South West
GW107738	0.00m-0.30m topsoil 0.30m-4.50m sand, yellow 4.50m-7.00m sand, white	1473m	West

Groundwater No	Drillers Log	Distance	Direction
GW105964	0.00m-9.50m sand	1474m	West
GW023659	0.00m-3.65m Soil Clay 3.65m-4.87m Sand Yellow Water Supply	1481m	South West
GW108296	0.00m-16.00m sand	1491m	West
GW075017	0.50m-3.00m SAND, MED TO FINE GRAINED,YELLOW 3.00m-4.00m PEATY SAND 4.00m-4.50m PEAT,FINE 4.50m-13.00m SILTY SAND 13.00m-18.00m SAND,DENSE,FINE 18.00m-19.00m PEATY SAND 19.00m-21.50m PEAT,SANDY PEAT,BLACK 21.50m-22.00m SAND 22.00m-23.00m PEAT, FIRM,BLACK 23.00m-27.00m SILTY SAND 27.00m-28.00m SANDY CLAY 28.00m-28.50m WEATHERED ROCK 28.50m-29.50m BED ROCK	1494m	West
GW107289	0.00m-14.03m Sand, unconsolidated	1496m	South
GW106661	0.00m-15.25m sand, unconsolidated	1507m	South
GW106945	0.00m-9.50m sand	1507m	West
GW106069	0.00m-7.01m sand, unconsolidated	1508m	South West
GW072974		1510m	South
GW106005	0.00m-12.29m sand	1516m	South
GW106863	0.00m-16.47m Sand, unconsolidated	1528m	South West
GW107132	0.00m-14.64m Sand, unconsolidated	1530m	South West
GW106028	0.00m-0.30m topsoil 0.30m-3.00m sand, yellow 3.00m-5.00m sand, brown	1531m	North West
GW107643	0.00m-0.30m topsoil 0.30m-3.50m sand, yellow 3.50m-5.50m sand, brown 5.50m-7.00m sand, fine grey	1538m	West
GW110538	0.00m-8.00m SAND	1554m	North West
GW105040	0.00m-8.00m SAND	1557m	North West
GW038009	0.00m-3.65m Sand Rubble 3.65m-4.87m Sand Hard Cemented 4.87m-8.53m Sand 8.53m-10.97m Sand 8.53m-10.97m Clay Sandy Bands 10.97m-12.19m Sand Clean 12.19m-21.33m Sand Clean Water Supply 21.33m-22.86m Clay Sandy	1571m	North West
GW105492	0.00m-6.71m UNCONSOLIDATED ALL SANDS	1574m	West
GW108048	0.00m-16.16m sand	1575m	South West
GW108046	0.00m-15.86m sand	1577m	South West
GW028289	0.00m-6.09m Sand Water Supply	1581m	South West
GW047125	0.00m-0.61m Made Ground 0.61m-3.05m Sand Yellow 3.05m-3.96m Peat 3.96m-5.79m Sand Grey Water Supply 5.79m-15.85m Sand White Water Supply 15.85m-18.59m Sand Water Supply 18.59m-18.75m Wood 18.75m-20.73m Sand Water Supply 20.73m-24.38m Sandstone Water Supply	1605m	South West

Groundwater No	Drillers Log	Distance	Direction
GW106021	0.00m-16.47m sand, unconsolidated	1621m	West
GW112397	0.00m-7.32m UNCONSOLIDATED ALL SAND	1624m	North West
GW100755	0.00m-0.30m TOPSOIL 0.30m-0.70m BROWN SAND 0.70m-4.50m WHITE SAND 4.50m-4.80m COFFEE ROCK 4.80m-15.20m WHITE SAND 15.20m-15.40m BLACK PEAT 15.40m-19.00m WHITE SAND 19.00m-19.50m GREY CLAY 19.50m-19.50m SANDSTONE	1630m	West
GW111238	0.00m-12.00m SAND	1636m	West
GW110539	0.00m-10.00m SAND	1640m	North West
GW107741	0.00m-9.00m sand	1658m	South West
GW106772	0.00m-5.00m sand	1659m	North West
GW106602	0.00m-6.10m sand, unconsolidated	1664m	North West
GW105575	0.00m-7.00m sand	1671m	North West
GW060170	0.00m-3.00m Sand White Peaty Water Supply 3.00m-14.00m Sand Light Brown Water Supply 14.00m-14.50m Peat Water Supply 14.50m-20.00m Sand White Peaty Water Supply	1672m	South West
GW108734	0.00m-6.10m sand	1672m	West
GW023529	0.00m-0.91m Sand Grey 0.91m-6.70m Sand White Water Supply	1677m	South
GW108472	0.00m-16.00m sand	1680m	South
GW017651	0.00m-0.30m Topsoil 0.30m-0.91m Sand Yellow Hard Cemented 0.91m-3.65m Sand Yellow Clay 3.65m-6.09m Sand White Clean Water Supply 6.09m-9.75m Sand Packed Dry 9.75m-15.84m Sand White Clean Water Supply 15.84m-16.15m Clay Sandy Bands 16.15m-17.37m Sand White Clay 17.37m-17.67m Peat 17.67m-18.28m Sand Grey Clay 18.28m-19.20m Peat Clay Bands 19.20m-20.72m Peat Sand 20.72m-21.33m Sand Coarse Hard Cemented Clay 21.33m-23.62m Sand White Clay 23.62m-25.29m Sand Peaty clay 25.29m-29.26m Sand White	1683m	West
GW110270	0.00m-0.30m TOPSOIL 0.30m-3.00m YELLOW SAND 3.00m-5.00m SAND,DARK BROWN 5.00m-6.00m SAND, LIGHT BROWN	1686m	North West
GW105440	0.00m-5.18m UNCONSOLIDATED ALL SANDS	1690m	West
GW107213	0.00m-0.30m topsoil 0.30m-1.50m sand, grey 1.50m-3.40m sand, brown 3.40m-6.00m sand, yellow	1690m	West
GW111248	0.00m-2.00m TOPSOIL 2.00m-16.00m SAND 16.00m-17.00m PEAT AND COAL 17.00m-30.00m SAND	1690m	South West
GW025718	0.00m-3.65m Sand Water Supply	1691m	North West
GW107551	0.00m-6.71m Sand, unconsolidated	1693m	North West
GW108596	0.00m-16.00m sand	1696m	South East
GW104945	0.00m-7.32m UNCONSOLIDATED ALL SANDS	1698m	West

Groundwater No	Drillers Log	Distance	Direction
GW108448	0.00m-16.00m Sand	1706m	South
GW108440	0.00m-0.30m Topsoil 0.30m-3.50m Sand, yellow 3.50m-5.00m Sand, grey	1712m	West
GW106093	0.00m-5.18m sand, unconsolidated	1713m	North West
GW075025	0.00m-2.00m SAND,COFFEE BROWN 2.00m-5.00m SAND,MED GRAINED,YELLOW 5.00m-7.50m SAND,FINE,WHITE 7.50m-8.00m PEAT,FINE,BLACK 8.00m-12.00m PEATY SAND,DARK BROWN 12.00m-18.00m SILTY SAND,FINE GRAINED 18.00m-24.50m SAND,MED. COARSE 24.50m-25.50m BEDROCK	1715m	South
GW107603	0.00m-7.00m sand	1722m	West
GW104832	0.00m-7.32m UNCONSOLIDATED ALL SANDS	1726m	West
GW106752	0.00m-9.50m sand	1728m	South
GW108822	0.00m-14.00m sand	1731m	South
GW106854	0.00m-7.00m sand	1735m	North East
GW025540	0.00m-0.91m Sand Black 0.91m-4.87m Sand White Water Supply	1736m	South
GW111557	0.00m-8.00m ALL SAND	1740m	West
GW100359	0.00m-5.50m ALL SAND UNCONSOLIDATED	1742m	North West
GW108653	0.00m-12.00m sand	1743m	North West
GW107447	0.00m-8.23m Sand, unconsolidated	1745m	North East
GW108418	0.00m-6.00m sand	1747m	West
GW101883	0.00m-10.00m Sand	1752m	South
GW106856	0.00m-7.93m sand, unconsolidated	1757m	North West
GW106083	0.00m-0.50m fill 0.50m-11.20m sand 11.20m-11.30m peat 11.30m-19.20m sand 19.20m-20.00m peat siff 20.00m-20.10m sandstone,	1761m	North West
GW072994		1764m	South
GW046836	0.00m-6.10m Sand White 6.10m-7.92m Sand Yellow 7.92m-10.97m Sand Some Traces Clay Fine 10.97m-14.63m Sand White 14.63m-16.46m Sand 16.46m-18.29m Sand White 18.29m-18.90m Sand Water Supply 18.90m-21.95m Sand White Water Supply 21.95m-24.08m Sand Dirty Water Supply 24.08m-24.38m Sand White Water Supply 24.38m-25.91m Sand Water Supply 25.91m-35.97m Sand White Water Supply 35.97m-37.49m Sand Some Clay 37.49m-37.80m Clay Grey	1765m	South
GW101728	0.00m-4.58m SAND, UNCONSOLIDATED	1767m	West
GW104834	0.00m-5.79m UNCONSOLIDATED ALL SANDS	1767m	North West
GW105134	0.00m-5.00m SAND	1767m	West
GW109946	0.00m-0.30m TOPSOIL 0.30m-3.00m SAND BROWN 3.00m-5.00m SAND YELLOW	1768m	West

Groundwater No	Drillers Log	Distance	Direction
GW100939	0.00m-5.50m UNCONSOLIDATED ALL SANDS	1769m	North West
GW110423	0.00m-12.00m UNCONSOLIDATED ALL SANDS	1769m	South
GW106110	0.00m-1.80m fill 1.80m-9.00m sand 9.00m-10.50m sand, peat 10.50m-21.00m sand 21.00m-23.20m peat heavy	1772m	North West
GW072787	0.00m-5.50m Unconsolidated Sand	1775m	West
GW105019	0.00m-0.30m SANDY TOPSOIL 0.30m-6.50m FILL,SAND,BRICKS 6.50m-9.60m LIGHT BROWN SAND 9.60m-18.00m WHITE BEACH SAND 18.00m-24.00m YELLOW SAND 24.00m-26.50m YELLOW SAND/SILTY 26.50m-27.50m YELLOW SAND MORE SILTY 27.50m-30.00m SOFT SANDSTONE	1781m	North West
GW013629	0.00m-0.60m Topsoil Sandy 0.60m-12.19m Sand White Some Hard Cemented 12.19m-16.76m Sand 16.76m-16.91m Clay Seams 16.91m-21.64m Sand Water Supply 21.64m-21.94m Peat	1782m	North West
GW108632	0.00m-7.32m sand	1787m	North West
GW053600	0.00m-2.50m Sand White 2.50m-13.00m Sand Yellow 13.00m-19.60m Sand White 19.60m-23.00m Sand White Peaty 23.00m-24.00m Peat Clay 24.00m-26.00m Sand Peaty 26.00m-30.00m Sand Yellow 30.00m-30.50m Clay Grey	1789m	South East
GW105431	0.00m-6.00m SAND BROWN 6.00m-30.00m SAND WHITE	1789m	South East
GW108394	0.00m-16.00m SAND	1790m	South
GW108491	0.00m-0.30m Topsoil 0.30m-6.50m Sand, yellow 6.50m-7.00m Sand, dark grey	1797m	North West
GW112385	0.00m-5.49m UNCONSOLIDATE ALL SANDS	1798m	West
GW023585	0.00m-4.57m Sand Water Supply	1807m	North West
GW102294	0.00m-10.00m Sand	1809m	South
GW114917	0.00m-9.15m UNCONSOLIDATED ALL SANDS	1810m	West
GW108846	0.00m-8.00m sand	1813m	North West
GW017653	0.00m-0.91m Sand White Dirty 0.91m-1.21m Sand Cemented Hard 1.21m-2.43m Sand Cemented Hard 2.43m-9.14m Sand Clean 9.14m-9.75m Sand Cemented Hard Bands 9.75m-11.27m Sand Clean Wet 11.27m-15.54m Sand Clean Water Supply 15.54m-16.00m Peat 16.00m-18.59m Sand Grey Water Supply 18.59m-18.74m Peat Wood 18.74m-19.20m Clay Peaty 19.20m-19.50m Peat Wood 19.50m-21.94m Sand Dirty Water Supply 21.94m-22.55m Peat Wood 22.55m-22.86m Sand White 22.86m-24.38m Sand Dirty 22.86m-24.38m Clay Grey 24.38m-25.60m Peat 24.38m-25.60m Sand Dirty	1814m	South West
GW024024	0.00m-0.60m Sand Grey 0.60m-6.09m Sand White Water Supply	1815m	South

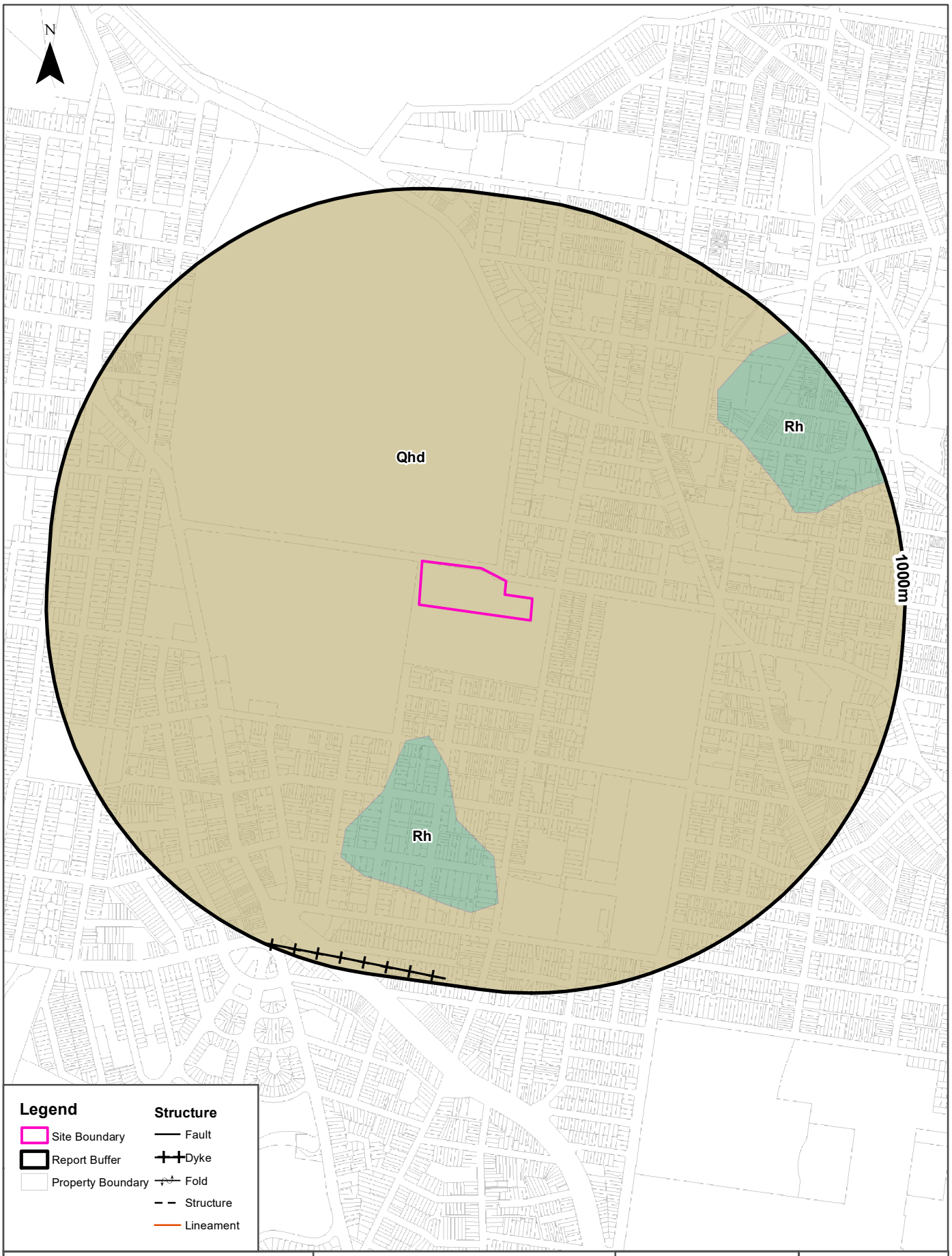
Groundwater No	Drillers Log	Distance	Direction
GW107509	0.00m-10.00m sand	1829m	North West
GW107578	0.00m-16.47m Sand, unconsolidated	1829m	South
GW106182	0.00m-0.30m topsoil 0.30m-3.00m sand, brown silty 3.00m-4.00m sand, light brown	1830m	West
GW106030	0.00m-1.00m fill 1.00m-4.00m sand, small rocks 4.00m-8.80m sand 8.80m-8.90m peat 8.90m-9.70m sand 9.70m-11.30m peat & sand 11.30m-13.10m sand 13.10m-13.20m peat 13.20m-14.70m sand 14.70m-14.80m peat 14.80m-19.90m sand 19.90m-20.40m clay 20.40m-20.50m sandstone	1838m	North West
GW106537	0.00m-10.00m sand	1846m	North West
GW019633	0.00m-4.57m Sand 4.57m-6.09m Sand Wet 6.09m-7.31m Sand Peaty 7.31m-10.97m Sand 10.97m-11.58m Sand Dark Brown 11.58m-14.63m Sand 14.63m-14.93m Clay Sandy 14.93m-16.15m Sand 16.15m-16.76m Clay Peaty 16.76m-18.28m Sand 18.28m-18.89m Peat Bands 18.89m-19.50m Clay Sandy 19.50m-20.72m Sand White 20.72m-21.94m Sand 21.94m-22.55m Sand Yellow 22.55m-24.99m Sand Gravel 24.99m-29.87m Sand Clean 29.87m-33.52m Sand White Clean 33.52m-34.13m Sand Yellow 34.13m-35.05m Sand Peaty	1849m	South West
GW106435	0.00m-12.81m sand, uncosolidated	1849m	North West
GW024206	0.00m-1.21m Topsoil Grey 1.21m-5.48m Sand Yellow Water Supply	1861m	South
GW106798	0.00m-10.00m sand	1869m	North West
GW111247	0.00m-1.00m TOPSOIL 1.00m-3.00m SILT 3.00m-19.00m SAND 19.00m-20.00m PEAT/COAT 20.00m-36.00m SAND	1874m	South West
GW104057	0.00m-1.00m SANDY TOPSOIL 1.00m-2.00m DIRTY WHITE SAND 2.00m-3.00m LIGHT BROWN SAND 3.00m-7.00m LIGHT YELLOW SAND 7.00m-11.00m WHITE SAND 11.00m-12.00m WHITE SAND,BLACK PEAT 12.00m-13.00m WHITE SAND 13.00m-14.00m ROCK,ORANGE FATTY SANDS & CLAY	1880m	North West
GW111600	0.00m-20.00m SANDS,FINE,VERY FINE,DK GREY IN COLOUR	1883m	South West
GW111624	0.00m-31.00m BOTANY SANDS 31.00m-36.00m HAWKESBURY SANDSTONE	1883m	South West
GW112525	0.00m-4.50m SAND LIGHT BROWN 4.50m-9.00m SAND YELLOW 9.00m-17.00m SAND LIGHT BROWN 17.00m-21.50m SAND GREY 21.50m-26.00m SAND LIGHT BROWN 26.00m-30.00m SAND WHITE	1883m	South

Groundwater No	Drillers Log	Distance	Direction
GW042834	0.00m-1.22m Made Ground 1.22m-10.36m Sand White 10.36m-21.95m Sand White Light Water Supply 21.95m-23.16m Peat Sand Water Supply 23.16m-29.87m Sand Grey Water Supply 29.87m-30.48m Sand Grey Clay Water Supply 30.48m-31.09m Clay Grey	1886m	North West
GW023270	0.00m-3.65m Sand 3.65m-3.74m Sand Hard Cemented 3.74m-5.18m Sand White 5.18m-7.01m Sand Water Supply	1890m	South
GW104992	0.00m-9.00m SAND	1892m	South
GW023841	0.00m-4.57m Sand Water Supply	1896m	South
GW023991	0.00m-1.52m Sand White 1.52m-3.04m Sand Hard Cemented 3.04m-5.79m Sand Yellow Water Supply	1898m	South
GW101759	0.00m-10.98m Unconsolidated Sand	1899m	North West
GW106058	0.00m-7.50m sand	1899m	North West
GW017729	0.00m-30.48m Sand Water Supply	1900m	North West
GW101072	0.00m-10.00m Sand	1900m	South
GW027616	0.00m-0.91m Sand Made Ground 0.91m-1.82m Sand Hard Cemented 1.82m-3.65m Sand White 3.65m-5.48m Sand White Some Clay 5.48m-8.22m Sand 8.22m-10.05m Sand Slightly Peaty Water Supply 10.05m-12.19m Sand Yellow Some Clay Water Supply 12.19m-27.43m Sand White Water Supply 27.43m-32.00m Sand Water Supply 32.00m-32.61m Sandstone Decomposed	1911m	South
GW114340	0.00m-5.55m SAND	1911m	North
GW105747	0.00m-8.23m sand, unconsolidated	1916m	North West
GW029355	0.00m-2.43m Sand 2.43m-2.74m Clay Sand 2.74m-3.20m Sand Hard Cemented 3.20m-11.27m Sand 11.27m-14.02m Sand Clayey 14.02m-14.32m Sand Water Supply 14.32m-15.24m Sand White Water Supply 15.24m-28.95m Sand Water Supply 28.95m-28.97m Sandstone	1919m	South
GW110542	0.00m-1.00m SAND AND FILL 1.00m-7.00m SAND L/BROWN 7.00m-13.00m SAND L/GREY 13.00m-17.00m SAND YELLOW 17.00m-20.00m SAND GREY 20.00m-23.00m SAND D/GREY 23.00m-27.50m SAND CREAM 27.50m-28.00m SAND AND CLAY	1934m	North East
GW024118	0.00m-0.91m Sand Black 0.91m-3.04m Sand White Water Supply	1940m	North West
GW108228	0.00m-17.00m sand	1941m	North
GW114341	0.00m-0.20m BITUMEN 0.20m-2.00m SAND 2.00m-2.72m CLAY / SANDSTONE	1949m	North
GW024368	0.00m-4.27m Made Ground 4.27m-5.79m Sand Moist 5.79m-12.95m Sand White Wet Water Supply	1955m	South West
GW101069	1.00m-10.00m sand	1957m	South
GW026584	0.00m-6.09m Sand Grey	1962m	South

Groundwater No	Drillers Log	Distance	Direction
GW023275	0.00m-5.79m Sand Water Supply	1970m	West
GW106693	0.00m-11.29m sand	1974m	North West
GW106730	0.00m-15.00m sand	1975m	North West
GW106004	0.00m-0.30m fill 0.30m-10.80m sand 10.80m-11.50m sand, peat 11.50m-16.50m sand 16.50m-17.00m sand, peat 17.00m-19.00m sand 19.00m-21.00m peat 21.00m-23.20m peat, sand	1992m	North West
GW108498	0.00m-18.00m Sand	1996m	South

Geology 1:100,000

Upper Campus, University of New South Wales, Sydney, NSW 2052



Geology

Upper Campus, University of New South Wales, Sydney, NSW 2052

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Qhd	Medium to fine-grained marine sand with podsols				Quaternary		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
Qhd	Medium to fine-grained marine sand with podsols				Quaternary		Sydney	1:100,000
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				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
Dyke			Sydney	1:100,000

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

Naturally Occurring Asbestos Potential

Upper Campus, University of New South Wales, Sydney, NSW 2052

Naturally Occurring Asbestos Potential

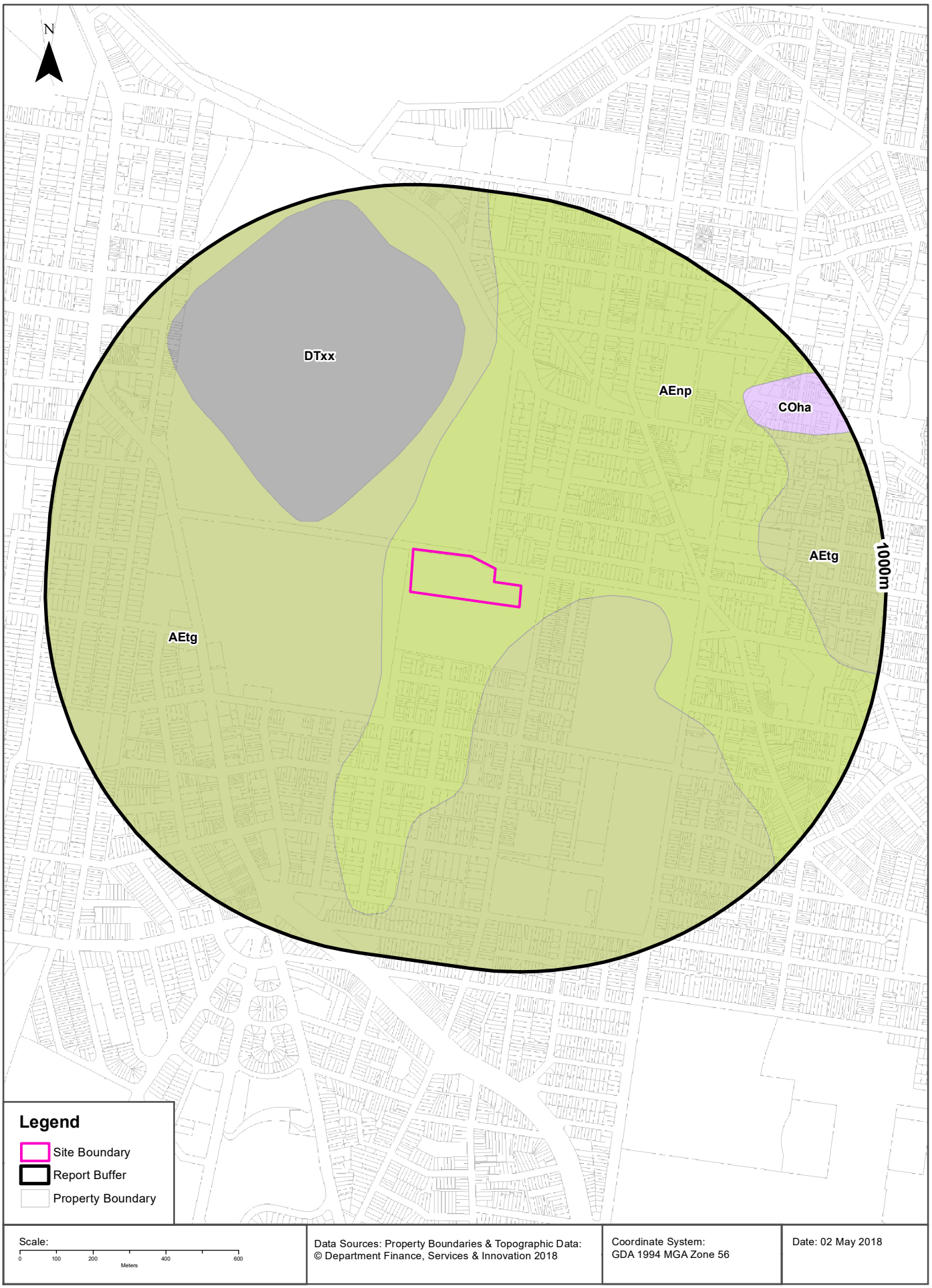
Naturally Occurring Asbestos Potential within the dataset buffer:

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

Upper Campus, University of New South Wales, Sydney, NSW 2052



Soils

Upper Campus, University of New South Wales, Sydney, NSW 2052

Soil Landscapes

What are the onsite Soil Landscapes?

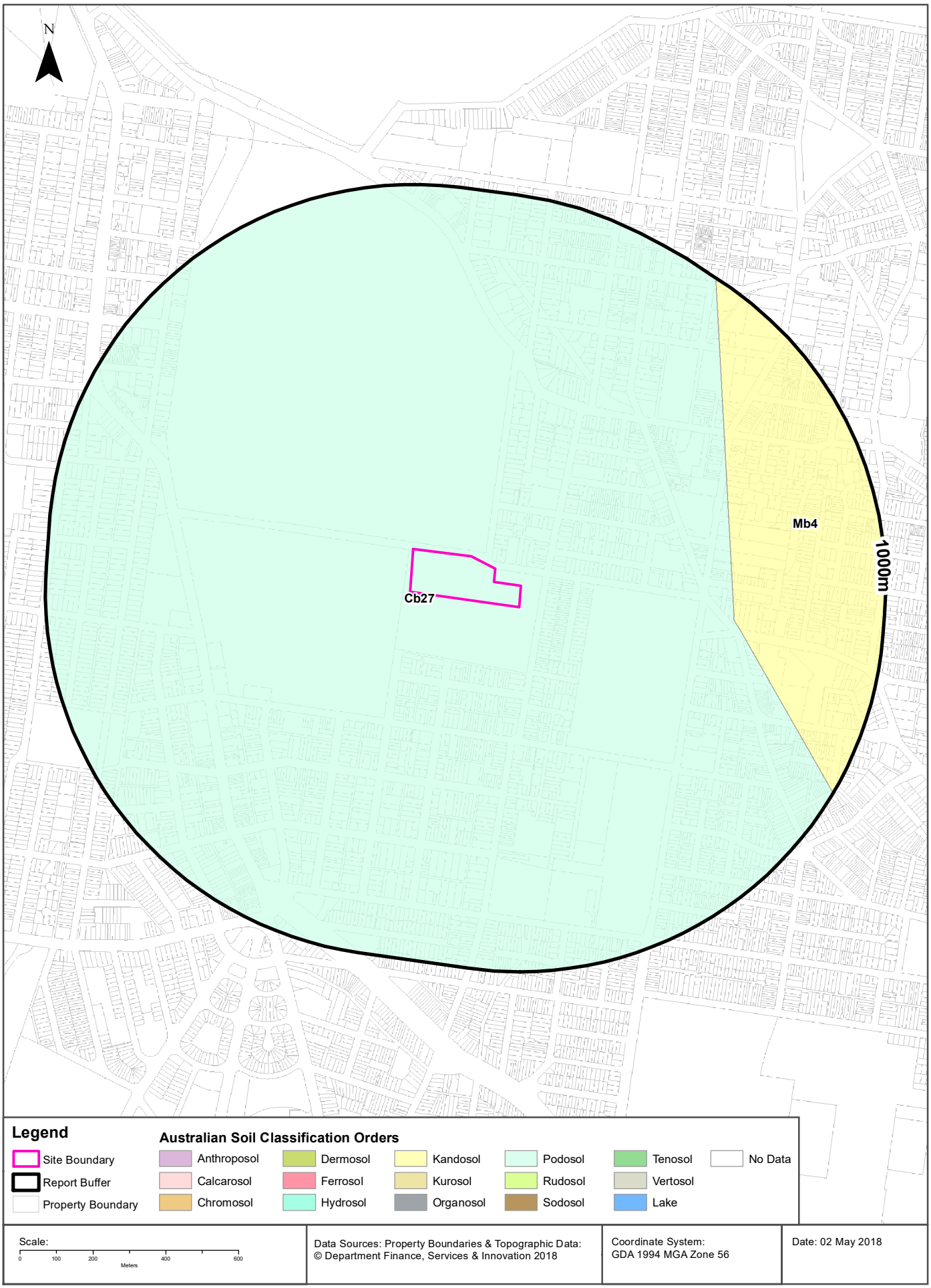
Soil Code	Name	Group	Process	Map Sheet	Scale
AEnp	NEWPORT		AEOLIAN	Sydney	1:100,000

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
AEnp	NEWPORT		AEOLIAN	Sydney	1:100,000
AEtg	TUGGERAH		AEOLIAN	Sydney	1:100,000
COha	HAWKESBURY		COLLUVIAL	Sydney	1:100,000
DTxx	DISTURBED TERRAIN		DISTURBED TERRAIN	Sydney	1:100,000

Atlas of Australian Soils

Upper Campus, University of New South Wales, Sydney, NSW 2052



Soils

Upper Campus, University of New South Wales, Sydney, NSW 2052

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
Cb27	Podosol	Coastal sand plains and dunes, lagoons, and swampy areas: chief soils are leached sands (Uc2.3 and Uc2.2). Associated are dunes of siliceous sands (Uc1.2) and/or calcareous sands (Uc1.l) fringing the coastline; and swampy areas of (Uf6) soils and (Uc1.2) soils with peaty surfaces. Unit Cb27 has similarities with units Cb28 and Ca6.	0m
Mb4	Kandosol	Coastal complex: chief soils are acid yellow leached earths (Gn2.74) and (Gn2.34), hard acidic yellow mottled soils (Dy3.41), and hard acidic red soils (Dr2.21). This unit includes headlands and rugged coastal areas of unit Mb2; ridges and slopes of unit Tb35; low-lying coastal areas of unit Cb27; and some swampy areas.	577m

Acid Sulfate Soils

Upper Campus, University of New South Wales, Sydney, NSW 2052

Standard Local Environmental Plan Acid Sulfate Soils

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

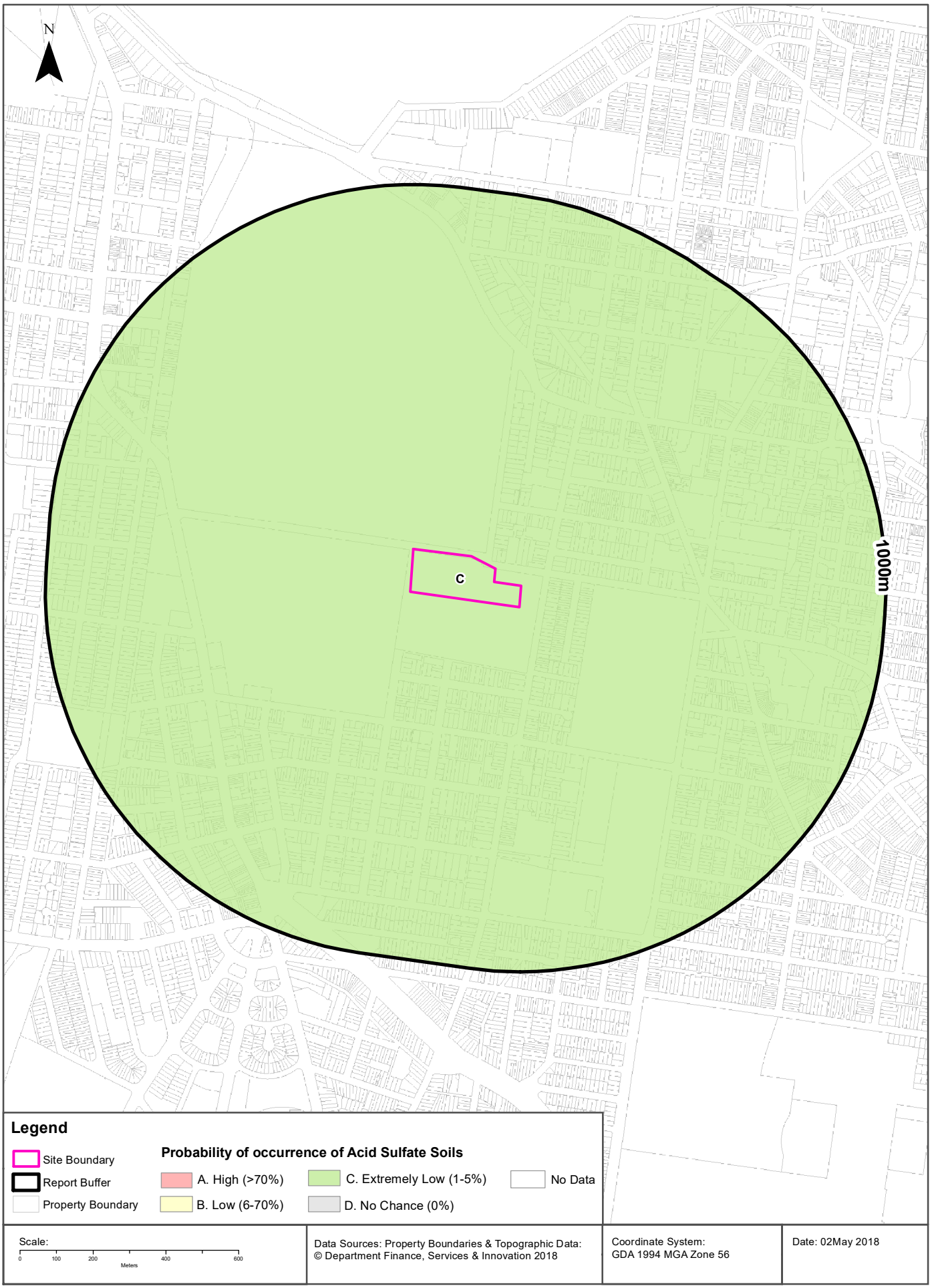
Soil Class	Description	LEP
N/A		

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

Soil Class	Description	LEP	Distance	Direction
N/A				

Atlas of Australian Acid Sulfate Soils

Upper Campus, University of New South Wales, Sydney, NSW 2052



Acid Sulfate Soils

Upper Campus, University of New South Wales, Sydney, NSW 2052

Atlas of Australian Acid Sulfate Soils

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

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

Dryland Salinity

Upper Campus, University of New South Wales, Sydney, NSW 2052

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

Mining Subsidence Districts

Upper Campus, University of New South Wales, Sydney, NSW 2052

Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

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

Environmental Zoning

Upper Campus, University of New South Wales, Sydney, NSW 2052

State Environmental Planning Policy Protected Areas

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

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

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

State Environmental Planning Policy Major Developments (2005)

State Environmental Planning Policy Major Developments within the dataset buffer:

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

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

State Environmental Planning Policy Strategic Land Use Areas

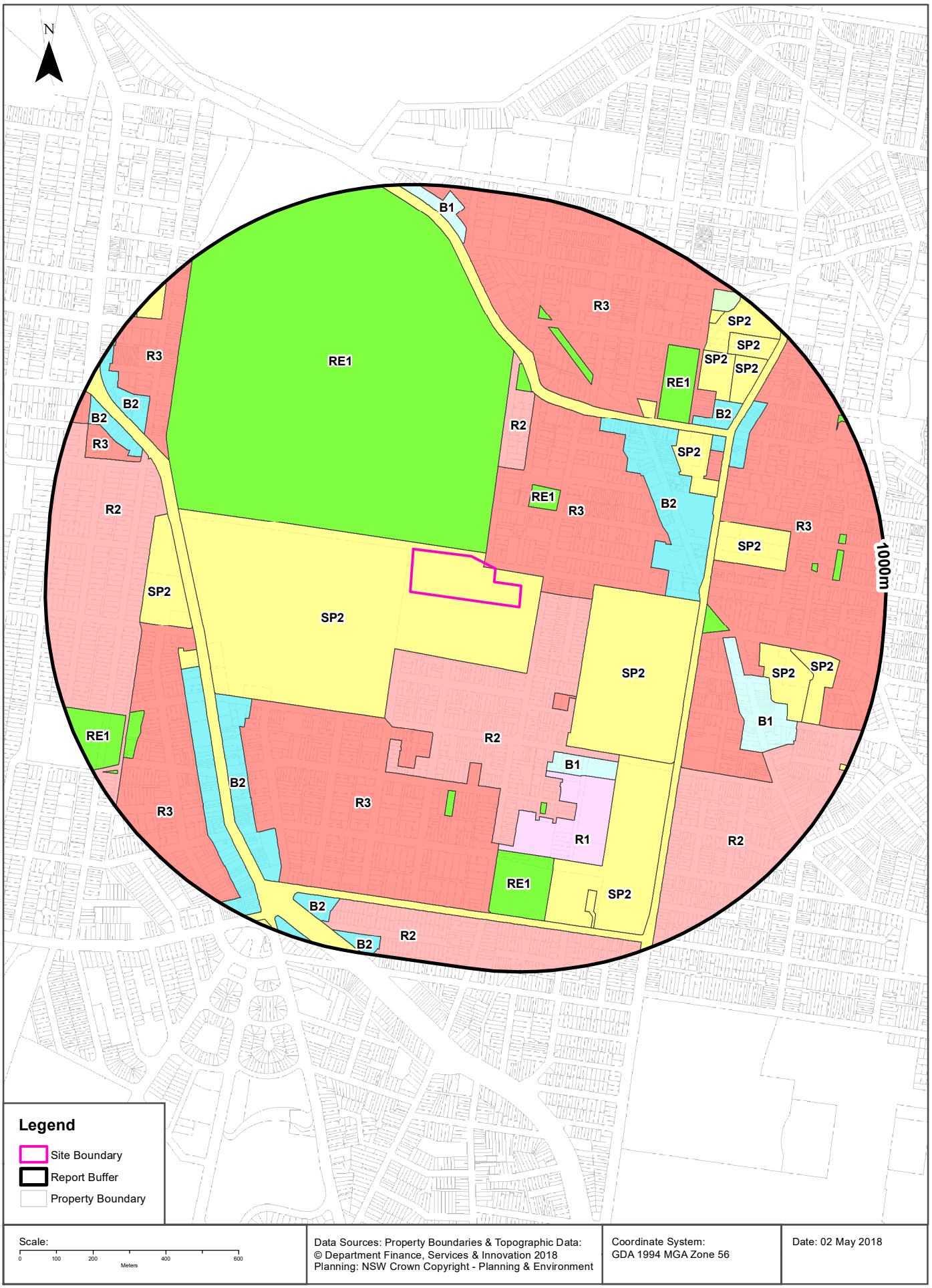
State Environmental Planning Policy Strategic Land Use Areas onsite or within the dataset buffer:

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

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

LEP Planning Zones

Upper Campus, University of New South Wales, Sydney, NSW 2052



Local Environmental Plan

Upper Campus, University of New South Wales, Sydney, NSW 2052

Land Zoning

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

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		0m	Onsite
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		0m	Onsite
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		15m	North West
R2	Low Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		49m	South
SP2	Infrastructure	Health Services Facilities	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		191m	South East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		194m	North East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		253m	South East
R2	Low Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		258m	North
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		353m	South
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		358m	East
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	02/04/2015	02/04/2015	26/01/2018	Amendment No 2	406m	South East
R1	General Residential		Randwick Local Environmental Plan 2012	02/04/2015	02/04/2015	26/01/2018	Amendment No 2	453m	South East
SP2	Infrastructure	Classified Road	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		473m	South
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		474m	North
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		487m	South East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		503m	North East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		504m	East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		504m	East
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		524m	South West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		524m	South
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		526m	North East
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		531m	East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		537m	South
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		563m	South East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		570m	North East
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		573m	North East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		580m	North East

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		591m	North East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		605m	South West
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		605m	West
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		607m	West
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		614m	South West
R2	Low Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		620m	South East
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		638m	North East
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		645m	North East
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		658m	North East
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		664m	East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		668m	South
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		678m	North
R2	Low Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		681m	West
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		713m	North West
SP2	Infrastructure	Cemetery	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		725m	North East
SP2	Infrastructure	Seniors Housing	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		750m	East
SP2	Infrastructure	Community Facility	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		762m	North East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		786m	West
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		788m	North West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		795m	East
SP2	Infrastructure	Childcare Centre	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		796m	South
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		799m	South West
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		802m	North West
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		817m	North East
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		849m	North
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		851m	West
SP2	Infrastructure	Public Administration Building	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		851m	North East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		852m	East
R2	Low Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		860m	South
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		863m	South West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		876m	East
SP2	Infrastructure	Emergency Services Facility	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		886m	North East
RE2	Private Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		921m	North East

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		935m	North West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		941m	South West
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		948m	South
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		955m	North West
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		959m	South West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		962m	North East
SP2	Infrastructure	Water Supply System	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		977m	South East
SP2	Infrastructure	Classified Road	Botany Bay Local Environmental Plan 2013	09/10/2015	09/10/2015	19/02/2016	Amendment No 4	982m	South West

Local Environmental Plan

Upper Campus, University of New South Wales, Sydney, NSW 2052

Minimum Subdivision Lot Size

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

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

Maximum Height of Building

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

Symbol	Maximum Height of Building	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
19	24.00 m	Randwick Local Environmental Plan 2012	01/02/2013	15/01/2013	26/01/2018		19.1

Floor Space Ratio

What are the onsite Local Environmental Plan Floor Space Ratios?

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

Land Application

What are the onsite Local Environmental Plan Land Applications?

Application Type	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
Included	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	15/02/2013		100

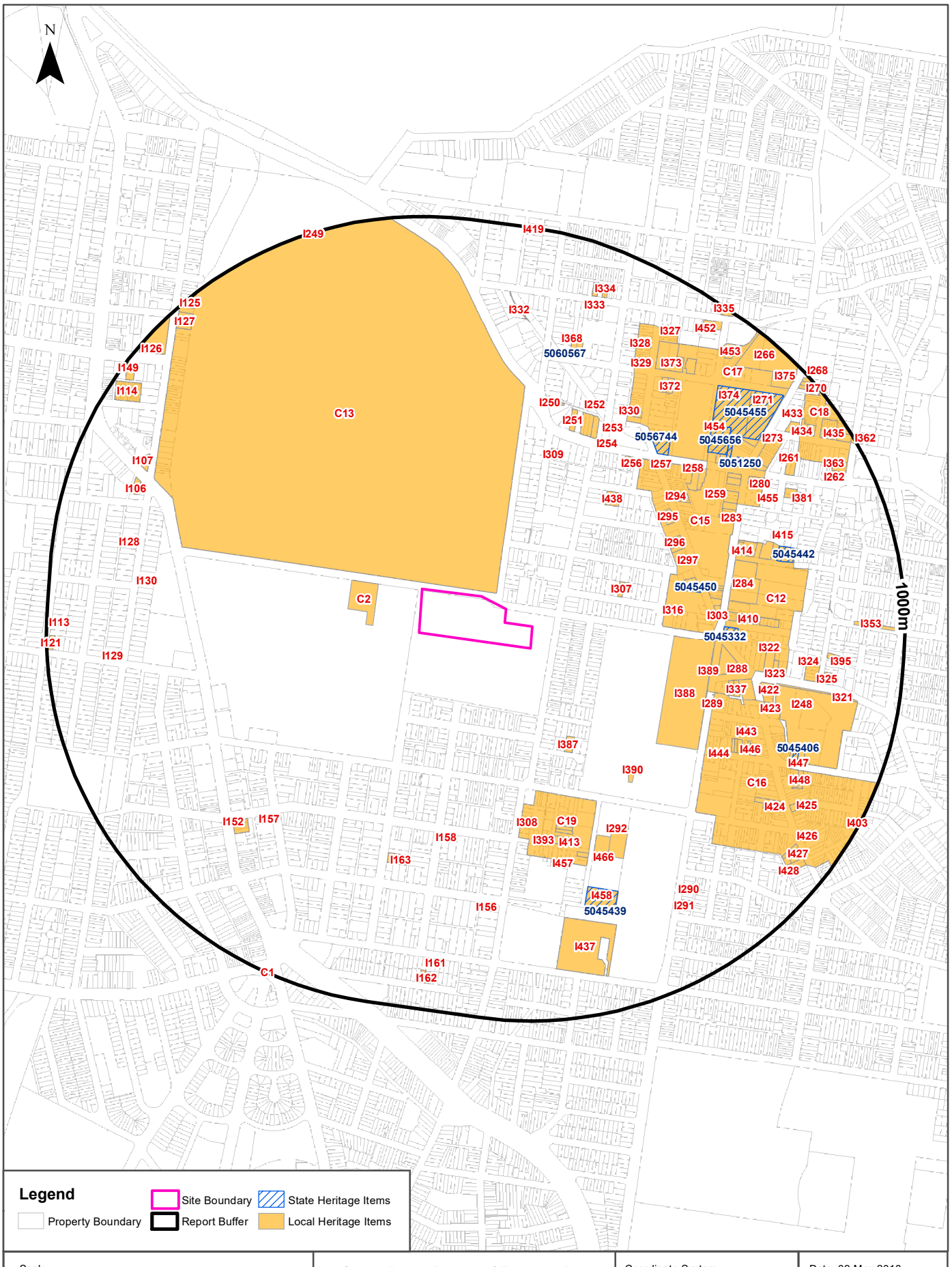
Land Reservation Acquisition

What are the onsite Local Environmental Plan Land Reservation Acquisitions?

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

Heritage Items

Upper Campus, University of New South Wales, Sydney, NSW 2052



Heritage

Upper Campus, University of New South Wales, Sydney, NSW 2052

State Heritage Items

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

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
5045450	Sandgate	128 Belmore Road Randwick	Randwick	02/04/1999	67	261	416m	East
5045332	Corana and Hygeia	211-215 Avoca Street Randwick	Randwick	02/04/1999	454	1177	512m	East
5056744	Randwick Presbyterian Church	162 Alison Road Randwick	Randwick	08/05/2008	1777	2203	573m	North East
5045439	Big Stable Newmarket	29-39 Young Street Randwick	Randwick	02/04/1999	388	939	657m	South East
5045656	Avonmore Terrace	26-42 The Avenue Randwick	Randwick	02/04/1999	565	1534	664m	North East
5045455	St. Jude's Anglican Church, Cemetery, Rectory, Vergers Residence	102-108 Avoca Street Randwick	Randwick	02/04/1999	12	23	677m	North East
5045442	Nugal Hall	16-18 Milford Street Randwick	Randwick	02/04/1999	173	354	679m	East
5060567	Electricity Substation No. 349	2S Frances Street Randwick	Randwick	02/05/2008	1792	2231	684m	North
5051250	Randwick Post Office (former) and Jubilee Fountain	124 Alison Road Randwick	Randwick	23/06/2000	1409		693m	North East
5045406	Ritz Theatre	43 St Pauls Street Randwick	Randwick	02/04/1999	348	832	755m	East

Local Heritage Items

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

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
C13	Racecourse	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	15m	North West
C2	Old Tote & Figtree Theatre	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	119m	West
I307	Blenheim House and outbuilding	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	241m	East
I387	'Cotswold', late Victorian cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	253m	South East
C15	Randwick Junction	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	347m	East

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I316	Semi-detached pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	354m	East
I388	Prince of Wales Hospital group (Main Block, Catherine Hayes Hospital and Superintendent's residence)	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	372m	East
C12	High Cross	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	372m	East
C19	Struggletown	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	02/04/2015	02/04/2015	02/04/2015	381m	South East
I438	Group of Italianate houses	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	382m	North East
I390	Randwick Destitute Children's Asylum Cemetery	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	398m	South East
I309	'Redlands', Art Deco flats	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	414m	North East
I301	'Sandgate'	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	417m	East
I297	'Koorowi Flats' 3 storey commercial/residential building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	422m	East
I296	3 storey commercial building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	424m	East
I299	Commercial building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	425m	East
I295	Residential/commercial building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	453m	North East
I308	Georgian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	459m	South
I298	'Cooks Lodge' 2 storey commercial building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	478m	East
I392	Workers cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	478m	South East
I300	Federation commercial building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	479m	East
I389	Prince of Wales Hospital gates and fence	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	480m	East
I393	2 storey sandstone cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	487m	South East
I302	The Star and Garter Inn	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	489m	East
I303	Statue of Captain James Cook	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	494m	East
I285	Late Victorian shop and residence	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	497m	East
I289	Post box	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	502m	East
I288	High Cross Park	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	504m	East

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I251	'Carlton', Victorian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	504m	North East
I255	'Rexmere', Victorian terrace	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	505m	North East
C16	The Spot	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	506m	South East
I411	St Jude's Mission Church	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	506m	South
I252	'Verona', 'Amphion' and 'Donacis', Boom style houses	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	508m	North East
I256	'Hillcrest', Victorian terrace	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	509m	North East
I294	3 storey Art Deco commercial building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	511m	North East
I287	'Corana' and 'Hygeia'	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	512m	East
I253	'Rothesay', Art Deco residential flats	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	514m	North East
I412	Old stone cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	514m	South East
I413	Edwardian timber cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	517m	South East
I286	'Goldring House'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	518m	East
I292	Newmarket Sale Ring	Item - General	Local	Randwick Local Environmental Plan 2012	02/04/2015	02/04/2015	02/04/2015	519m	South East
I254	St Jude's Well, early stone fountain	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	520m	North East
I158	Late 1920s house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	524m	South
I466	Newmarket House	Item - General	Local	Randwick Local Environmental Plan 2012	02/04/2015	02/04/2015	02/04/2015	529m	South East
I284	Our Lady of the Sacred Heart Church and 'Ventnor', sandstone house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	531m	East
I336	'Essex', Victorian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	537m	East
I250	'Shahzada', Victorian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	545m	North
I337	'Edith', Victorian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	550m	East
I410	'Brighton Terrace'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	552m	East
I258	'Seabird', Victorian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	557m	North East
I457	Weatherboard cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	559m	South East
I422	Royal Hotel	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	563m	East

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I259	'Glanmire', Victorian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	571m	North East
I257	Randwick Presbyterian Church	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	573m	North East
C17	St Jude's	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	573m	North East
I283	'Somerset' and 'Glastonbury'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	580m	East
I443	Victorian terrace	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	591m	South East
I282	Terraced pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	592m	North East
I414	Victorian mansion	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	593m	East
I444	Federation single storey cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	597m	South East
I163	Inter-war mansion	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	597m	South
I281	Terraced pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	600m	North East
I445	Victorian Italianate boom style 2 storey house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	604m	South East
I279	'Clovelly', 'Ilfracombe' and 'Torquay', Italianate houses	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	612m	North East
I330	'Juverna', Art Deco flat buildings	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	615m	North East
I322	'Gower Galtees', Art Deco residential flat building, including fence and gates	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	626m	East
I157	'Lanor', Edwardian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	629m	South West
I446	Terraced pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	630m	South East
I415	Californian bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	634m	East
I423	Pair of cottages	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	641m	East
I277	Commercial building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	647m	North East
I323	Edwardian residence	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	650m	East
I458	Big Stable Newmarket	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	657m	South East
I260	Stone commercial building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	658m	North East
I276	Commercial building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	660m	North East

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I248	'Aeolia', Brigidine Convent and Chapel	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	664m	East
I321	Coogee Bay Road Retaining Walls	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	664m	East
I454	'Avonmore Terrace'	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	664m	North East
I416	'Nugal Hall', Gothic revival sandstone mansion	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	679m	East
I152	Commercial/residential group, 'O'Dea's Corner'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	679m	South West
I370	Electricity Substation No 349	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	684m	North
I368	Federation arts and crafts 2 storey house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	687m	North
I369	Federation arts and crafts 2 storey house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	691m	North
I274	Former Randwick Post Office	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	693m	North East
I280	Coach and Horses Hotel	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	694m	North East
I156	1950s brick house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	694m	South
I455	2 storey semi-detached pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	697m	East
I275	Jubilee Fountain	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	704m	North East
I371	Federation Queen Anne single storey house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	715m	North East
I130	Bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	718m	West
I424	Grand Edwardian mansion	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	721m	South East
I372	Federation Queen Anne single storey house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	723m	North East
I278	Part of Victorian and inter-war building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	723m	North East
I374	St Jude's Cemetery	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	725m	North East
I437	Rainbow Street Public School	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	726m	South
I324	'Glen Mervyn'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	736m	East
I329	Federation house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	739m	North East
I272	Hetta Building, commercial/residential building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	742m	North East
I273	Victorian and inter-war building (shopfronts with residences above)	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	745m	North East

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I332	Part of Normanhurst boundary wall (adjacent to former tramway reservation)	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	747m	North
I447	Ritz Cinema	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	748m	East
I290	Late Edwardian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	757m	South East
I381	Pair of 2 storey stone cottages	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	759m	East
I373	Group of Federation mansions	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	760m	North East
I271	St Jude's Group (St Jude's Anglican Church, Rectory, Old Borough Chambers and Hall (Note - Cemetery*	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	762m	North East
I128	Edwardian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	775m	West
I291	'Canberra', Edwardian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	785m	South East
I328	Federation house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	788m	North East
I325	Former police station	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	788m	East
I448	Masonic Temple, classical revival style	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	788m	South East
I261	Residential flat building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	790m	North East
I395	2 storey Federation house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	793m	East
I455	2 storey semi-detached pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	795m	East
I373	Group of Federation mansions	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	796m	North East
I129	Corner bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	802m	West
I107	Doncaster Hotel	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	802m	North West
I106	Masonic Temple	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	806m	West
I425	Federation house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	811m	South East
C18	St Mark's	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	842m	North East
I327	'Woodville', Edwardian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	850m	North East
I433	Small Gothic church	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	854m	North East

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I333	'Pepadeniya', Federation bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	860m	North
I353	Dolphin Street Sandstone Retaining Wall and Embankment	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	861m	East
I334	Semi-detached pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	866m	North
I426	Unusual Edwardian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	874m	South East
I434	Part of historic residential streetscape	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	882m	North East
I266	Randwick Public School (c 1924) and Randwick North High School (1886)	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	885m	North East
I453	Randwick Fire Station	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	886m	North East
I427	Federation Queen Anne house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	887m	South East
I262	Freestanding Victorian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	887m	East
I161	Late modern house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	895m	South
I162	Late 1920s residential flat building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	897m	South
I428	Federation Queen Anne houses	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	898m	South East
I363	Sandstone cottage and terraced pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	905m	North East
I375	Randwick Town Hall	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	909m	North East
I114	Single storey terrace group	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	909m	North West
I452	'Tayar', Italianate house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	921m	North East
I435	Part of historic residential streetscape	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	922m	North East
I127	Victorian mansion	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	932m	North West
I126	Kensington Public School buildings	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	935m	North West
I113	Bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	943m	West
I362	Victorian Italianate residence	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	955m	North East
I149	'Cooma', Edwardian mansion	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	956m	North West
I270	'Braemar'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	957m	North East

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I267	Post box	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	960m	North East
I269	'Aloha'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	968m	North East
I125	Detached cottage group	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	972m	North West
I121	Bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	977m	West
I268	'Eulalia'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	978m	North East
I335	'Peckham', Victorian mansion	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	978m	North East
I403	Transitional Victorian/Edwardian style house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	987m	South East
I419	Spanish Mission flats	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	995m	North
C1	Daceyville Garden Suburb Heritage Conservation Area	Conservation Area - General	Local	Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	09/10/2015	995m	South West
I249	Members, Stand/Official Stand, Royal Randwick Racecourse	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	02/04/2015	997m	North

Natural Hazards

Upper Campus, University of New South Wales, Sydney, NSW 2052

Bush Fire Prone Land

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

Bush Fire Prone Land Category	Distance	Direction
No records within buffer		

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Ecological Constraints - Native Vegetation & RAMSAR Wetlands

Upper Campus, University of New South Wales, Sydney, NSW 2052

Ecological Constraints

Upper Campus, University of New South Wales, Sydney, NSW 2052

Native Vegetation

What native vegetation exists within the dataset buffer?

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

RAMSAR Wetlands

What RAMSAR Wetland areas exist within the dataset buffer?

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

Ecological Constraints

Upper Campus, University of New South Wales, Sydney, NSW 2052

Groundwater Dependent Ecosystems Atlas

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

Ecological Constraints

Upper Campus, University of New South Wales, Sydney, NSW 2052

Inflow Dependent Ecosystems Likelihood

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

Ecological Constraints

Upper Campus, University of New South Wales, Sydney, NSW 2052

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	Crinia tinnula	Wallum Froglet	Vulnerable	Not Sensitive	Not Listed	
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	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 grisea	Sooty Shearwater	Not Listed	Not Sensitive	Not Listed	CAMBA;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 alba	Sanderling	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris bairdii	Baird's Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;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 melanotos	Pectoral Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Calidris ruficollis	Red-necked Stint	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris tenuirostris	Great Knot	Vulnerable	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Charadrius leschenaultii	Greater Sand-plover	Vulnerable	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Charadrius mongolus	Lesser Sand-plover	Vulnerable	Not Sensitive	Endangered	ROKAMBA;CAMBA; JAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Charadrius veredus	Oriental Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Chlidonias leucopterus	White-winged Black Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Dasyornis brachypterus	Eastern Bristlebird	Endangered	Category 2	Endangered	
Animalia	Aves	Diomedea exulans	Wandering Albatross	Endangered	Not Sensitive	Endangered	JAMBA
Animalia	Aves	Diomedea gibsoni	Gibson's Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Egretta sacra	Eastern Reef Egret	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Epthianura albifrons	White-fronted Chat	Endangered Population, Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Erythrotriorchis radiatus	Red Goshawk	Critically Endangered	Category 2	Vulnerable	
Animalia	Aves	Fregata ariel	Lesser Frigatebird	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	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	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Hydroprogne caspia	Caspian Tern	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Ixobrychus flavicollis	Black Bittern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Lathamus discolor	Swift Parrot	Endangered	Category 3	Critically Endangered	
Animalia	Aves	Limicola falcinellus	Broad-billed Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa lapponica	Bar-tailed Godwit	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa limosa	Black-tailed Godwit	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Macronectes giganteus	Southern Giant Petrel	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Macronectes halli	Northern Giant-Petrel	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Merops ornatus	Rainbow Bee-eater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Neochmia ruficauda	Star Finch	Presumed Extinct	Not Sensitive	Endangered	
Animalia	Aves	Neophema chrysogaster	Orange-bellied Parrot	Critically Endangered	Category 3	Critically Endangered	
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	Numenius phaeopus	Whimbrel	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Onychoprion fuscata	Sooty Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pezoporus wallicus wallicus	Eastern Ground Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Phaethon lepturus	White-tailed Tropicbird	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	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	Procelsterna cerulea	Grey Ternlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pterodroma leucoptera leucoptera	Gould's Petrel	Vulnerable	Not Sensitive	Endangered	
Animalia	Aves	Ptilinopus regina	Rose-crowned Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus superbus	Superb Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	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	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Sula dactylatra	Masked Booby	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Thalassarche cauta	Shy Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thalassarche chrysostoma	Grey-headed Albatross	Not Listed	Not Sensitive	Endangered	
Animalia	Aves	Thalassarche melanophris	Black-browed Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Tringa brevipes	Grey-tailed Tattler	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa glareola	Wood Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa incana	Wandering Tattler	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Tringa nebularia	Common Greenshank	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa stagnatilis	Marsh Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tryngites subruficollis	Buff-breasted Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Xenus cinereus	Terek Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Mammalia	Aepyprymnus rufescens	Rufous Bettong	Vulnerable	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	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Dasyurus viverrinus	Eastern Quoll	Endangered	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	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	
Animalia	Mammalia	Perameles nasuta	Long-nosed Bandicoot	Endangered Population	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Dermochelys coriacea	Leatherback Turtle	Endangered	Not Sensitive	Endangered	
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	Amperea xiphoclada subsp. pedicellata		Presumed Extinct	Not Sensitive	Extinct	
Plantae	Flora	Asterolasia buxifolia		Endangered	Not Sensitive	Not Listed	
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	Dichanthium setosum	Bluegrass	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Diuris arenaria	Sand Doubletail	Endangered	Category 2	Not Listed	
Plantae	Flora	Doryanthes palmeri	Giant Spear Lily	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus camfieldii	Camfield's Stringybark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus fracta	Broken Back Ironbark	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus pulverulenta	Silver-leafed Gum	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Grammitis stenophylla	Narrow-leaf Finger Fern	Endangered	Category 3	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Grevillea caleyi	Caley's Grevillea	Critically Endangered	Category 3	Endangered	
Plantae	Flora	Hibbertia puberula		Endangered	Not Sensitive	Not Listed	
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	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Persoonia nutans	Nodding Geebung	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pimelea curviflora subsp. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Pimelea spicata	Spiked Rice-flower	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Prasophyllum fuscum	Slaty Leek Orchid	Critically Endangered	Category 2	Vulnerable	
Plantae	Flora	Prostanthera marifolia	Seaforth Mintbush	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Pultenaea parviflora		Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Senecio spathulatus	Coast Groundsel	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Senna acclinis	Rainforest Cassia	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetratheca glandulosa		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Tetratheca juncea	Black-eyed Susan	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Thesium australe	Austral Toadflax	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Triplarina imbricata	Creek Triplarina	Endangered	Not Sensitive	Endangered	

Data does not include NSW category 1 sensitive species.

Data obtained 02/05/2018

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Appendix D

Photographs

Photo 1 - North western landscape area

Photo 2 - Parking

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs** **Project Area 1** **Contamination Investigation**	PROJECT: 86361.01 PLATE No: 1 REV: A
	CLIENT: UNSW	DATE: 30-May-18

Photo 3 - Clancy Auditorium

Photo 4 - University mall

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs** **Project Area 1** **Contamination Investigatio**	PROJECT: 86361.01 PLATE No: 2 REV: A
	CLIENT: UNSW	DATE: 30-May-18

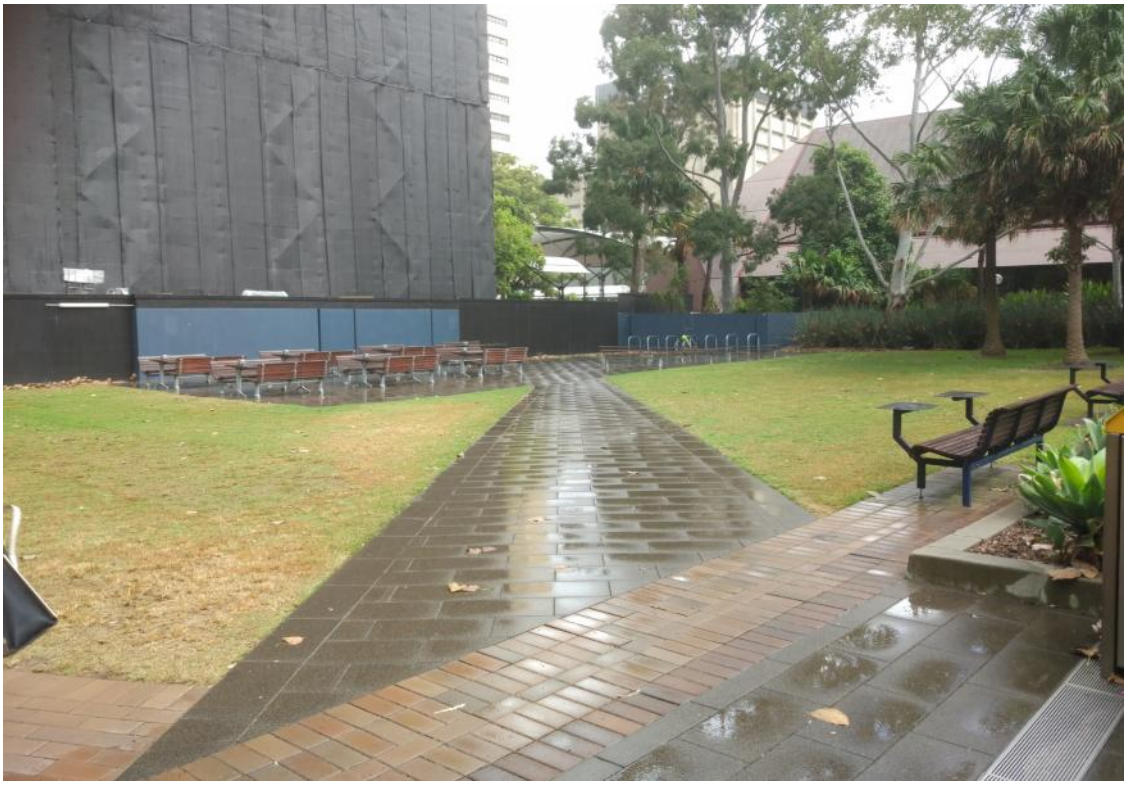

Photo 5 - Biomedical Lawn

Photo 6 - BEES Building and pedestrian access

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs** **Project Area 1** **Contamination Investigation**	PROJECT: 86361.01 PLATE No: 3 REV: A
	CLIENT: UNSW	DATE: 30-May-18

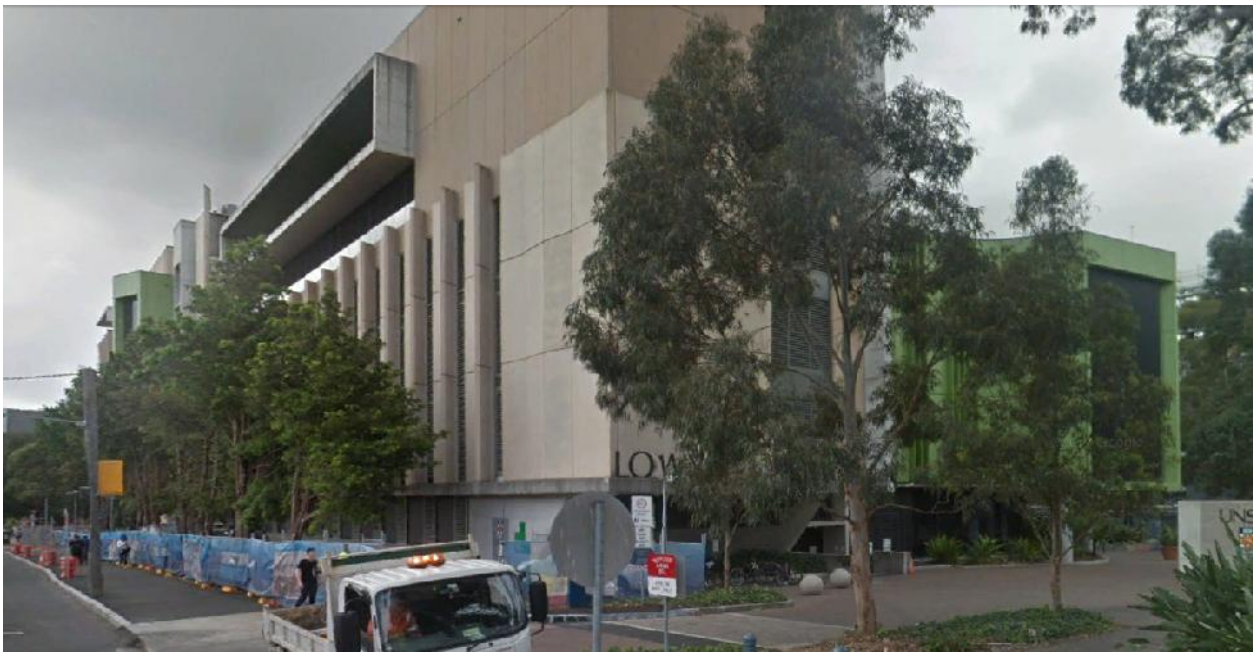

Photo 7 - Lowy Centre

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs** **Project Area 1** **Contamination Investigatio**	PROJECT: 86361.01 PLATE No: 4 REV: A
	CLIENT: UNSW	DATE: 30-May-18

Appendix E

Borehole Log Results

Sampling Methods

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Sampling

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

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

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

Test Pits

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

Large Diameter Augers

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

Continuous Spiral Flight Augers

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

Non-core Rotary Drilling

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

Continuous Core Drilling

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

Standard Penetration Tests

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

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

The test results are reported in the following form.

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

  4,6,7
  N=13

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

  15, 30/40 mm

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

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

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

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

Soil Descriptions

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Description and Classification Methods

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

Soil Types

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

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

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

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

The proportions of secondary constituents of soils are described as:

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

Definitions of grading terms used are:

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

Cohesive Soils

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

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

Cohesionless Soils

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

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

Soil Descriptions

Soil Origin

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

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

Transported soils may be further subdivided into:

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

Rock Strength

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

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

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

Degree of Weathering

The degree of weathering of rock is classified as follows:

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

Degree of Fracturing

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

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

Rock Descriptions

Rock Quality Designation

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

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

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

Stratification Spacing

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

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

Symbols & Abbreviations

Douglas Partners

Introduction

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

Drilling or Excavation Methods

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

Water

▷	Water seep
▽	Water level

Sampling and Testing

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

Description of Defects in Rock

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

Defect Type

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

Orientation

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

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

Coating or Infilling Term

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

Coating Descriptor

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

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

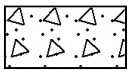
Symbols & Abbreviations

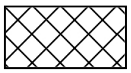
Graphic Symbols for Soil and Rock

General

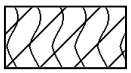

Asphalt

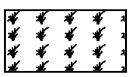

Road base

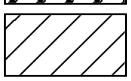

Concrete


Filling

Soils


Topsoil

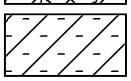

Peat


Clay


Silty clay

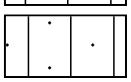

Sandy clay

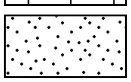

Gravelly clay

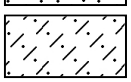

Shaly clay

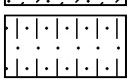

Silt


Clayey silt


Sandy silt

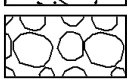

Sand


Clayey sand


Silty sand


Gravel

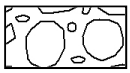

Sandy gravel


Cobbles, boulders

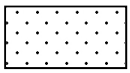

Talus

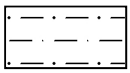
Sedimentary Rocks

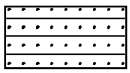

Boulder conglomerate

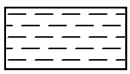

Conglomerate


Conglomeratic sandstone

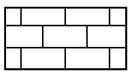

Sandstone


Siltstone

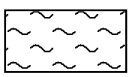

Laminite

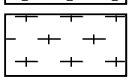

Mudstone, claystone, shale

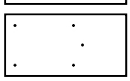

Coal


Limestone

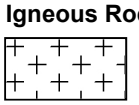
Metamorphic Rocks

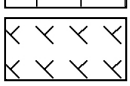

Slate, phyllite, schist

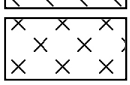

Gneiss

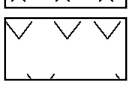

Quartzite

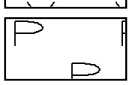
Igneous Rocks


Granite


Dolerite, basalt, andesite


Dacite, epidote


Tuff, breccia


Porphyry

BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 57.7 AHD
EASTING: 336770
NORTHING: 6245715
DIP/AZIMUTH: 90°/--

BORE No: BH6
PROJECT No: 86361.00
DATE: 7/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	VWP Construction Details
57	0.0	FILLING: poorly-compacted, brown, medium grained sand filling with some silt and rootlets and some fine to medium gravels, humid		A/E	0.0 - 0.1				
	0.2	FILLING: poorly-compacted, grey-brown, gravelly sand filling, humid		B	0.1 - 0.4				
				A/E	0.4 - 0.5				
	0.5	FILLING: variably compacted, dark brown, sitly sand filling with some fine gravels, damp							
	1			A/E	0.9 - 1.0				1
				A/E	1.4 - 1.5				
56		1.6m: with some fine to medium gravels and trace of glass/tile fragments below 1.6m							
	2			A/E	1.9 - 2.0				2
	2.3	FILLING: yellow-brown, medium grained sand filling with some silt and some fine to medium gravels, damp		A/E	2.4 - 2.5				
55	3			A/E	2.9 - 3.0				3
	3.0	Bore discontinued at 3.0m - Limit of investigation							
54	4								4
53									

RIG: 3.5t excavator **DRILLER:** A&A **LOGGED:** JN **CASING:** Uncased
TYPE OF BORING: Solid flight auger (TC-bit) to 3.0 m
WATER OBSERVATIONS: No free ground water observed whislt augering
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 58.1 AHD
EASTING: 336809
NORTHING: 6245714
DIP/AZIMUTH: 90°/--

BORE No: BH7
PROJECT No: 86361.00
DATE: 4/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
58	0.1	FILLING: grey-brown, silty sand filling (topsoil) with trace roots and rootlets and some fine gravels, humid		A/E	0.0				
		FILLING: variably compacted, grey-brown, medium sand filling with fine to coarse sandstone gravels and cobbles, some glass/tile fragments, humid		A/E	0.1				
					0.4				
				B	0.5				
				A/E	0.9				
57	1.0	SAND: dense, yellow, medium grain sand, humid			1.0				
				A/E*	1.4				
	1.5	Bore discontinued at 1.5m			1.5				
56	2								
55	3								
54	4								

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

RIG: Hand tools **DRILLER:** JN **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Hand auger to 1.5 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS: *BD/201805#5

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

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 57.6 AHD
EASTING: 336767
NORTHING: 6245695
DIP/AZIMUTH: 90°/--

BORE No: BH8
PROJECT No: 86361.00
DATE: 7/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
57	0.1	FILLING: grey-brown, medium sand filling with some silt, fine to medium gravels and mulch, damp		A/E	0.0–0.1				
		FILLING: variably compacted, yellow-brown, medium sand filling with some fine gravels, damp		B					
				A/E	0.4–0.5				
	0.6	FILLING: variably compacted, grey silty sand filling, some fine to medium gravels, damp		A/E	0.9–1.0				
56	1.6	FILLING: variably compacted, grey silty sand filling, some fine to medium gravels and trace glass/tile fragments, damp		A/E	1.4–1.5				
				A/E	1.9–2.0				
				A/E	2.4–2.5				
55	2.6	SAND: yellow, medium grained sand, damp		A/E	2.9–3.0				
	3.0	Bore discontinued at 3.0m - Limit of investigation							

RIG: 3.5 t excavator **DRILLER:** A&A **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Solid flight auger (tc-bit) to 3.0 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 57.8 AHD
EASTING: 336786
NORTHING: 6245699
DIP/AZIMUTH: 90°/--

BORE No: BH9
PROJECT No: 86361.00
DATE: 7/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
57	0.0	FILLING: grey-brown, medium sand filling with mulch, some fine to coarse gravels, damp		A/E	0.0 - 0.1				
	0.2	FILLING: variably compacted, brown, medium sand filling with trace of fine gravels, humid		A/E	0.4 - 0.5				
	0.6	FILLING: variably compacted grey-brown silty sand filling, with some fine to medium gravels, damp		A/E	0.9 - 1.0				
				A/E	1.4 - 1.5				
56	1.6	FILLING: variably compacted, yellow-brown, medium sand filling, with some fine to medium gravels, damp		A/E	1.9 - 2.0				
	2.2	SAND: medium dense to dense, yellow, medium sand, damp		A/E	2.4 - 2.5				
55				A/E	2.9				
	3.0	Bore discontinued at 3.0m - Limit of investigation			3.0				
54									
53									

RIG: 3.5 t excavator **DRILLER:** A&A **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Solid flight auger (tc-bit) to 3.0 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 58.1 AHD
EASTING: 336804
NORTHING: 6245691
DIP/AZIMUTH: 90°/--

BORE No: BH10
PROJECT No: 86361.00
DATE: 2/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
58	0.1	FILLING: dark brown silty sand filling (topsoil) with some mulch and rootlets, moist		A/E	0.0–0.1				
		FILLING: poorly compacted, grey, slightly gravelly medium grained sand filling with some silt, damp		A/E	0.4–0.5				
	0.7	FILLING: variably compacted, yellow, medium grained sand filling with some fine to coarse sandstone gravels, trace glass/tile fragments, moist		A/E	0.9–1.0				
57	1			A/E	1.4–1.5				
	1.5	Bore discontinued at 1.5m							
56	2								
55	3								
54	4								

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

RIG: Hand tools **DRILLER:** JN **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Hand auger to 1.5 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 57.7 AHD
EASTING: 336782
NORTHING: 6245670
DIP/AZIMUTH: 90°/--

BORE No: BH12
PROJECT No: 86361.00
DATE: 2/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
	0.0				0.0				
	0.1	FILLING: red-brown, medium to coarse grain sand filling with some fine to medium gravels, trace of clay, moist		A/E	0.1				
		FILLING: variably compacted, grey brown gravelly sand filling, damp			0.2				
	0.3			A/E	0.3		Bulk sample 0.2-.03m		
		Bore discontinued at 0.3m - Hand auger refusal on gravelly filling							

RIG: Hand tools **DRILLER:** JN **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Hand auger to 0.3 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 57.8 AHD
EASTING: 336809
NORTHING: 6245677
DIP/AZIMUTH: 90°/--

BORE No: BH13
PROJECT No: 86361.00
DATE: 2/5/2018
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	0.06	PAVERS										
	0.2	FILLING: yellow medium sand filling with some fine gravels, moist							A/E			
		FILLING: grey-brown medium sand filling with some silt, damp										
	0.5	FILLING: poorly compacted, yellow-brown medium sand filling, damp							A/E			
57	1								A/E			
									S			3,5,8 N = 13
	1.5	FILLING: poorly compacted, grey medium sand filling with some silt , some fine to medium gravels, moist										
56	2								A/E			
									S			3,5,3 N = 8
55	3											
	3.0	FILLING: variably compacted, grey medium silty sand filling with some clay, some glass/tile fragments and metal wires, some fine to coarse gravels, moist							A/E			
54	4								S			3,8,10 N = 18
53												

RIG: Hanjin D&B 8D **DRILLER:** BG Drilling **LOGGED:** JN/SI **CASING:** HW to 6.70 m

TYPE OF BORING: Solid flight auger (TC-bit) to 6.70 m, NMLC coring to 12.65 m

WATER OBSERVATIONS: Free ground water observed at 5.0 m whislt augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
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BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 57.8 AHD
EASTING: 336809
NORTHING: 6245677
DIP/AZIMUTH: 90°/--

BORE No: BH13
PROJECT No: 86361.00
DATE: 2/5/2018
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
52	6	FILLING: variably compacted, grey medium silty sand filling with some clay, some glass/tile fragments and metal wires, some fine to coarse gravels, moist *(continued)*							A/E			
									S			2,11,3 N = 14
									A/E			
51	6.7 7	SANDSTONE: very low to medium strength, slightly and moderately weathered, slightly fractured, pale grey, medium grained sandstone with some extremely low strength seams						6.85m: B 0°, cly co 1mm 6.92m: B 10°, cly, inf, 10mm				PL(A) = 0.86
								7.18-7.94m: B (x4) 5-20°, cly inf 20-30mm				PL(A) = 0.57
50	8								C	82	51	
								8.3m: B 20°, pl, ro, cln				PL(A) = 0.67
49	9							8.60-9.08m: B (x2) 5°-10° cly co 1-2mm				
								9.15m: CORE LOSS: 550mm				
48	9.7	SANDSTONE: see over page							C	100	100	PL(A) = 0.3

RIG: Hanjin D&B 8D **DRILLER:** BG Drilling **LOGGED:** JN/SI **CASING:** HW to 6.70 m
TYPE OF BORING: Solid flight auger (TC-bit) to 6.70 m, NMLC coring to 12.65 m
WATER OBSERVATIONS: Free ground water observed at 5.0 m whislt augering
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 57.8 AHD
EASTING: 336809
NORTHING: 6245677
DIP/AZIMUTH: 90°/--

BORE No: BH13
PROJECT No: 86361.00
DATE: 2/5/2018
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
47	11	SANDSTONE: low to medium then medium strength, slightly weathered then fresh, slightly fractured to unbroken, pale grey medium grained massive sandstone with some carbonaceous flakes *(continued)*										PL(A) = 0.56
									C	100	100	
46	12							11.65-11.80m: J 70°, fe, he				PL(A) = 0.87
												PL(A) = 0.84
	12.65	Bore discontinued at 12.65m - Limit of investigation										
45	13											
44	14											
43												

RIG: Hanjin D&B 8D **DRILLER:** BG Drilling **LOGGED:** JN/SI **CASING:** HW to 6.70 m
TYPE OF BORING: Solid flight auger (TC-bit) to 6.70 m, NMLC coring to 12.65 m
WATER OBSERVATIONS: Free ground water observed at 5.0 m whislt augering
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 57.5 AHD
EASTING: 336822
NORTHING: 6245662
DIP/AZIMUTH: 90°/--

BORE No: BH14
PROJECT No: 86361.00
DATE: 1/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
57	0.05	FILLING: red-brown, medium grained silty sand filling with mulch, moist		A/E	0.0				
	0.15	FILLING: red-brown, medium grained silty sand filling, moist			0.1				
				A/E	0.2				
				A/E	0.3				
		FILLING: variably compacted grey-brown, yellow-brown and red-brown medium sand with some fine to medium gravel and silt, moist		A/E	0.4				
					0.5		Bulk sample 0.5-1.0m		
	0.7	SAND: medium dense, yellow, medium grained sand, moist							
	1			A/E	0.9				
					1.0				
					1.4				
56	1.5			A/E	1.5				
		1.8 m: dense Bore discontinued at 1.5m							
	2								
55									
	3								
54									
	4								
53									

RIG: Hand tools **DRILLER:** JN **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Hand auger to 1.5 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 57.1 AHD
EASTING: 336837
NORTHING: 6245653
DIP/AZIMUTH: 90°/--

BORE No: BH15
PROJECT No: 86361.00
DATE: 1/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
57	0.0	FILLING: poorly compacted, grey-brown gravelly sand filling with some silt and glass fragments, damp		A/E	0.0				
					0.1				
				A/E	0.2				
					0.3				
	0.5	FILLING: variably compacted, grey-brown, medium sand and sandstone gravels/cobbles filling, pavers, with trace of glass/tile/ceramic fragments, damp		A/E	0.5		Bulk sample 0.5-1.0m		
					0.6				
					0.9				
56	1.0	Bore discontinued at 1.0m - Hand auger refusal on sandstone cobbles in filling		A/E	1.0				
55	2								
54	3								
53	4								

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20; 1, 2, 3, 4

RIG: Hand tools **DRILLER:** JN **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Hand auger to 1.0 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 57.9 AHD
EASTING: 336775
NORTHING: 6245653
DIP/AZIMUTH: 90°/--

BORE No: BH17
PROJECT No: 86361.00
DATE: 4/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
	0.1	FILLING: dark brown silty sand filling with fine to coarse gravel, some rootlets, moist		A/E*	0.0–0.1				
		FILLING: poorly-compacted grey-brown medium sand filling with trace of fine gravels, moist		A/E	0.4–0.5				
	0.6	FILLING: poorly-compacted, yellow-brown, medium sand filling with some fine to medium gravels, damp		A/E	0.6–0.7				
	0.8	SAND: medium dense, yellow, medium sand, damp		A/E	0.9–1.0				
57	1			A/E	1.4–1.5				1
	1.5	Bore discontinued at 1.5m							
56	2								2
55	3								3
54	4								4
53									

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

RIG: Hand tools **DRILLER:** JN **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Hand auger to 1.5 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS: *BD/201805#4

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

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 56.5 AHD
EASTING: 336826
NORTHING: 6245642
DIP/AZIMUTH: 90°/--

BORE No: BH18
PROJECT No: 86361.00
DATE: 1/5/2018
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	0.06	PAVERS										
	0.2	FILLING: yellow, medium to coarse sand filling with some fine to medium gravels, moist							A/E			
56		FILLING: variably compacted, grey and pale grey, medium to coarse silty sand filling with some fine to medium gravels, moist							A/E			
	1								A/E			
									S			3,4,6 N = 10
		1.3 m: with some glass fragments							A/E			
55												
	2	2.0 m: with some rubber pieces, metal wires and tree roots							A/E			
54									S			2,1,2 N = 3
	3											
53						▼						
	4								S/E			3,5,5 N = 10
52												

RIG: Dando Terrier **DRILLER:** BG Drilling **LOGGED:** JN/SI **CASING:** HQ to 6.50 m

TYPE OF BORING: Solid flight auger (TC-bit) to 4.0 m, rotary (mud) to 6.90 m, NMLC coring to 12.60 m

WATER OBSERVATIONS: Free ground water observed at 3.90 m whilst augering

REMARKS: 5.5 m - 100% water loss, 12.4 m - 100% water loss; standpipe installed to 12.6 m, screen from 3.6-6.6 m, gravel to 7.0 m, bentonite plug to 6.6 m, gravel to 3.5 m, backfill to surface finished with gatic cover and concrete

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 56.5 AHD
EASTING: 336826
NORTHING: 6245642
DIP/AZIMUTH: 90°/--

BORE No: BH18
PROJECT No: 86361.00
DATE: 1/5/2018
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
51	6	FILLING: variably compacted, grey and pale grey, medium to coarse silty sand filling with some fine to medium gravels, moist *(continued)*										
50	6.5	SANDSTONE: very low strength pale grey medium grained sandstone							S/E			12,11,25/100 refusal
	6.93	SANDSTONE: medium strength, slightly weathered, slightly fractured, grey-brown medium to coarse grained sandstone						6.9m: CORE LOSS: 30mm 6.93m: Cs 20 mm	C	60	0	
49	7											PL(A) = 0.91
	8							7.7m: B 0-5°, un, ro, cln	C	95	95	
	8.35							8.2m: CORE LOSS: 150mm				
48	8.8	SANDSTONE: high strength, fresh, slightly fractured to unbroken, pale grey, medium grained and yellow sandstone							C	100	99	PL(A) = 0.52
	9											
47									C	100	100	PL(A) = 1.43

RIG: Dando Terrier **DRILLER:** BG Drilling **LOGGED:** JN/SI **CASING:** HQ to 6.50 m

TYPE OF BORING: Solid flight auger (TC-bit) to 4.0 m, rotary (mud) to 6.90 m, NMLC coring to 12.60 m

WATER OBSERVATIONS: Free ground water observed at 3.90 m whilst augering

REMARKS: 5.5 m - 100% water loss, 12.4 m - 100% water loss; standpipe installed to 12.6 m, screen from 3.6-6.6 m, gravel to 7.0 m, bentonite plug to 6.6 m, gravel to 3.5 m, backfill to surface finished with gatic cover and concrete

SAMPLING & IN SITU TESTING LEGEND

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

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 56.5 AHD
EASTING: 336826
NORTHING: 6245642
DIP/AZIMUTH: 90°/--

BORE No: BH18
PROJECT No: 86361.00
DATE: 1/5/2018
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
46		SANDSTONE: high strength, fresh, slightly fractured to unbroken, pale grey, medium grained and yellow sandstone *(continued)*						9.98m: J 30°, pl, ro, cln	C	100	100	PL(A) = 1.63
	11											PL(A) = 1.47
45												
	12								C	100	98	
44								12.4m: B 0°, cly co 3 mm				PL(A) = 1
	12.6	Bore discontinued at 12.6m - Limit of investigation										
	13											
43												
	14											
42												

RIG: Dando Terrier **DRILLER:** BG Drilling **LOGGED:** JN/SI **CASING:** HQ to 6.50 m

TYPE OF BORING: Solid flight auger (TC-bit) to 4.0 m, rotary (mud) to 6.90 m, NMLC coring to 12.60 m

WATER OBSERVATIONS: Free ground water observed at 3.90 m whilst augering

REMARKS: 5.5 m - 100% water loss, 12.4 m - 100% water loss; standpipe installed to 12.6 m, screen from 3.6-6.6 m, gravel to 7.0 m, bentonite plug to 6.6 m, gravel to 3.5 m, backfill to surface finished with gatic cover and concrete

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 56.5 AHD
EASTING: 336857
NORTHING: 6245654
DIP/AZIMUTH: 90°/--

BORE No: BH19
PROJECT No: 86361.00
DATE: 7/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
56	0.1	FILLING: brown, medium sand filling (topsoil), with some rootlets and fine to medium gravels, moist		A/E	0.0–0.1				
		FILLING: variably compacted, dark grey silty sand filling with some clay, trace of fine to medium gravels, moist		A/E	0.4–0.5				
	0.5	FILLING: variably compacted, grey, medium sand filling with some fine gravels, moist		A/E	0.9–1.0				
55	1			A/E	1.4–1.5				
		1.6 m: with trace of glass/tile fragments and some metal wire		A/E	1.9–2.0				
54	2			A/E	2.4–2.5				
	2.5	FILLING: dark grey silty sand filling with some clay and glass/tile fragments, rubber pieces, metal wire, with trace of fine gravels, moist		A/E	2.9–3.0				
53	3	Bore discontinued at 3.0m - Limit of investigation							
52	4								

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

RIG: 3.5 t excavator **DRILLER:** A&A **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Solid flight auger (tc-bit) to 3.0 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

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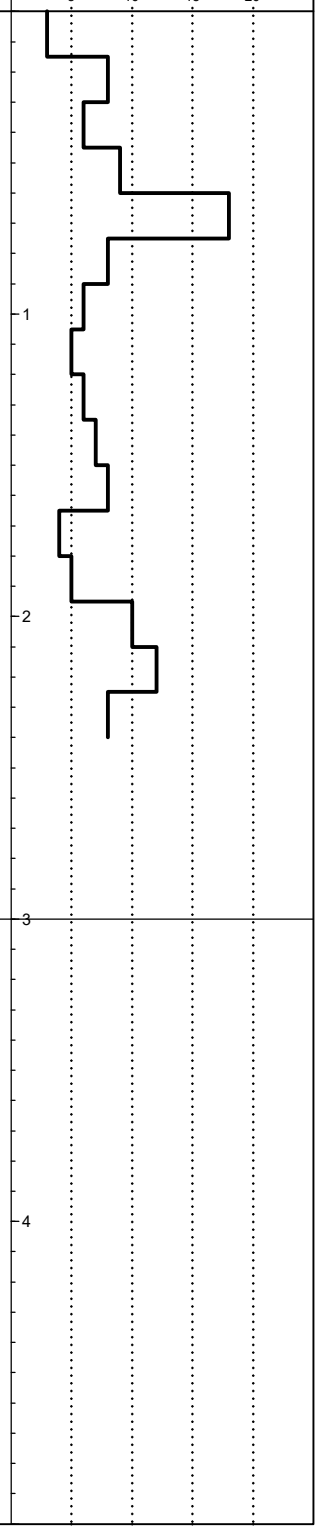
BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 56.5 AHD
EASTING: 336861
NORTHING: 6245640
DIP/AZIMUTH: 90°/--

BORE No: BH20
PROJECT No: 86361.00
DATE: 7/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
56	0.1	FILLING: grey-brown, medium sand filling (topsoil) with rootlets, some fine to medium gravels, moist		A/E	0.0–0.1				
		FILLING: variably compacted, grey gravelly sand filling, moist		A/E	0.4–0.5				
	0.5	FILLING: variably compacted, brown, medium sand filling, with trace of fine gravels, moist		A/E	0.9–1.0				
55	1			A/E	1.4–1.5				
	1.7	FILLING: variably compacted, grey, medium sand filling, some silt and fine to medium gravels, with trace of glass/tile fragments, moist		A/E	1.9–2.0				
54	2			A/E	2.4–2.5				
	2.7	FILLING: grey, gravelly sand filling, moist		A/E	2.9–3.0				
53	3	Bore discontinued at 3.0m - Limit of investigation							
52	4								



RIG: 3.5 t excavator **DRILLER:** A&A **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Solid flight auger (tc-bit) to 3.0 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 56.4 AHD
EASTING: 336882
NORTHING: 6245627
DIP/AZIMUTH: 90°/--

BORE No: BH21
PROJECT No: 86361.00
DATE: 7/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
56	0.1	FILLING: grey-brown, silty sand filling (topsoil) with rootlets and trace fine to medium gravels, moist			0.0				
		FILLING: variably compacted, grey-brown, silty sand filling with trace of fine to medium gravels, moist		A/E	0.2 0.3				
	0.4	FILLING: variably compacted, brown medium sand filling with some silt, fine to medium gravels, moist		A/E A/E	0.4 0.5				
	0.9	FILLING: variably compacted, pale grey, medium sand filling, moist		A/E	0.9 1.0				
55	1.8	FILLING: variably compacted, dark brown silty sand filling with some fine to medium gravels, with trace of glass/tile fragments, some metal wire, moist		A/E	1.9 2.0				
54				A/E*	2.4 2.5				
	2.7	SANDSTONE: low to medium strength, pale brown, medium grained sandstone (possible boulder filling)		A/E	2.7 2.8			▼	
		Bore discontinued at 2.8m - Auger refusal on medium strength sandstone (possible boulder infilling)							
53									
52									

RIG: 3.5 t excavator **DRILLER:** A&A **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Solid flight auger (tc-bit) to 2.8 m

WATER OBSERVATIONS: Free ground water observed at 2.7 m whilst augering

REMARKS: *BD/201805#6

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

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
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BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 56.3 AHD
EASTING: 336821
NORTHING: 6245606
DIP/AZIMUTH: 90°/--

BORE No: BH22
PROJECT No: 86361.00
DATE: 9/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
56	0.05	PAVERS			0.05				
	0.1	FILLING: yellow, medium sand filling with fine gravels, damp			0.25		Bulk sample 0.1-0.6m		
		FILLING: variably compacted, grey, gravelly sand filling, damp (possible roadbase gravels)		A/E	0.4				
				A/E	0.5				
	0.8	FILLING: variably compacted, brown, medium sand filling with some clay and fine to medium gravels, with trace of glass/tile fragments, damp		A/E	0.9				
55	1				1.0				1
				A/E	1.4				
	1.5	Bore discontinued at 1.5m - Limit of investigation			1.5				
54	2								2
53	3								3
52	4								4

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

RIG: Hand tools **DRILLER:** JN **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Hand auger to 1.5 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 54.9 AHD
EASTING: 336784
NORTHING: 6245590
DIP/AZIMUTH: 90°/--

BORE No: BH23
PROJECT No: 86361.00
DATE: 9/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
	0.1	FILLING: poorly-compacted, brown, silty sand filling (topsoil) with some rootlets, fine to medium gravels, moist		A/E	0.0				
	0.3	FILLING: poorly-compacted, pale brown, sandstone gravel filling		A/E	0.2			▼	
		FILLING: poorly-compacted, grey, silty sand filling, with trace of clay, wet		A/E	0.4				
	0.7				0.5				
	0.8	FILLING: variably compacted, pale brown, medium to coarse sand filling with some clay and fine to medium gravels, moist		A/E	0.7				
54	0.85				0.8				
	1	SANDSTONE: extremely low to very low strength, orange sandstone (possible filling)							1
		Bore discontinued at 0.85m - Hand auger refusal on extremely low to very low strength sandstone (possibly filling)							
53	2								2
52	3								3
51	4								4
50									

RIG: Hand tools **DRILLER:** JN **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Hand auger to 0.85 m

WATER OBSERVATIONS: Free ground water observed at 0.3 m whilst augering

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 54.9 AHD
EASTING: 336796
NORTHING: 6245588
DIP/AZIMUTH: 90°/--

BORE No: BH24
PROJECT No: 86361.00
DATE: 9/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
54	0	FILLING: poorly-compacted, brown silty sand filling with some tree roots, rootlets, fine to medium gravels, humid		A/E	0.0				
					0.1				
				B					
				A/E	0.4				
					0.5				
	0.7	Bore discontinued at 0.7m - Hand auger refusal on tree root							
53	1								
52	2								
51	3								
50	4								

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

RIG: Hand tools **DRILLER:** JN **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Hand auger to 0.7 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 54.6 AHD
EASTING: 336783
NORTHING: 6245602
DIP/AZIMUTH: 90°/--

BORE No: BH25
PROJECT No: 86361.00
DATE: 9/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
54	0.04	PAVERS		A/E	0.04				
	0.08	FILLING: grey-brown, gravelly sand filling, moist		A/E	0.08				
	0.2	FILLING: moderately compacted, grey sandy gravel filling, damp (possibly roadbase gravel)			0.1				
					0.2				
		FILLING: variably compacted, dark grey and pale brown medium to coarse sand filling with some silt, fine to medium gravels and clay, moist		A/E*	0.4				
					0.5				
					0.6				
	0.7			A/E	0.7				
	0.75	SANDSTONE: extremely low to very low strength, orange sandstone (possible cobble/boulder filling)		A/E	0.75				>>
		Bore discontinued at 0.75m - Hand auger refusal on extremely low to very low strength sandstone (possible cobble/boulder filling)							
53	1								1
52	2								2
51	3								3
50	4								4

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

RIG: Hand tools **DRILLER:** JN **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Hand auger to 0.75 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS: *BD/201805#7

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

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: University of New South Wales
PROJECT: Project Area 1
LOCATION: High Street, Kensington UNSW

SURFACE LEVEL: 55.5 AHD
EASTING: 336820
NORTHING: 6245542
DIP/AZIMUTH: 90°/--

BORE No: BH26
PROJECT No: 86361.00
DATE: 9/5/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
55	0	FILLING: poorly compacted, brown silty sand filling with rootlets, fine to medium gravels, damp		A/E	0.0				
					0.1				
				B					
					0.4				
				A/E	0.5				
	0.7								
	0.72	SANDSTONE: low to medium strength, orange sandstone (possible filling)							
		Bore discontinued at 0.72m							
	1	- Hand auger refusal on low to medium strength strength sandstone (possibly filling)							
54	2								
53	3								
52	4								
51									

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

RIG: Hand tools **DRILLER:** JN **LOGGED:** JN **CASING:** Uncased

TYPE OF BORING: Hand auger to 0.72 m

WATER OBSERVATIONS: No free ground water observed whilst augering

REMARKS: DCP test bouncing at 0.75 m

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

SAMPLING & IN SITU TESTING LEGEND

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

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Appendix F

Results Tables F1 and F2

Laboratory Certificates and Chain of Custody

95%UCL

Sample	Representative Overlying Soil Type	Fill/ Natural	Date Sampled	Heavy Metals								PAH				TRH (NEPM 2013)						BTEX				VOC	phenol	PCB [a-1]	OCP [b]	OPP [b]	Asbestos (40 g sample)		Asbestos (500 ml Sample)						
				As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	total [b]	BaP TEQ	BaP	Naphthalene	C6-C10	>C10-C16	F1 - C6 - C10 less BTEX	F2 - >C10-C16 less naphthalene	>C16-C34	>C34-C40	Benzene	Toluene	Ethylbenzene	xylene						Asbestos ID in soil	Trace Analysis	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos#1	Asbestos ID in soil <0.1g/kg*	ACM >7mm Estimation*	FA and AF Estimation*	FA and AF Estimation*#2
				Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total			Total						
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg			-	-	g/kg	-	%(w/w)	g	%(w/w)
Soil Assessment Criteria (SAC) - NEPM (as amended 2013) (refer to report body for details)																																							
Commercial																																							
HIL D				3,000	900	3,600[c]	240,000	1,500	730/180	6,000	400,000	4,000	40														660	7	refer to note 1	refer to note 2							0.05		0.001
EIL/ ESL				*160*		*680*	*150*	*1,800*		*50*	*460*			*1.4*	*370*		*170*	*215*		*2,500*	*6,600*	*95*	*135*	*185*	*95*				*640 [i]*									
Management Limit	Coarse															700	1,000			3,500	10,000																		
HSLs - Vapour Intrusion																																							
HSL D	0-<1m	Sand													NL			260	NL			3	NL	NL	230														
HSL D, direct contact															11,000			26,000	20,000	27,000	38,000	430	99,000	27,000	81,000														
Intrusive Maintenance Workers																																							
HSLs - Vapour Intrusion																																							
HSL	0-<2m	Sand													NL			NL	NL			77	NL	NL	NL														
HSL, direct contact															29,000			82,000	62,000	85,000	120,000	1,100	120,000	85,000	130,000														
Laboratory Results																																							
Sample Location		**Depth**																																					
6		0.4-0.5		Filling	May-18	<4	<0.4	5	44	130	0.3	4	86	2.4	<0.5	0.3	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
7		0.4-0.5		Filling	May-18	<4	<0.4	5	58	78	0.2	7	57	9.7	1.6	1.1	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
8		0.4-0.5		Filling	May-18	<4	<0.4	2	12	38	<0.1	2	51	0.06	<0.5	0.06	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
8		0.9-1.0		Filling	May-18	5	<0.4	4	22	180	0.5	3	38	24	4.4	*3*	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
9		0.9-1.0		Filling	May-18	<4	<0.4	9	*520*	1800	0.4	3	49	27	3.7	*2.6*	0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
9		2.4-2.5		Natural Sand	May-18	<4	<0.4	1	26	50	<0.1	2	23	0.5	<0.5	0.05	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
10		0.9-1.0		Filling	May-18	<4	<0.4	5	36	180	0.5	4	120	1.6	<0.5	0.2	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
12		0.2-0.3		Filling	May-18	4	<0.4	10	58	76	0.2	11	47	1.8	<0.5	0.2	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
13		0.4-0.5		Filling	May-18	<4	<0.4	5	40	160	0.2	6	98	2.1	<0.5	0.3	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	**No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected, Chrysotile asbestos fragment detected below the reporting limit**	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
13		2.4-2.5		Filling	May-18	<4	<0.4	6	140	200	0.4	6	220	3.4	0.5	0.3	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
13		5.4-5.5			May-18	7	0.9	27	*160*	540	1.3	12	*560*	22	2.3	*1.5*	0.1	<25	<50	<25	<50	350	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
14		0.2-0.3		Filling	May-18	<4	<0.4	2	48	56	0.2	3	69	2.9	0.6	0.4	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	0.2*	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
14		1.4-1.5		Natural Sand	May-18	<4	<0.4	2	9	62	<0.1	2	28	0.91	<0.5	0.1	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
15		0.5-0.6		Filling	May-18	<4	<0.4	9	48	170	0.6	18	160	6.2	1.1	0.74	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
17		0.4-0.5		Filling	May-18	<4	<0.4	10	26	51	0.4	2	45	0.4	<0.5	0.1	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
18		0.1-0.2		Filling	May-18	<4	<0.4	5	3	3	<0.1	1	11	<0.05	<0.5	<0.05	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
18		2.0-2.5		Filling	May-18	7	<0.4	14	*230*	140	0.3	17	230	14	2.6	*1.7*	<0.1	<25	<50	<25	<50	160	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
18		4.0-4.45			May-18	5	1	18	86	390	0.8	10	*710*	28	4	*2.7*	0.2	<25	<50	<25	<50	520	<100	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	**Chrysotile asbestos detected: Organic fibres detected**	No asbestos detected	-	-	-	-	-	-
19		0.4-0.5		Filling	May-18	6	<0.4	9	32	54	0.2	8	100	1.7	<0.5	0.2	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
19		1.9-2.0		Filling	May-18	9	<0.4	33	83	310	0.8	11	240	12	1.9	1.3	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
20		0.9-1.0		Filling	May-18	<4	<0.4	3	20	86	<0.1	4	82	39	8.2	*5.4*	<0.1	<25	<50	<25	<50	440	130	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
21		0.2-0.3		Filling	May-18	<4	<0.4	6	77	91	0.3	7	150	5	0.8	0.53	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
21		2.4-2.5		Filling	May-18	<4	<0.4	1	2	3	<0.1	<1	19	<0.05	<0.5	<0.05	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
22		0.9-1		Filling	May-18	4	<0.4	12	65	360	1.1	10	220	2.2	<0.5	0.3	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	-	-	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
23		0.4-0.5		Filling	May-18	<4	<0.4	6	19	16	0.7	3	29	<0.05	<0.5	<0.05	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	-	-	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
24		0.4-0.5		Filling	May-18	<4	<0.4	9	*220*	23	0.4	11	83	<0.05	<0.5	<0.05	<0.1	<25	91	<25	91	530	140	<0.2	<0.5	<1	<1	-	25	<0.5	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	-	-	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
25		0.4-0.5		Filling	May-18	<4	<0.4	7	17	21	1.6	5	63	0.5	<0.5	0.05	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
26		0-0.1		Filling	May-18	<4	<0.4	8	37	13	<0.1	5	51	<0.05	<0.5	<0.05	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
13 - [TRIPLICATE]		2.4-2.5		Filling	May-18	4	0.4	6	110	1100	1.2	7	*730*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19 - [TRIPLICATE]		1.9-2.0		Filling	May-18	14	<0.4	41	120	440	0.8	17	390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 - [TRIPLICATE]		0.9-1.0		Filling	May-18	7	<0.4	7	47	590	0.2	9	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD201805 #5		-		BH8 /0.4-0.5	May-18	<4	<0.4	1	1	3	<0.1	<1	35	0.2	<0.5	0.06	<0.1	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD 201805 #7				BH25 / 0.4-0.5		<5	<1	6	19	23	1	6	47	<0.5	<0.5	<0.5	<0.5	<10	<50	<10	<50	<100	-	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes

a	Replicate sample of sample listed directly above
b	Overlying material applying for HSL. Soil type adopted on conservative basis
c	Analysis result for total Cr, SAC and waste classification guidelines for Cr(VI), background ranges for Cr(III)
d	Where results of one or more component compound are above PQL sum of all results above PQL given, when all results are below PQL results quoted as <PQL of majority of individual analytes
e	Where results of one or more component compound are above PQL sum of all results above PQL given, when all results are below PQL results quoted as less than the sum of PQLs of the individual analytes
f	Guideline for scheduled chemicals, including OCP
g	Guidline for moderately harmful pesticides
h	Various available, not listed as not detected above PQL
i	Analysis result for TRH, guidelines for TPH
j	EIL for DDT
Italic	Exceedance of EIL/ESL
Bold	Exceedance of SAC
Red	Exceedance of General Solid Waste thresholds
*	As dieldrin
1	DDT+DDE+DDD - 3600 mg/kg, Aldrin + Dieldrin - 45 mg/kg, chlrodane - 530 mg/kg, endosulfan - 2000 mg/kg, endrin - 100 mg/kg, heptachlor - 50 mg/kg, HCB - 80 mg/kg and methoxychlor - 2500 mg/kg
2	chloropyifos - 2000 mg/kg

Acronyms

As	arsenic
BaP	benzo(a)pyrene
BaP TEQ	benzo(a)pyrene toxic equivalent
BTEX	benzene, toluene, ethyl benzene, total xylenes
Cd	cadmium
Cr	chromium (total)
Cu	copper
EIL	ecological investigation level
ESL	ecological screening level
GIL	groundwater investigation level
Hg	mercury
HIL	health investigation level
HSL	health screening level
NAD	no asbestos detected at the limit of reporting
Ni	nickel
NL	"Not limiting" to human health for the proposed land use for vapour intrusion from petroleum hydrocarbons
OCP	organochlorine pesticides
OPP	organophosphorus pesticides
PAH	polycyclic aromatic hydrocarbons
Pb	lead
PCB	polychlorinated biphenyls
PQL	practical quantitation limit
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbons
TRH	total recoverable hydrocarbons, including total petroleum hydrocarbons (TPH)
VOC	volatile organic compounds
Zn	zinc

Guidelines

National Environment Protection Council (NEPC) *National Environment Protection (Assessment of Site Contamination) Measure* 1999 (as amended 2013).
NEPC (1999) *National Environment Protection Measure (Assessment of Site Contamination)* Schedule B1, Table 5-A, Background Ranges
ANZECC/NHMRC (1992) *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites* , Environmental Soil Quality Guidelines Background A [ANZECC A];
ANZECC (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* , Volume 3, Table 9.2.16 Datasets used to derive suggested upper background values for uncontaminated Australian soils
NSW EPA (2014) *Waste Classification Guidelines*

Table F2 - Summary of Waste Classification Results

Sample	Representative Overlying Soil Type	Fill/ Natural	Date Sampled	Heavy Metals										PAH				TRH/TPH					BTEX				VOC	phenol	PCB[a-1]	OCP[b]	OPP[b]	Asbestos (40 g sample)		Asbestos (500 ml Sample)						
				As	Cd	Cr	Cu	Pb		Hg	Ni	Zn	total[b]	BaP		Naphthalene	C_6 - C_9	C_{10} - C_{14}	C_{15} - C_{28}	C_{29} - C_{36}	C_{10} - C_{36} [i]	Benzene	Toluene	Ethylbenzene	xylene						Asbestos ID in soil	Trace Analysis	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos#1	Asbestos ID in soil <0.1g/kg*	ACM >7mm Estimation*	FA and AF Estimation*	FA and AF Estimation*#2
				Total	Total	Total	Total	Total	TCLP	Total	Total	Total	Total	TCLP	Total	TCLP	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total								
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg								
General Solid	CT1			100	20	100		100		4	40		200		0.8		650				10,000	10	288	600	1,000			288	<50	<50[f]	250			-		nil	nil	nil	nil	nil	nil
	SCC1/TCLP1			500	100	1,900		1,500	5	50	1,050		200		10	0.04	650				10,000	18	518	1,080	1,800			518	<50	<50[f]	1000			nil		nil	nil	nil	nil	nil	nil
Restricted Solid	CT2			400	80	400		400		16	160		800		3.2		2,600				40,000	40	1,152	2,400	4,000			1,152	<50	<50[f]	250			nil		nil	nil	nil	nil	nil	nil
	SCC2/TCLP2			2,000	400	7,600		6,000	20	200	4,200		800		23	0.16	2,600				40,000	72	2,073	4,320	7,200			2,070	<50	<50[f]	1000			nil		nil	nil	nil	nil	nil	nil
Published Background Ranges																																								
NEPC (1999)				1-50	1	5-1000	2-100	2-200		0.03	5-500	10-300																												
ANZECC (1992)				0.2-30	0.04-2	0.5-110	1-190	<2-200		0.001-0.1	2-400	2-180	0.95-5									0.05 - 1	0.1 - 1					0.03 – 0.5	0.02 – 0.1	<0.001 - <0.97											
ANZECC (2000)				1-53	0.016-0.78	2.5-673	0.4-412	2-81			1-517	1-263																												
Laboratory Results																																								
Sample Location		**Depth**																																						
6		0.4-0.5		Filling	May-18	<4	<0.4	5	44	130	-	0.3	4	86	2.4	-	0.3	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
7		0.4-0.5		Filling	May-18	<4	<0.4	5	58	78	-	0.2	7	57	9.7	-	1.1	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
8		0.4-0.5		Filling	May-18	<4	<0.4	2	12	38	-	<0.1	2	51	0.06	-	0.06	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
8		0.9-1.0		Filling	May-18	5	<0.4	4	22	180	-	0.5	3	38	24	0.001	3	<0.001	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
9		0.9-1.0		Filling	May-18	<4	<0.4	9	520	1800	8.3	0.4	3	49	27	Nil (+) VE	2.6	<0.001	0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
9		2.4-2.5		Natural Sand	May-18	<4	<0.4	1	26	50	-	<0.1	2	23	0.5	-	0.05	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
10		0.9-1.0		Filling	May-18	<4	<0.4	5	36	180	-	0.5	4	120	1.6	-	0.2	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
12		0.2-0.3		Filling	May-18	4	<0.4	10	58	76	-	0.2	11	47	1.8	-	0.2	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
13		0.4-0.5		Filling	May-18	<4	<0.4	5	40	160	-	0.2	6	98	2.1	-	0.3	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	**No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected, Chrysotile asbestos fragement detected below the reporting limit**	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
13		2.4-2.5		Filling	May-18	<4	<0.4	6	140	200	0.3	0.4	6	220	3.4	-	0.3	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
13		5.4-5.5			May-18	7	0.9	27	160	540	0.79	1.3	12	560	22	-	1.5	-	0.1	<25	<50	220	150	370	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
14		0.2-0.3		Filling	May-18	<4	<0.4	2	48	56	-	0.2	3	69	2.9	-	0.4	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	0.2*	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
14		1.4-1.5		Natural Sand	May-18	<4	<0.4	2	9	62	-	<0.1	2	28	0.91	-	0.1	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
15		0.5-0.6		Filling	May-18	<4	<0.4	9	48	170	-	0.6	18	160	6.2	-	0.74	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
17		0.4-0.5		Filling	May-18	<4	<0.4	10	26	51	-	0.4	2	45	0.4	-	0.1	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
18		0.1-0.2		Filling	May-18	<4	<0.4	5	3	3	-	<0.1	1	11	<0.05	-	<0.05	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
18		2.0-2.5		Filling	May-18	7	<0.4	14	230	140	-	0.3	17	230	14	-	1.7	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
18		4.0-4.45		Filling	May-18	5	1	18	86	390	3.6	0.8	10	710	28	Nil (+) VE	2.7	<0.001	0.2	<25	<50	320	230	550	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	**Chrysotile asbestos detected: Organic fibres detected**	No asbestos detected	-	-	-	-	-	-
19		0.4-0.5		Filling	May-18	6	<0.4	9	32	54	-	0.2	8	100	1.7	-	0.2	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
19		1.9-2.0		Filling	May-18	9	<0.4	33	83	310	0.91	0.8	11	240	12	Nil (+) VE	1.3	<0.001	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
20		0.9-1.0		Filling	May-18	<4	<0.4	3	20	86	0.52	<0.1	4	82	39	Nil (+) VE	5.4	<0.001	<0.1	<25	<50	240	240	480	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
21		0.2-0.3		Filling	May-18	<4	<0.4	6	77	91	-	0.3	7	150	5	-	0.53	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
21		2.4-2.5		Filling	May-18	<4	<0.4	1	2	3	-	<0.1	<1	19	<0.05	-	<0.05	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	<1	<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
22		0.9-1		Filling	May-18	4	<0.4	12	65	360	-	1.1	10	220	2.2	-	0.3	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	-	-	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
23		0.4-0.5		Filling	May-18	<4	<0.4	6	19	16	-	0.7	3	29	<0.05	-	<0.05	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	-	-	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
24		0.4-0.5		Filling	May-18	<4	<0.4	9	220	23	-	0.4	11	83	<0.05	-	<0.05	-	<0.1	<25	98	280	310	688	<0.2	<0.5	<1	<1		25	<0.5	<0.1	<0.1	-	-	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
25		0.4-0.5		Filling	May-18	<4	<0.4	7	17	21	-	1.6	5	63	0.5	-	0.05	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	-	-	-	-	-	-
26		0-0.1		Filling	May-18	<4	<0.4	8	37	13	-	<0.1	5	51	<0.05	-	<0.05	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1		<5	<0.1	<0.1	<0.1	-	-	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	0	–	<0.001
13 - [TRIPLICATE]		2.4-2.5		Filling	May-18	4	0.4	6	110	1100	-	1.2	7	730	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19 - [TRIPLICATE]		1.9-2.0		Filling	May-18	14	<0.4	41	120	440	-	0.8	17	390	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 - [TRIPLICATE]		0.9-1.0		Filling	May-18	7	<0.4	7	47	590	-	0.2	9	160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD/201805#4		-		BH17/0.4-0.5	May-18	<5	<1	60	56	44		0.1	3	45	<0.5	-	<0.5	-	<0.5	<10	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD/201805 #5		-		BH8 /0.4-0.5	May-18	<4	<0.4	1	1	3	-	<0.1	<1	35	0.2	-	0.06	-	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1														
BD 201805 #7				BH25 / 0.4-0.5		<5	<1	6	19	23	-	1	6	47	<0.5	-	<0.5	-	<0.5	<10	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5														

Notes

a	Replicate sample of sample listed directly above
b	Overlying material applying for HSL. Soil type adopted on conservative basis
c	Analysis result for total Cr, SAC and waste classification guidelines for Cr(VI), background ranges for Cr(III)
d	Where results of one or more component compound are above PQL sum of all results above PQL given, when all results are below PQL results quoted as <PQL of majority of individual analytes
e	Where results of one or more component compound are above PQL sum of all results above PQL given, when all results are below PQL results quoted as less than the sum of PQLs of the individual analytes
f	Guideline for scheduled chemicals, including OCP
g	Guidline for moderately harmful pesticides
h	Various available, not listed as not detected above PQL
i	Analysis result for TRH, guidelines for TPH
j	EIL for DDT
1	DDT+DDE+DDD - 3600 mg/kg, Aldrin + Dieldrin - 45 mg/kg, chlrodane - 530 mg/kg, endosulfan - 2000 mg/kg, endrin - 100 mg/kg, heptachlor - 50 mg/kg, HCB - 80 mg/kg and methoxychlor - 2500 mg/kg
2	chloropyifos - 2000 mg/kg

Acronyms

As	arsenic
BaP	benzo(a)pyrene
BaP TEQ	benzo(a)pyrene toxic equivalent
BTEX	benzene, toluene, ethyl benzene, total xylenes
Cd	cadmium
Cr	chromium (total)
Cu	copper
EIL	ecological investigation level
ESL	ecological screening level
GIL	groundwater investigation level
Hg	mercury
Ni	nickel
OCP	organochlorine pesticides
OPP	organophosphorus pesticides
PAH	polycyclic aromatic hydrocarbons
Pb	lead
PCB	polychlorinated biphenyls
PQL	practical quantitation limit
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbons
TRH	total recoverable hydrocarbons, including total petroleum hydrocarbons (TPH)
VOC	volatile organic compounds
Zn	zinc

Guidelines

National Environment Protection Council (NEPC) *National Environment Protection (Assessment of Site Contamination) Measure* 1999 (as amended 2013).
NEPC (1999) *National Environment Protection Measure (Assessment of Site Contamination)* Schedule B1, Table 5-A, Background Ranges
ANZECC/NHMRC (1992) *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites* , Environmental Soil Quality Guidelines Background A [ANZECC A];
ANZECC (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* , Volume 3, Table 9.2.16 Datasets used to derive suggested upper background values for uncontaminated Australian soils
NSW EPA (2014) *Waste Classification Guidelines*

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CERTIFICATE OF ANALYSIS 191226

Client Details

Client	Douglas Partners Pty Ltd
Attention	Kurt Plambeck
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**86361.01, UNSW - Project Area 1, Kensington**
Number of Samples	26 Soil
Date samples received	09/05/2018
Date completed instructions received	09/05/2018

Analysis Details

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

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

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

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

Report Details

Date results requested by	16/05/2018
Date of Issue	16/05/2018

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Authorised By

Jacinta Hurst, Laboratory Manager

VOCs in soil						
Our Reference		191226-1	191226-2	191226-5	191226-13	191226-16
Your Reference	UNITS	7	10	13	18	8
Depth		0.4-0.5	0.9-1.0	2.4-2.5	4.0-4.45	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Dichlorodifluoromethane	mg/kg	<1	<1	<1	<1	<1
Chloromethane	mg/kg	<1	<1	<1	<1	<1
Vinyl Chloride	mg/kg	<1	<1	<1	<1	<1
Bromomethane	mg/kg	<1	<1	<1	<1	<1
Chloroethane	mg/kg	<1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	<1	<1	<1	<1	<1
1,1-Dichloroethene	mg/kg	<1	<1	<1	<1	<1
trans-1,2-dichloroethene	mg/kg	<1	<1	<1	<1	<1
1,1-dichloroethane	mg/kg	<1	<1	<1	<1	<1
cis-1,2-dichloroethene	mg/kg	<1	<1	<1	<1	<1
bromochloromethane	mg/kg	<1	<1	<1	<1	<1
chloroform	mg/kg	<1	<1	<1	<1	<1
2,2-dichloropropane	mg/kg	<1	<1	<1	<1	<1
1,2-dichloroethane	mg/kg	<1	<1	<1	<1	<1
1,1,1-trichloroethane	mg/kg	<1	<1	<1	<1	<1
1,1-dichloropropene	mg/kg	<1	<1	<1	<1	<1
Cyclohexane	mg/kg	<1	<1	<1	<1	<1
carbon tetrachloride	mg/kg	<1	<1	<1	<1	<1
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
dibromomethane	mg/kg	<1	<1	<1	<1	<1
1,2-dichloropropane	mg/kg	<1	<1	<1	<1	<1
trichloroethene	mg/kg	<1	<1	<1	<1	<1
bromodichloromethane	mg/kg	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	mg/kg	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	mg/kg	<1	<1	<1	<1	<1
1,1,2-trichloroethane	mg/kg	<1	<1	<1	<1	<1
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	mg/kg	<1	<1	<1	<1	<1
dibromochloromethane	mg/kg	<1	<1	<1	<1	<1
1,2-dibromoethane	mg/kg	<1	<1	<1	<1	<1
tetrachloroethene	mg/kg	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	mg/kg	<1	<1	<1	<1	<1
chlorobenzene	mg/kg	<1	<1	<1	<1	<1
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
bromoform	mg/kg	<1	<1	<1	<1	<1

VOCs in soil						
Our Reference		191226-1	191226-2	191226-5	191226-13	191226-16
Your Reference	UNITS	7	10	13	18	8
Depth		0.4-0.5	0.9-1.0	2.4-2.5	4.0-4.45	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
styrene	mg/kg	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	<1	<1	<1	<1	<1
o-Xylene	mg/kg	<1	<1	<1	<1	<1
1,2,3-trichloropropane	mg/kg	<1	<1	<1	<1	<1
isopropylbenzene	mg/kg	<1	<1	<1	<1	<1
bromobenzene	mg/kg	<1	<1	<1	<1	<1
n-propyl benzene	mg/kg	<1	<1	<1	<1	<1
2-chlorotoluene	mg/kg	<1	<1	<1	<1	<1
4-chlorotoluene	mg/kg	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	mg/kg	<1	<1	<1	<1	<1
tert-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	mg/kg	<1	<1	<1	<1	<1
1,3-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
sec-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,4-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
4-isopropyl toluene	mg/kg	<1	<1	<1	<1	<1
1,2-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
n-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	mg/kg	<1	<1	<1	<1	<1
hexachlorobutadiene	mg/kg	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	mg/kg	<1	<1	<1	<1	<1
Surrogate Dibromofluorometha	%	106	108	107	97	111
Surrogate aaa-Trifluorotoluene	%	101	98	99	95	104
Surrogate Toluene-d_8	%	102	101	101	107	105
Surrogate 4-Bromofluorobenzene	%	96	93	95	94	97

VOCs in soil			
Our Reference		191226-17	191226-23
Your Reference	UNITS	9	21
Depth		0.9-1.0	2.4-2.5
Type of sample		Soil	Soil
Date extracted	-	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018
Dichlorodifluoromethane	mg/kg	<1	<1
Chloromethane	mg/kg	<1	<1
Vinyl Chloride	mg/kg	<1	<1
Bromomethane	mg/kg	<1	<1
Chloroethane	mg/kg	<1	<1
Trichlorofluoromethane	mg/kg	<1	<1
1,1-Dichloroethene	mg/kg	<1	<1
trans-1,2-dichloroethene	mg/kg	<1	<1
1,1-dichloroethane	mg/kg	<1	<1
cis-1,2-dichloroethene	mg/kg	<1	<1
bromochloromethane	mg/kg	<1	<1
chloroform	mg/kg	<1	<1
2,2-dichloropropane	mg/kg	<1	<1
1,2-dichloroethane	mg/kg	<1	<1
1,1,1-trichloroethane	mg/kg	<1	<1
1,1-dichloropropene	mg/kg	<1	<1
Cyclohexane	mg/kg	<1	<1
carbon tetrachloride	mg/kg	<1	<1
Benzene	mg/kg	<0.2	<0.2
dibromomethane	mg/kg	<1	<1
1,2-dichloropropane	mg/kg	<1	<1
trichloroethene	mg/kg	<1	<1
bromodichloromethane	mg/kg	<1	<1
trans-1,3-dichloropropene	mg/kg	<1	<1
cis-1,3-dichloropropene	mg/kg	<1	<1
1,1,2-trichloroethane	mg/kg	<1	<1
Toluene	mg/kg	<0.5	<0.5
1,3-dichloropropane	mg/kg	<1	<1
dibromochloromethane	mg/kg	<1	<1
1,2-dibromoethane	mg/kg	<1	<1
tetrachloroethene	mg/kg	<1	<1
1,1,1,2-tetrachloroethane	mg/kg	<1	<1
chlorobenzene	mg/kg	<1	<1
Ethylbenzene	mg/kg	<1	<1
bromoform	mg/kg	<1	<1

VOCs in soil			
Our Reference		191226-17	191226-23
Your Reference	UNITS	9	21
Depth		0.9-1.0	2.4-2.5
Type of sample		Soil	Soil
m+p-xylene	mg/kg	<2	<2
styrene	mg/kg	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	<1	<1
o-Xylene	mg/kg	<1	<1
1,2,3-trichloropropane	mg/kg	<1	<1
isopropylbenzene	mg/kg	<1	<1
bromobenzene	mg/kg	<1	<1
n-propyl benzene	mg/kg	<1	<1
2-chlorotoluene	mg/kg	<1	<1
4-chlorotoluene	mg/kg	<1	<1
1,3,5-trimethyl benzene	mg/kg	<1	<1
tert-butyl benzene	mg/kg	<1	<1
1,2,4-trimethyl benzene	mg/kg	<1	<1
1,3-dichlorobenzene	mg/kg	<1	<1
sec-butyl benzene	mg/kg	<1	<1
1,4-dichlorobenzene	mg/kg	<1	<1
4-isopropyl toluene	mg/kg	<1	<1
1,2-dichlorobenzene	mg/kg	<1	<1
n-butyl benzene	mg/kg	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	<1	<1
1,2,4-trichlorobenzene	mg/kg	<1	<1
hexachlorobutadiene	mg/kg	<1	<1
1,2,3-trichlorobenzene	mg/kg	<1	<1
Surrogate Dibromofluorometha	%	67	107
Surrogate aaa-Trifluorotoluene	%	98	86
Surrogate Toluene-d_8	%	102	101
Surrogate 4-Bromofluorobenzene	%	91	93

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		191226-1	191226-2	191226-3	191226-4	191226-5
Your Reference	UNITS	7	10	12	13	13
Depth		0.4-0.5	0.9-1.0	0.2-0.3	0.4-0.5	2.4-2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	101	98	90	84	99

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		191226-6	191226-7	191226-8	191226-9	191226-10
Your Reference	UNITS	13	14	14	15	17
Depth		5.4-5.5	0.2-0.3	1.4-1.5	0.5-0.6	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	90	89	85	89	91

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		191226-11	191226-12	191226-13	191226-14	191226-15
Your Reference	UNITS	18	18	18	Spike	Blank
Depth		0.1-0.2	2.0-2.5	4.0-4.45	-	-
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
TRH C_6 - C_9	mg/kg	<25	<25	<25	[NA]	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	[NA]	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	100%	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	100%	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	99%	<1
m+p-xylene	mg/kg	<2	<2	<2	100%	<2
o-Xylene	mg/kg	<1	<1	<1	99%	<1
naphthalene	mg/kg	<1	<1	<1	[NA]	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	[NA]	<1
Surrogate aaa-Trifluorotoluene	%	117	112	95	98	113

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		191226-16	191226-17	191226-18	191226-19	191226-20
Your Reference	UNITS	8	9	9	19	19
Depth		0.4-0.5	0.9-1.0	2.4-2.5	0.4-0.5	1.9-2.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	104	98	99	82	85

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		191226-21	191226-22	191226-23	191226-24	191226-25
Your Reference	UNITS	20	21	21	6	BH8
Depth		0.9-1.0	0.2-0.3	2.4-2.5	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	87	84	86	89	84

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		191226-26
Your Reference	UNITS	BD201805 #5
Depth		-
Type of sample		Soil
Date extracted	-	10/05/2018
Date analysed	-	11/05/2018
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	111

svTRH (C10-C40) in Soil						
Our Reference		191226-1	191226-2	191226-3	191226-4	191226-5
Your Reference	UNITS	7	10	12	13	13
Depth		0.4-0.5	0.9-1.0	0.2-0.3	0.4-0.5	2.4-2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	91	87	90	86	88

svTRH (C10-C40) in Soil						
Our Reference		191226-6	191226-7	191226-8	191226-9	191226-10
Your Reference	UNITS	13	14	14	15	17
Depth		5.4-5.5	0.2-0.3	1.4-1.5	0.5-0.6	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	220	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	150	<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	350	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	350	<50	<50	<50	<50
Surrogate o-Terphenyl	%	96	85	91	86	86

svTRH (C10-C40) in Soil						
Our Reference		191226-11	191226-12	191226-13	191226-15	191226-16
Your Reference	UNITS	18	18	18	Blank	8
Depth		0.1-0.2	2.0-2.5	4.0-4.45	-	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	320	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	230	<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	160	520	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	160	520	<50	<50
Surrogate o-Terphenyl	%	86	88	100	91	89

svTRH (C10-C40) in Soil						
Our Reference		191226-17	191226-18	191226-19	191226-20	191226-21
Your Reference	UNITS	9	9	19	19	20
Depth		0.9-1.0	2.4-2.5	0.4-0.5	1.9-2.0	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	11/05/2018
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	240
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	240
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	440
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	130
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	570
Surrogate o-Terphenyl	%	89	89	88	84	89

svTRH (C10-C40) in Soil						
Our Reference		191226-22	191226-23	191226-24	191226-25	191226-26
Your Reference	UNITS	21	21	6	BH8	BD201805 #5
Depth		0.2-0.3	2.4-2.5	0.4-0.5	0.9-1.0	-
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	83	80	86	87	87

PAHs in Soil						
Our Reference		191226-1	191226-2	191226-3	191226-4	191226-5
Your Reference	UNITS	7	10	12	13	13
Depth		0.4-0.5	0.9-1.0	0.2-0.3	0.4-0.5	2.4-2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.5	<0.1	0.1	<0.1	0.2
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	1.4	0.2	0.3	0.2	0.5
Pyrene	mg/kg	1.5	0.2	0.3	0.2	0.5
Benzo(a)anthracene	mg/kg	0.9	0.2	0.2	0.2	0.3
Chrysene	mg/kg	0.8	0.2	0.2	0.2	0.3
Benzo(b,j+k)fluoranthene	mg/kg	2	0.3	0.3	0.4	0.6
Benzo(a)pyrene	mg/kg	1.1	0.2	0.2	0.3	0.3
Indeno(1,2,3-c,d)pyrene	mg/kg	0.6	0.1	0.1	0.2	0.3
Dibenzo(a,h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.8	0.2	0.2	0.3	0.4
Total +ve PAH's	mg/kg	9.7	1.6	1.8	2.1	3.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.6	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.6	<0.5	<0.5	<0.5	0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.6	<0.5	<0.5	<0.5	0.6
Surrogate p-Terphenyl-d14	%	114	113	112	112	105

PAHs in Soil						
Our Reference		191226-6	191226-7	191226-8	191226-9	191226-10
Your Reference	UNITS	13	14	14	15	17
Depth		5.4-5.5	0.2-0.3	1.4-1.5	0.5-0.6	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	2.8	<0.1	<0.1	0.2	<0.1
Anthracene	mg/kg	1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	4.0	0.3	0.1	0.7	0.1
Pyrene	mg/kg	3.7	0.4	0.1	0.8	0.1
Benzo(a)anthracene	mg/kg	1.7	0.2	<0.1	0.5	<0.1
Chrysene	mg/kg	1.5	0.2	0.1	0.5	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	2.4	0.6	0.3	1	<0.2
Benzo(a)pyrene	mg/kg	1.5	0.4	0.1	0.74	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	0.8	0.3	<0.1	0.6	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.2	<0.1	<0.1	0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	1.1	0.4	0.1	0.8	0.1
Total +ve PAH's	mg/kg	22	2.9	0.91	6.2	0.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	2.3	0.5	<0.5	1.1	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	2.3	0.6	<0.5	1.1	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	2.3	0.6	<0.5	1.1	<0.5
Surrogate p-Terphenyl-d14	%	108	107	108	108	109

PAHs in Soil						
Our Reference		191226-11	191226-12	191226-13	191226-16	191226-17
Your Reference	UNITS	18	18	18	8	9
Depth		0.1-0.2	2.0-2.5	4.0-4.45	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	11/05/2018	11/05/2018
Naphthalene	mg/kg	<0.1	<0.1	0.2	<0.1	0.1
Acenaphthylene	mg/kg	<0.1	<0.1	0.1	<0.1	0.3
Acenaphthene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.6	1.8	<0.1	2.0
Anthracene	mg/kg	<0.1	0.2	0.5	<0.1	0.5
Fluoranthene	mg/kg	<0.1	1.7	4.6	<0.1	4.9
Pyrene	mg/kg	<0.1	1.7	4.9	<0.1	4.6
Benzo(a)anthracene	mg/kg	<0.1	1.2	2.5	<0.1	2.7
Chrysene	mg/kg	<0.1	1.2	2.4	<0.1	2.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	2.7	4.1	<0.2	3.9
Benzo(a)pyrene	mg/kg	<0.05	1.7	2.7	0.06	2.6
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	1.2	1.5	<0.1	1.4
Dibenzo(a,h)anthracene	mg/kg	<0.1	0.3	0.4	<0.1	0.3
Benzo(g,h,i)perylene	mg/kg	<0.1	1.5	2.0	<0.1	1.6
Total +ve PAH's	mg/kg	<0.05	14	28	0.06	27
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	2.6	4.0	<0.5	3.7
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	2.6	4.0	<0.5	3.7
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	2.6	4.0	<0.5	3.7
Surrogate p-Terphenyl-d14	%	108	106	109	111	108

PAHs in Soil						
Our Reference		191226-18	191226-19	191226-20	191226-21	191226-22
Your Reference	UNITS	9	19	19	20	21
Depth		2.4-2.5	0.4-0.5	1.9-2.0	0.9-1.0	0.2-0.3
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	0.6	0.4	0.3
Anthracene	mg/kg	<0.1	<0.1	0.1	0.2	<0.1
Fluoranthene	mg/kg	0.2	0.2	1.7	3.3	0.8
Pyrene	mg/kg	0.1	0.2	1.8	4.1	0.8
Benzo(a)anthracene	mg/kg	<0.1	0.2	1.1	2.6	0.5
Chrysene	mg/kg	<0.1	0.2	1.0	2.6	0.5
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.4	2.2	8.7	0.9
Benzo(a)pyrene	mg/kg	0.05	0.2	1.3	5.4	0.53
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	0.8	4.2	0.3
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	0.2	1.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.2	1	6.1	0.4
Total +ve PAH's	mg/kg	0.5	1.7	12	39	5.0
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	1.9	8.2	0.7
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	1.9	8.2	0.8
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	1.9	8.2	0.8
Surrogate p-Terphenyl-d14	%	111	108	108	107	105

PAHs in Soil					
Our Reference		191226-23	191226-24	191226-25	191226-26
Your Reference	UNITS	21	6	BH8	BD201805 #5
Depth		2.4-2.5	0.4-0.5	0.9-1.0	-
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	0.2	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.1	0.9	<0.1
Anthracene	mg/kg	<0.1	<0.1	0.2	<0.1
Fluoranthene	mg/kg	<0.1	0.4	3.1	0.1
Pyrene	mg/kg	<0.1	0.4	3.4	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.2	2.2	<0.1
Chrysene	mg/kg	<0.1	0.2	2.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.5	4.7	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.3	3.0	0.06
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.2	1.6	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	0.5	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.2	2.0	<0.1
Total +ve PAH's	mg/kg	<0.05	2.4	24	0.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	4.4	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	4.4	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	4.4	<0.5
Surrogate p-Terphenyl-d14	%	109	109	125	111

Organochlorine Pesticides in soil						
Our Reference		191226-1	191226-2	191226-3	191226-4	191226-5
Your Reference	UNITS	7	10	12	13	13
Depth		0.4-0.5	0.9-1.0	0.2-0.3	0.4-0.5	2.4-2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	116	111	116	115	120

Organochlorine Pesticides in soil						
Our Reference		191226-6	191226-7	191226-8	191226-9	191226-10
Your Reference	UNITS	13	14	14	15	17
Depth		5.4-5.5	0.2-0.3	1.4-1.5	0.5-0.6	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	0.2	<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	%	123	118	119	113	110

Organochlorine Pesticides in soil						
Our Reference		191226-11	191226-12	191226-13	191226-16	191226-17
Your Reference	UNITS	18	18	18	8	9
Depth		0.1-0.2	2.0-2.5	4.0-4.45	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	113	122	119	119	118

Organochlorine Pesticides in soil						
Our Reference		191226-18	191226-19	191226-20	191226-21	191226-22
Your Reference	UNITS	9	19	19	20	21
Depth		2.4-2.5	0.4-0.5	1.9-2.0	0.9-1.0	0.2-0.3
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	116	113	124	101	110

Organochlorine Pesticides in soil				
Our Reference		191226-23	191226-24	191226-25
Your Reference	UNITS	21	6	BH8
Depth		2.4-2.5	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018
HCB	mg/kg	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	111	124	112

Organophosphorus Pesticides						
Our Reference		191226-1	191226-2	191226-3	191226-4	191226-5
Your Reference	UNITS	7	10	12	13	13
Depth		0.4-0.5	0.9-1.0	0.2-0.3	0.4-0.5	2.4-2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	116	111	116	115	120

Organophosphorus Pesticides						
Our Reference		191226-6	191226-7	191226-8	191226-9	191226-10
Your Reference	UNITS	13	14	14	15	17
Depth		5.4-5.5	0.2-0.3	1.4-1.5	0.5-0.6	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	123	118	119	113	110

Organophosphorus Pesticides						
Our Reference		191226-11	191226-12	191226-13	191226-16	191226-17
Your Reference	UNITS	18	18	18	8	9
Depth		0.1-0.2	2.0-2.5	4.0-4.45	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	113	122	119	119	118

Organophosphorus Pesticides						
Our Reference		191226-18	191226-19	191226-20	191226-21	191226-22
Your Reference	UNITS	9	19	19	20	21
Depth		2.4-2.5	0.4-0.5	1.9-2.0	0.9-1.0	0.2-0.3
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	116	113	124	101	110

Organophosphorus Pesticides				
Our Reference		191226-23	191226-24	191226-25
Your Reference	UNITS	21	6	BH8
Depth		2.4-2.5	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	111	124	112

PCBs in Soil						
Our Reference		191226-1	191226-2	191226-3	191226-4	191226-5
Your Reference	UNITS	7	10	12	13	13
Depth		0.4-0.5	0.9-1.0	0.2-0.3	0.4-0.5	2.4-2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	116	111	116	115	120

PCBs in Soil						
Our Reference		191226-6	191226-7	191226-8	191226-9	191226-10
Your Reference	UNITS	13	14	14	15	17
Depth		5.4-5.5	0.2-0.3	1.4-1.5	0.5-0.6	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	123	118	119	113	110

PCBs in Soil						
Our Reference		191226-11	191226-12	191226-13	191226-16	191226-17
Your Reference	UNITS	18	18	18	8	9
Depth		0.1-0.2	2.0-2.5	4.0-4.45	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	113	122	119	119	118

PCBs in Soil						
Our Reference		191226-18	191226-19	191226-20	191226-21	191226-22
Your Reference	UNITS	9	19	19	20	21
Depth		2.4-2.5	0.4-0.5	1.9-2.0	0.9-1.0	0.2-0.3
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	116	113	124	101	110

PCBs in Soil				
Our Reference		191226-23	191226-24	191226-25
Your Reference	UNITS	21	6	BH8
Depth		2.4-2.5	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil
Date extracted	-	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCLMX	%	111	124	112

Acid Extractable metals in soil						
Our Reference		191226-1	191226-2	191226-3	191226-4	191226-5
Your Reference	UNITS	7	10	12	13	13
Depth		0.4-0.5	0.9-1.0	0.2-0.3	0.4-0.5	2.4-2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Arsenic	mg/kg	<4	<4	4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	5	5	10	5	6
Copper	mg/kg	58	36	58	40	140
Lead	mg/kg	78	180	76	160	200
Mercury	mg/kg	0.2	0.5	0.2	0.2	0.4
Nickel	mg/kg	7	4	11	6	6
Zinc	mg/kg	57	120	47	98	220

Acid Extractable metals in soil						
Our Reference		191226-6	191226-7	191226-8	191226-9	191226-10
Your Reference	UNITS	13	14	14	15	17
Depth		5.4-5.5	0.2-0.3	1.4-1.5	0.5-0.6	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Arsenic	mg/kg	7	<4	<4	<4	<4
Cadmium	mg/kg	0.9	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	27	2	2	9	10
Copper	mg/kg	160	48	9	48	26
Lead	mg/kg	540	56	62	170	51
Mercury	mg/kg	1.3	0.2	<0.1	0.6	0.4
Nickel	mg/kg	12	3	2	18	2
Zinc	mg/kg	560	69	28	160	45

Acid Extractable metals in soil						
Our Reference		191226-11	191226-12	191226-13	191226-16	191226-17
Your Reference	UNITS	18	18	18	8	9
Depth		0.1-0.2	2.0-2.5	4.0-4.45	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Arsenic	mg/kg	<4	7	5	<4	<4
Cadmium	mg/kg	<0.4	<0.4	1	<0.4	<0.4
Chromium	mg/kg	5	14	18	2	9
Copper	mg/kg	3	230	86	12	520
Lead	mg/kg	3	140	390	38	1,800
Mercury	mg/kg	<0.1	0.3	0.8	<0.1	0.4
Nickel	mg/kg	1	17	10	2	3
Zinc	mg/kg	11	230	710	51	49

Acid Extractable metals in soil						
Our Reference		191226-18	191226-19	191226-20	191226-21	191226-22
Your Reference	UNITS	9	19	19	20	21
Depth		2.4-2.5	0.4-0.5	1.9-2.0	0.9-1.0	0.2-0.3
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Arsenic	mg/kg	<4	6	9	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	1	9	33	3	6
Copper	mg/kg	26	32	83	20	77
Lead	mg/kg	50	54	310	86	91
Mercury	mg/kg	<0.1	0.2	0.8	<0.1	0.3
Nickel	mg/kg	2	8	11	4	7
Zinc	mg/kg	23	100	240	82	150

Acid Extractable metals in soil						
Our Reference		191226-23	191226-24	191226-25	191226-26	191226-27
Your Reference	UNITS	21	6	BH8	BD201805 #5	20 - [TRIPLICATE]
Depth		2.4-2.5	0.4-0.5	0.9-1.0	-	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Arsenic	mg/kg	<4	<4	5	<4	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	1	5	4	1	7
Copper	mg/kg	2	44	22	1	47
Lead	mg/kg	3	130	180	3	590
Mercury	mg/kg	<0.1	0.3	0.5	<0.1	0.2
Nickel	mg/kg	<1	4	3	<1	9
Zinc	mg/kg	19	86	38	35	160

Acid Extractable metals in soil			
Our Reference		191226-28	191226-29
Your Reference	UNITS	13 - [TRIPLICATE]	19 - [TRIPLICATE]
Depth		2.4-2.5	1.9-2.0
Type of sample		Soil	Soil
Date prepared	-	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018
Arsenic	mg/kg	4	14
Cadmium	mg/kg	0.4	<0.4
Chromium	mg/kg	6	41
Copper	mg/kg	110	120
Lead	mg/kg	1,100	440
Mercury	mg/kg	1.2	0.8
Nickel	mg/kg	7	17
Zinc	mg/kg	730	390

Misc Soil - Inorg						
Our Reference		191226-1	191226-2	191226-3	191226-4	191226-5
Your Reference	UNITS	7	10	12	13	13
Depth		0.4-0.5	0.9-1.0	0.2-0.3	0.4-0.5	2.4-2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg						
Our Reference		191226-6	191226-7	191226-8	191226-9	191226-10
Your Reference	UNITS	13	14	14	15	17
Depth		5.4-5.5	0.2-0.3	1.4-1.5	0.5-0.6	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg						
Our Reference		191226-11	191226-12	191226-13	191226-16	191226-17
Your Reference	UNITS	18	18	18	8	9
Depth		0.1-0.2	2.0-2.5	4.0-4.45	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg						
Our Reference		191226-18	191226-19	191226-20	191226-21	191226-22
Your Reference	UNITS	9	19	19	20	21
Depth		2.4-2.5	0.4-0.5	1.9-2.0	0.9-1.0	0.2-0.3
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg				
Our Reference		191226-23	191226-24	191226-25
Your Reference	UNITS	21	6	BH8
Depth		2.4-2.5	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	10/05/2018	10/05/2018	10/05/2018
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5

Moisture						
Our Reference		191226-1	191226-2	191226-3	191226-4	191226-5
Your Reference	UNITS	7	10	12	13	13
Depth		0.4-0.5	0.9-1.0	0.2-0.3	0.4-0.5	2.4-2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Moisture	%	3.6	6.9	2.3	4.4	9.0

Moisture						
Our Reference		191226-6	191226-7	191226-8	191226-9	191226-10
Your Reference	UNITS	13	14	14	15	17
Depth		5.4-5.5	0.2-0.3	1.4-1.5	0.5-0.6	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Moisture	%	31	9.7	2.0	6.5	8.1

Moisture						
Our Reference		191226-11	191226-12	191226-13	191226-15	191226-16
Your Reference	UNITS	18	18	18	Blank	8
Depth		0.1-0.2	2.0-2.5	4.0-4.45	-	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Moisture	%	6.4	7.1	27	0.2	3.7

Moisture						
Our Reference		191226-17	191226-18	191226-19	191226-20	191226-21
Your Reference	UNITS	9	9	19	19	20
Depth		0.9-1.0	2.4-2.5	0.4-0.5	1.9-2.0	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Moisture	%	5.3	1.1	17	14	9.6

Moisture						
Our Reference		191226-22	191226-23	191226-24	191226-25	191226-26
Your Reference	UNITS	21	21	6	BH8	BD201805 #5
Depth		0.2-0.3	2.4-2.5	0.4-0.5	0.9-1.0	-
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	10/05/2018	10/05/2018	10/05/2018	10/05/2018	10/05/2018
Date analysed	-	11/05/2018	11/05/2018	11/05/2018	11/05/2018	11/05/2018
Moisture	%	12	11	4.8	4.8	0.4

Asbestos ID - soils						
Our Reference		191226-1	191226-2	191226-3	191226-4	191226-5
Your Reference	UNITS	7	10	12	13	13
Depth		0.4-0.5	0.9-1.0	0.2-0.3	0.4-0.5	2.4-2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	15/05/2018	15/05/2018	15/05/2018	15/05/2018	15/05/2018
Sample mass tested	g	Approx. 35g	Approx. 30g	Approx. 35g	29.89g	Approx. 30g
Sample Description	-	Brown sandy soil	Brown sandy soil	Brown sandy soil & rocks	Brown sandy soil	Brown sandy soil
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		191226-6	191226-7	191226-8	191226-9	191226-10
Your Reference	UNITS	13	14	14	15	17
Depth		5.4-5.5	0.2-0.3	1.4-1.5	0.5-0.6	0.4-0.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	15/05/2018	15/05/2018	15/05/2018	15/05/2018	15/05/2018
Sample mass tested	g	Approx. 35g	Approx. 30g	Approx. 35g	Approx. 45g	Approx. 30g
Sample Description	-	Brown sandy soil	Brown sandy soil	Brown sandy soil	Brown sandy soil	Brown sandy soil
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		191226-11	191226-12	191226-13	191226-16	191226-17
Your Reference	UNITS	18	18	18	8	9
Depth		0.1-0.2	2.0-2.5	4.0-4.45	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	15/05/2018	15/05/2018	15/05/2018	15/05/2018	15/05/2018
Sample mass tested	g	Approx. 30g	Approx. 30g	31.11g	Approx. 30g	Approx. 30g
Sample Description	-	Brown sandy soil	Brown sandy soil	Brown sandy soil	Brown sandy soil	Brown sandy soil
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	Chrysotile asbestos detected 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		191226-18	191226-19	191226-20	191226-21	191226-22
Your Reference	UNITS	9	19	19	20	21
Depth		2.4-2.5	0.4-0.5	1.9-2.0	0.9-1.0	0.2-0.3
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	15/05/2018	15/05/2018	15/05/2018	15/05/2018	15/05/2018
Sample mass tested	g	Approx. 40g	Approx. 25g	Approx. 30g	Approx. 25g	Approx. 25g
Sample Description	-	Brown sandy soil	Brown sandy soil	Brown sandy soil	Brown sandy soil	Brown sandy soil
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		191226-23	191226-24	191226-25
Your Reference	UNITS	21	6	BH8
Depth		2.4-2.5	0.4-0.5	0.9-1.0
Type of sample		Soil	Soil	Soil
Date analysed	-	15/05/2018	15/05/2018	15/05/2018
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 35g
Sample Description	-	Brown sandy soil	Brown sandy soil	Brown sandy soil
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected

Misc Inorg - Soil				
Our Reference		191226-1	191226-10	191226-12
Your Reference	UNITS	7	17	18
Depth		0.4-0.5	0.4-0.5	2.0-2.5
Type of sample		Soil	Soil	Soil
Date prepared	-	15/05/2018	15/05/2018	15/05/2018
Date analysed	-	15/05/2018	15/05/2018	15/05/2018
pH 1:5 soil:water	pH Units	6.7	7.0	8.2

CEC				
Our Reference		191226-1	191226-10	191226-12
Your Reference	UNITS	7	17	18
Depth		0.4-0.5	0.4-0.5	2.0-2.5
Type of sample		Soil	Soil	Soil
Date prepared	-	15/05/2018	15/05/2018	15/05/2018
Date analysed	-	15/05/2018	15/05/2018	15/05/2018
Exchangeable Ca	meq/100g	2.1	1.5	8.3
Exchangeable K	meq/100g	<0.1	<0.1	0.1
Exchangeable Mg	meq/100g	0.46	0.15	0.64
Exchangeable Na	meq/100g	0.25	<0.1	0.12
Cation Exchange Capacity	meq/100g	2.8	1.7	9.2

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

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

QUALITY CONTROL: VOCs in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	191226-2
Date extracted	-			10/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			11/05/2018	1	11/05/2018	11/05/2018		11/05/2018	11/05/2018
Dichlorodifluoromethane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Chloromethane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Bromomethane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Chloroethane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
trans-1,2-dichloroethene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	mg/kg	1	Org-014	<1	1	<1	<1	0	108	99
cis-1,2-dichloroethene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
bromochloromethane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
chloroform	mg/kg	1	Org-014	<1	1	<1	<1	0	109	98
2,2-dichloropropane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	mg/kg	1	Org-014	<1	1	<1	<1	0	109	100
1,1,1-trichloroethane	mg/kg	1	Org-014	<1	1	<1	<1	0	113	104
1,1-dichloropropene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
carbon tetrachloride	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-014	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
dibromomethane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
trichloroethene	mg/kg	1	Org-014	<1	1	<1	<1	0	98	89
bromodichloromethane	mg/kg	1	Org-014	<1	1	<1	<1	0	106	94
trans-1,3-dichloropropene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,3-dichloropropane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
dibromochloromethane	mg/kg	1	Org-014	<1	1	<1	<1	0	114	101
1,2-dibromoethane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
tetrachloroethene	mg/kg	1	Org-014	<1	1	<1	<1	0	99	92
1,1,1,2-tetrachloroethane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
chlorobenzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
bromoform	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-014	<2	1	<2	<2	0	[NT]	[NT]
styrene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	191226-2
1,2,3-trichloropropane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
isopropylbenzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
bromobenzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
tert-butyl benzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
sec-butyl benzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
hexachlorobutadiene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluorometha	%		Org-014	105	1	106	107	1	106	106
Surrogate aaa-Trifluorotoluene	%		Org-014	98	1	101	98	3	102	94
Surrogate Toluene-d_8	%		Org-014	102	1	102	101	1	103	103
Surrogate 4-Bromofluorobenzene	%		Org-014	97	1	96	93	3	97	97

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	13	10/05/2018	10/05/2018		[NT]	[NT]
Date analysed	-			[NT]	13	11/05/2018	11/05/2018		[NT]	[NT]
Dichlorodifluoromethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
Chloromethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
Bromomethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
Chloroethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
trans-1,2-dichloroethene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
cis-1,2-dichloroethene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
bromochloromethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
chloroform	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
2,2-dichloropropane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,1,1-trichloroethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,1-dichloropropene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
Cyclohexane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
carbon tetrachloride	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-014	[NT]	13	<0.2	<0.2	0	[NT]	[NT]
dibromomethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
trichloroethene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
bromodichloromethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
trans-1,3-dichloropropene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-014	[NT]	13	<0.5	<0.5	0	[NT]	[NT]
1,3-dichloropropane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
dibromochloromethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,2-dibromoethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
tetrachloroethene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,1,1,2-tetrachloroethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
chlorobenzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
bromoform	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-014	[NT]	13	<2	<2	0	[NT]	[NT]
styrene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
1,2,3-trichloropropane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
isopropylbenzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
bromobenzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
n-propyl benzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
2-chlorotoluene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
4-chlorotoluene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
tert-butyl benzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
sec-butyl benzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
n-butyl benzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
hexachlorobutadiene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluorometha	%		Org-014	[NT]	13	97	104	7	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-014	[NT]	13	95	88	8	[NT]	[NT]
Surrogate Toluene-d_8	%		Org-014	[NT]	13	107	102	5	[NT]	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-014	[NT]	13	94	96	2	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	191226-2
Date extracted	-			10/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			11/05/2018	1	11/05/2018	11/05/2018		11/05/2018	11/05/2018
TRH C_6 - C_9	mg/kg	25	Org-016	<25	1	<25	<25	0	97	89
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	1	<25	<25	0	97	89
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	97	88
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	100	91
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	97	88
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	96	88
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	99	90
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	111	1	101	98	3	117	107

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	191226-22
Date extracted	-			[NT]	13	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			[NT]	13	11/05/2018	11/05/2018		11/05/2018	11/05/2018
TRH C_6 - C_9	mg/kg	25	Org-016	[NT]	13	<25	<25	0	94	70
TRH C_6 - C_{10}	mg/kg	25	Org-016	[NT]	13	<25	<25	0	94	70
Benzene	mg/kg	0.2	Org-016	[NT]	13	<0.2	<0.2	0	96	73
Toluene	mg/kg	0.5	Org-016	[NT]	13	<0.5	<0.5	0	98	69
Ethylbenzene	mg/kg	1	Org-016	[NT]	13	<1	<1	0	95	69
m+p-xylene	mg/kg	2	Org-016	[NT]	13	<2	<2	0	94	69
o-Xylene	mg/kg	1	Org-016	[NT]	13	<1	<1	0	92	71
naphthalene	mg/kg	1	Org-014	[NT]	13	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	13	95	88	8	110	84

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]	21	10/05/2018	10/05/2018		[NT]	[NT]
Date analysed	-			[NT]	21	11/05/2018	11/05/2018		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	[NT]	21	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	[NT]	21	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	21	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	21	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	21	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	21	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	21	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	21	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	21	87	81	7	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	191226-2
Date extracted	-			10/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			10/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	1	<50	<50	0	107	104
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	1	<100	<100	0	90	94
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	1	<100	<100	0	77	84
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	1	<50	<50	0	107	104
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	1	<100	<100	0	90	94
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	1	<100	<100	0	77	84
Surrogate o-Terphenyl	%		Org-003	87	1	91	91	0	97	87

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	191226-22
Date extracted	-			[NT]	13	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			[NT]	13	10/05/2018	10/05/2018		11/05/2018	11/05/2018
TRH C_{10} - C_{14}	mg/kg	50	Org-003	[NT]	13	<50	<50	0	107	96
TRH C_{15} - C_{28}	mg/kg	100	Org-003	[NT]	13	320	210	42	90	82
TRH C_{29} - C_{36}	mg/kg	100	Org-003	[NT]	13	230	160	36	77	91
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	[NT]	13	<50	<50	0	107	96
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	[NT]	13	520	360	36	90	82
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	[NT]	13	<100	<100	0	77	91
Surrogate o-Terphenyl	%		Org-003	[NT]	13	100	100	0	95	83

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	10/05/2018	10/05/2018		[NT]	[NT]
Date analysed	-			[NT]	21	11/05/2018	11/05/2018		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	[NT]	21	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	[NT]	21	240	360	40	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	[NT]	21	240	350	37	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	[NT]	21	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	[NT]	21	440	660	40	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	[NT]	21	130	210	47	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	21	89	97	9	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	191226-2
Date extracted	-			10/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			11/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	96	93
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	107	90
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	0.5	0.6	18	110	102
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	1.4	2.4	53	105	106
Pyrene	mg/kg	0.1	Org-012	<0.1	1	1.5	2.4	46	104	109
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	0.9	1.4	43	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	0.8	1.3	48	99	109
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	2	2.6	26	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	1.1	1.5	31	105	114
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	0.6	0.8	29	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.2	67	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	0.8	1	22	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	106	1	114	114	0	101	102

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	191226-22
Date extracted	-			[NT]	13	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			[NT]	13	10/05/2018	10/05/2018		10/05/2018	11/05/2018
Naphthalene	mg/kg	0.1	Org-012	[NT]	13	0.2	0.1	67	97	85
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	13	0.1	0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	13	0.2	0.1	67	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	13	0.2	0.2	0	108	99
Phenanthrene	mg/kg	0.1	Org-012	[NT]	13	1.8	1.8	0	112	101
Anthracene	mg/kg	0.1	Org-012	[NT]	13	0.5	0.5	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	13	4.6	3.4	30	107	90
Pyrene	mg/kg	0.1	Org-012	[NT]	13	4.9	3.4	36	106	88
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	13	2.5	1.6	44	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	13	2.4	1.5	46	100	89
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	13	4.1	2.7	41	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	13	2.7	1.7	45	98	89
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	13	1.5	1	40	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	13	0.4	0.2	67	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	13	2.0	1.2	50	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	13	109	111	2	101	120

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	21	10/05/2018	10/05/2018		[NT]	[NT]
Date analysed	-			[NT]	21	11/05/2018	11/05/2018		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	21	<0.1	0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	21	0.4	0.6	40	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	21	0.2	0.3	40	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	21	3.3	4.0	19	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	21	4.1	5.2	24	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	21	2.6	3.2	21	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	21	2.6	3.2	21	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	21	8.7	11	23	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	21	5.4	6.7	21	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	21	4.2	5.1	19	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	21	1.1	1.4	24	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	21	6.1	7.3	18	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	21	107	105	2	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	191226-2
Date extracted	-			10/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			11/05/2018	1	11/05/2018	11/05/2018		11/05/2018	11/05/2018
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	108	68
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	103	104
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	113	114
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	119	119
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	105	106
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	114	114
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	121	121
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	107	108
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	118	119
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	97	105
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	113	1	116	112	4	125	125

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	13	10/05/2018	10/05/2018		[NT]	[NT]
Date analysed	-			[NT]	13	11/05/2018	11/05/2018		[NT]	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	13	119	118	1	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	191226-2
Date extracted	-			10/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			11/05/2018	1	11/05/2018	11/05/2018		11/05/2018	11/05/2018
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	109	114
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	107	113
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	126	125
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	97	94
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	85	77
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	89	93
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	117	100
Surrogate TCMX	%		Org-008	113	1	116	112	4	109	115

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	13	10/05/2018	10/05/2018		[NT]	[NT]
Date analysed	-			[NT]	13	11/05/2018	11/05/2018		[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-008	[NT]	13	119	118	1	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	191226-2
Date extracted	-			10/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			11/05/2018	1	11/05/2018	11/05/2018		11/05/2018	11/05/2018
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	100	106
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	113	1	116	112	4	109	115

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	13	10/05/2018	10/05/2018		[NT]	[NT]
Date analysed	-			[NT]	13	11/05/2018	11/05/2018		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	[NT]	13	119	118	1	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	191226-2
Date prepared	-			10/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			10/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	108	97
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	99	94
Chromium	mg/kg	1	Metals-020	<1	1	5	6	18	108	102
Copper	mg/kg	1	Metals-020	<1	1	58	53	9	115	127
Lead	mg/kg	1	Metals-020	<1	1	78	74	5	104	#
Mercury	mg/kg	0.1	Metals-021	<0.1	1	0.2	0.1	67	107	123
Nickel	mg/kg	1	Metals-020	<1	1	7	9	25	107	105
Zinc	mg/kg	1	Metals-020	<1	1	57	66	15	105	123

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	191226-22
Date prepared	-			[NT]	13	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			[NT]	13	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Arsenic	mg/kg	4	Metals-020	[NT]	13	5	4	22	113	94
Cadmium	mg/kg	0.4	Metals-020	[NT]	13	1	0.9	11	103	91
Chromium	mg/kg	1	Metals-020	[NT]	13	18	19	5	111	101
Copper	mg/kg	1	Metals-020	[NT]	13	86	87	1	117	120
Lead	mg/kg	1	Metals-020	[NT]	13	390	380	3	108	100
Mercury	mg/kg	0.1	Metals-021	[NT]	13	0.8	0.6	29	105	110
Nickel	mg/kg	1	Metals-020	[NT]	13	10	7	35	110	103
Zinc	mg/kg	1	Metals-020	[NT]	13	710	660	7	109	98

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	21	10/05/2018	10/05/2018		[NT]	[NT]
Date analysed	-			[NT]	21	10/05/2018	10/05/2018		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	21	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	21	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	21	3	4	29	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	21	20	23	14	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	21	86	180	71	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	21	<0.1	0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	21	4	10	86	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	21	82	88	7	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	5	10/05/2018	10/05/2018		[NT]	[NT]
Date analysed	-			[NT]	5	10/05/2018	10/05/2018		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	5	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	5	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	5	6	10	50	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	5	140	160	13	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	5	200	270	30	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	5	0.4	0.6	40	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	5	6	8	29	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	5	220	280	24	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	20	10/05/2018	10/05/2018		[NT]	[NT]
Date analysed	-			[NT]	20	10/05/2018	10/05/2018		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	20	9	13	36	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	20	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	20	33	51	43	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	20	83	140	51	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	20	310	1400	127	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	20	0.8	1.1	32	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	20	11	17	43	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	20	240	350	37	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	191226-2
Date prepared	-			10/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			10/05/2018	1	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	1	<5	<5	0	108	112

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	191226-22
Date prepared	-			[NT]	13	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Date analysed	-			[NT]	13	10/05/2018	10/05/2018		10/05/2018	10/05/2018
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	[NT]	13	<5	<5	0	104	114

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	21	10/05/2018	10/05/2018		[NT]	[NT]
Date analysed	-			[NT]	21	10/05/2018	10/05/2018		[NT]	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	[NT]	21	<5	<5	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date prepared	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
Date analysed	-			15/05/2018	[NT]	[NT]	[NT]	[NT]	15/05/2018	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date prepared	-			15/05/2018	1	15/05/2018	15/05/2018		15/05/2018	[NT]
Date analysed	-			15/05/2018	1	15/05/2018	15/05/2018		15/05/2018	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	1	2.1	1.8	15	108	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	1	<0.1	<0.1	0	113	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	1	0.46	0.40	14	107	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	1	0.25	0.23	8	110	[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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

Acid Extractable Metals in Soil:
Percent recovery is not possible to report due to the high concentration of the element/s. However an acceptable recovery was obtained for the LCS.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 191226-21 for Pb and Ni. Therefore a triplicate result has been issued as laboratory sample number 191226-27.

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

Sample 191226-4; Chrysotile asbestos identified embedded in a fragment of fibre cement, however it is estimated less than the reporting limit for the method (i.e. < 0.1g/kg).

Sample 191226-13; Chrysotile asbestos identified embedded in a fragment of fibre cement, it is estimated to be 10.61g/kg in 31.11g of soil (i.e. > reporting limit for the method of 0.1g/kg).

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 191226-5 for Cr. Therefore a triplicate result has been issued as laboratory sample number 191226-28.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 191226-21 for Pb and Ni. Therefore a triplicate result has been issued as laboratory sample number 191226-29.

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CHAIN OF CUSTODY DESPATCH SHEET

Project No:	86361.01	**Suburb:**	Kensington	**To:**	Envirolab Services
Project Name:	UNSW - Project Area 1	**Order Number**			12 Ashley Street Chatswood
Project Manager:	Kurt Plambeck	**Sampler:**	JN	**Attn:**	Aileen
Emails:	urt.plameck@douglaspartners.com.a			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☐			**Email:**	
Prior Storage:	☐ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols	Asbestos ~~500 ml~~	combo 8a	Combo 3	VOC	Notes/preservation
7/0.4-0.5	1												✓	pH/CEC ✓
10/0.4-0.5	NR													
10/0.9-1.0	2												✓	
12/0.2-0.3	3													
13/0.4-0.5	4													
13/2.4-2.5	5												✓	
13/5.4-5.5	6													
14/0.2-0.3	7												~~✓~~	
14/1.4-1.5	8													
15/0.5-0.6	9												~~✓~~	
17/0.4-0.7	10													✓
18/0.1-0.2	11													
18/0.0-0.2	12													✓
15/4-4.45	13												✓	
Spike/Dup	14, 15													
PQL (S) mg/kg							X							**ANZECC PQLs req'd for all water analytes** ☐

ENVIROLAB — Envirolab Services, 12 Ashley St, Chatswood NSW 2067, Ph: (02) 9910 6200

Job No: 191226
Date Received: 09/5/2018
~~Time Received:~~ 14 30
Received By: PL
~~Temp: Cool/Ambient~~ 14.9
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: 9/5/18 **Received by:** Play **Date & Time:** 9/5/2018 14.30

FPM - ENVID/Form COC 02

*JAES Labelled Project # 86360.00 A

Rev4/October2016

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	86361.01	**Suburb:**	Kensington	**To:**	Envirolab Services
Project Name:	UNSW - Project Area 1	**Order Number**			12 Ashley Street Chatswood
Project Manager:	Kurt Plambeck	**Sampler:**	JN	**Attn:**	Aileen
Emails:	urt.plameck@douglaspartners.com.a			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☐			**Email:**	
Prior Storage:	☐ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐ No ☐	(If YES, then handle, transport and store in accordance with FPM HAZID)	

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols	Asbestos ~~500 ml~~	combo 8a	Combo 3	VOC	Notes/preservation
BD 201805 HA	-				✓		✓	✓				✓		in lab
BD 201805 #5	26				✓		✓	✓						intralab
8/0.4-0.9	16				✓	✓	✓	✓	✓	✓	✓		✓	
8/1.4-1.7	NR													
9/0.9-1.0	17												✓	
9/2.4-2.5	18													
19/0.4-0.5	19													
12/1.9-2.0	20													
20/0.9-1.0	21													
21/0.2-0.3	22													
21/2.4-2.5	23												✓	
6/0.4-0.5	24				✓	✓	✓	✓	✓	✓	✓			
BH 8/0.9-1m	extra	25			✓	✓	✓	✓	✓	✓	✓	OYH as	per email	
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container:	**Relinquished by:**	**Transported to laboratory by:**	
Send Results to: Douglas Partners Pty Ltd	**Address:**	**Phone:**	**Fax:**
Signed: 9/5/16	**Received by:** Mag	**Date & Time:** 9/5/2018	1430

Jessica Hie

From: Kurt Plambeck <kurt.plambeck@douglaspartners.com.au>
Sent: Wednesday, 9 May 2018 7:36 PM
To: Jessica Hie
Subject: RE: extra sample UNSW

Jess,
Please test that sample for 8a in lieu of the sample not received

Cheers

Sent from my Windows 10 phone

From: Jessica Hie
Sent: Wednesday, 9 May 2018 7:16 PM
To: Kurt Plambeck
Subject: extra sample UNSW

Hi Kurt,

We received an extra soil jar sample labelled BH8/0.9-1.0 (see attached).
We've added it to the end of COC and put on hold until further instruction

Regards,

Jessica Hie | Customer Service/Asbestos Analyst | Envirolab Services Pty Ltd

Great Science, Great Service.

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

Please note that all samples submitted to the Envirolab Group laboratories will be analysed under the Enviroli Conditions. The Terms and Conditions are accessible by clicking this link

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CERTIFICATE OF ANALYSIS 191226-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Kurt Plambeck
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**86361.01, UNSW - Project Area 1, Kensington**
Number of Samples	26 Soil
Date samples received	09/05/2018
Date completed instructions received	17/05/2018

Analysis Details

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

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

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

Report Details

Date results requested by	24/05/2018
Date of Issue	23/05/2018

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Results Approved By
Jeremy Faircloth, Organics Supervisor
Ken Nguyen, Senior Chemist

Authorised By

Jacinta Hurst, Laboratory Manager

PAHs in TCLP (USEPA 1311)						
Our Reference		191226-A-13	191226-A-17	191226-A-20	191226-A-21	191226-A-25
Your Reference	UNITS	18	9	19	20	BH8
Depth		4.0-4.45	0.9-1.0	1.9-2.0	0.9-1.0	0.9-1.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/05/2018	21/05/2018	21/05/2018	21/05/2018	21/05/2018
Date analysed	-	21/05/2018	21/05/2018	21/05/2018	21/05/2018	21/05/2018
Naphthalene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	0.001
Surrogate p-Terphenyl-d14	%	99	85	104	86	120

Metals in TCLP USEPA1311						
Our Reference		191226-A-5	191226-A-6	191226-A-13	191226-A-17	191226-A-20
Your Reference	UNITS	13	13	18	9	19
Depth		2.4-2.5	5.4-5.5	4.0-4.45	0.9-1.0	1.9-2.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	21/05/2018	21/05/2018	21/05/2018	21/05/2018	21/05/2018
Date analysed	-	21/05/2018	21/05/2018	21/05/2018	21/05/2018	21/05/2018
pH of soil for fluid# determ.	pH units	7.0	8.0	8.5	6.7	6.9
pH of soil TCLP (after HCl)	pH units	1.6	1.6	1.6	1.6	1.6
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.0	5.1	5.2	5.0	5.0
Lead in TCLP	mg/L	0.3	0.79	3.6	8.3	0.91

Metals in TCLP USEPA1311			
Our Reference		191226-A-21	191226-A-25
Your Reference	UNITS	20	BH8
Depth		0.9-1.0	0.9-1.0
Type of sample		Soil	Soil
Date extracted	-	21/05/2018	21/05/2018
Date analysed	-	21/05/2018	[NA]
pH of soil for fluid# determ.	pH units	7.2	6.4
pH of soil TCLP (after HCl)	pH units	1.6	1.5
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.0	5.0
Lead in TCLP	mg/L	0.52	[NA]

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
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: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			21/05/2018	[NT]	[NT]	[NT]	[NT]	21/05/2018	[NT]
Date analysed	-			21/05/2018	[NT]	[NT]	[NT]	[NT]	21/05/2018	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	77	[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]	86	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	85	[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]	86	[NT]
Pyrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	86	[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]	80	[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]	82	[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	95	[NT]	[NT]	[NT]	[NT]	115	[NT]

QUALITY CONTROL: Metals in TCLP USEPA1311					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			21/05/2018	[NT]	[NT]	[NT]	[NT]	21/05/2018	[NT]
Date analysed	-			21/05/2018	[NT]	[NT]	[NT]	[NT]	21/05/2018	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

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.

Andrew Fitzsimons

From: Simon Song
Sent: Thursday, 17 May 2018 5:29 PM
To: Andrew Fitzsimons
Subject: FW: 191228 & 191226 TCLP

ELS: 191226-A
Due: 24/5/18
TAT: 5 days

Regards,

Simon Song | Customer Service | Envirolab Services Pty Ltd

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From: Kurt Plambeck [mailto:kurt.plambeck@douglaspartners.com.au]
Sent: Thursday, 17 May 2018 5:12 PM
To: Simon Song <SSong@envirolab.com.au>
Subject: 191228 & 191226 TCLP

Simon,

Can you please complete TCLP on the following

191228 UNSW
PAH
2/0.4-0.5
2/0.9-1.0
16/0.4-0.5

Lead
1/0.4-0.5

191226
PAH
8/0.8-1.0 - 25
9/0.9-1.0 - 17
18/4-4.45 - 13

19/1.9-2.0 – 20
20/0.9-1.0 – 21

Lead
9/0.9-1 – 17
13/2.4-2.5 – 5
13/ 5.4-5.5 – 6
18/4.0-4.45 – 13
19/1.9-2.0 – 20
20/0.9-1.0 – 21

19/226-A

Cheers

Kurt Plambeck | Senior Associate/Environmental Scientist
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CERTIFICATE OF ANALYSIS 191712

Client Details

Client	Douglas Partners Pty Ltd
Attention	Kurt Plambeck
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**86361.01, Kensington**
Number of Samples	18 soil
Date samples received	15/05/2018
Date completed instructions received	15/05/2018

Analysis Details

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

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

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

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

Report Details

Date results requested by	22/05/2018
Date of Issue	21/05/2018

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Asbestos Approved By
Analysed by Asbestos Approved Identifier: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Lucy Zhu, Asbsestos Analyst
Nick Sarlamis, Inorganics Supervisor
Steven Luong, Senior Chemist

Authorised By

Jacinta Hurst, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		191712-1	191712-2	191712-3	191712-4	191712-5
Your Reference	UNITS	22	23	24	25	26
Depth		0.9-1	0.4-0.5	0.4-0.5	0.4-0.5	0-0.1
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	16/05/2018	16/05/2018	16/05/2018	16/05/2018	16/05/2018
Date analysed	-	21/05/2018	21/05/2018	21/05/2018	21/05/2018	21/05/2018
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	80	76	74	75	79

svTRH (C10-C40) in Soil						
Our Reference		191712-1	191712-2	191712-3	191712-4	191712-5
Your Reference	UNITS	22	23	24	25	26
Depth		0.9-1	0.4-0.5	0.4-0.5	0.4-0.5	0-0.1
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	16/05/2018	16/05/2018	16/05/2018	16/05/2018	16/05/2018
Date analysed	-	17/05/2018	17/05/2018	17/05/2018	17/05/2018	17/05/2018
TRH C_{10} - C_{14}	mg/kg	<50	<50	98	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	280	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	310	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	91	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	91	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	530	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	140	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	760	<50	<50
Surrogate o-Terphenyl	%	103	79	80	100	101

PAHs in Soil						
Our Reference		191712-1	191712-2	191712-3	191712-4	191712-5
Your Reference	UNITS	22	23	24	25	26
Depth		0.9-1	0.4-0.5	0.4-0.5	0.4-0.5	0-0.1
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	17/05/2018	17/05/2018	17/05/2018	17/05/2018	17/05/2018
Date analysed	-	18/05/2018	18/05/2018	18/05/2018	18/05/2018	18/05/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	0.2	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.3	<0.1	<0.1	0.2	<0.1
Pyrene	mg/kg	0.3	<0.1	<0.1	0.1	<0.1
Benzo(a)anthracene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.4	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.3	<0.05	<0.05	0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	2.2	<0.05	<0.05	0.50	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	92	98	95	92	92

Organochlorine Pesticides in soil						
Our Reference		191712-1	191712-2	191712-3	191712-4	191712-5
Your Reference	UNITS	22	23	24	25	26
Depth		0.9-1	0.4-0.5	0.4-0.5	0.4-0.5	0-0.1
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	16/05/2018	16/05/2018	16/05/2018	16/05/2018	16/05/2018
Date analysed	-	18/05/2018	18/05/2018	18/05/2018	18/05/2018	18/05/2018
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	110	108	99	98	97

Organophosphorus Pesticides						
Our Reference		191712-1	191712-2	191712-3	191712-4	191712-5
Your Reference	UNITS	22	23	24	25	26
Depth		0.9-1	0.4-0.5	0.4-0.5	0.4-0.5	0-0.1
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	16/05/2018	16/05/2018	16/05/2018	16/05/2018	16/05/2018
Date analysed	-	18/05/2018	18/05/2018	18/05/2018	18/05/2018	18/05/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	110	108	99	98	97

PCBs in Soil						
Our Reference		191712-1	191712-2	191712-3	191712-4	191712-5
Your Reference	UNITS	22	23	24	25	26
Depth		0.9-1	0.4-0.5	0.4-0.5	0.4-0.5	0-0.1
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	16/05/2018	16/05/2018	16/05/2018	16/05/2018	16/05/2018
Date analysed	-	18/05/2018	18/05/2018	18/05/2018	18/05/2018	18/05/2018
Aroclor 1016	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.5	<0.1	<0.1
Surrogate TCLMX	%	110	108	99	98	97

Acid Extractable metals in soil						
Our Reference		191712-1	191712-2	191712-3	191712-4	191712-5
Your Reference	UNITS	22	23	24	25	26
Depth		0.9-1	0.4-0.5	0.4-0.5	0.4-0.5	0-0.1
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	16/05/2018	16/05/2018	16/05/2018	16/05/2018	16/05/2018
Date analysed	-	16/05/2018	16/05/2018	16/05/2018	16/05/2018	16/05/2018
Arsenic	mg/kg	4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	12	6	9	7	8
Copper	mg/kg	65	19	220	17	37
Lead	mg/kg	360	16	23	21	13
Mercury	mg/kg	1.1	0.7	0.4	1.6	<0.1
Nickel	mg/kg	10	3	11	5	5
Zinc	mg/kg	220	29	83	63	51

Misc Soil - Inorg						
Our Reference		191712-1	191712-2	191712-3	191712-4	191712-5
Your Reference	UNITS	22	23	24	25	26
Depth		0.9-1	0.4-0.5	0.4-0.5	0.4-0.5	0-0.1
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	16/05/2018	16/05/2018	16/05/2018	16/05/2018	16/05/2018
Date analysed	-	16/05/218	16/05/218	16/05/218	16/05/218	16/05/218
Total Phenolics (as Phenol)	mg/kg	<5	<5	25	<5	<5

Moisture						
Our Reference		191712-1	191712-2	191712-3	191712-4	191712-5
Your Reference	UNITS	22	23	24	25	26
Depth		0.9-1	0.4-0.5	0.4-0.5	0.4-0.5	0-0.1
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	16/05/2018	16/05/2018	16/05/2018	16/05/2018	16/05/2018
Date analysed	-	17/05/2018	17/05/2018	17/05/2018	17/05/2018	17/05/2018
Moisture	%	12	21	15	21	12

Asbestos ID - soils		
Our Reference		191712-4
Your Reference	UNITS	25
Depth		0.4-0.5
Type of sample		soil
Date analysed	-	18/05/2018
Sample mass tested	g	Approx. 35g
Sample Description	-	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected

Asbestos ID - soils NEPM						
Our Reference		191712-1	191712-2	191712-3	191712-5	191712-6
Your Reference	UNITS	22	23	24	26	7
Depth		0.9-1	0.4-0.5	0.4-0.5	0-0.1	0.4-0.5
Type of sample		soil	soil	soil	soil	soil
Date analysed	-	18/05/2018	18/05/2018	18/05/2018	18/05/2018	18/05/2018
Sample mass tested	g	245.14	503.65	225.67	291.09	344.48
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	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
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		191712-7	191712-8	191712-9	191712-10	191712-11
Your Reference	UNITS	10	12	13	14	15
Depth		0.4-0.5	0.2-0.3	0.4-0.5	0.2-0.3	0.5-0.6
Type of sample		soil	soil	soil	soil	soil
Date analysed	-	18/05/2018	18/05/2018	18/05/2018	18/05/2018	18/05/2018
Sample mass tested	g	277.74	458.11	333.06	202.97	447.44
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	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
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		191712-12	191712-13	191712-14	191712-15	191712-16
Your Reference	UNITS	17	18	8	9	19
Depth		0.4-0.5	2-2.5	0.4-0.5	0.9-1.0	0.4-0.5
Type of sample		soil	soil	soil	soil	soil
Date analysed	-	18/05/2018	18/05/2018	18/05/2018	18/05/2018	18/05/2018
Sample mass tested	g	305.12	285.17	221.69	275.49	369.78
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	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
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM			
Our Reference		191712-17	191712-18
Your Reference	UNITS	20	21
Depth		0.9-1.0	0.2-0.3
Type of sample		soil	soil
Date analysed	-	18/05/2018	18/05/2018
Sample mass tested	g	392.95	226.09
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	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
Total Asbestos#1	g/kg	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–
FA and AF Estimation*	g	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001

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.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
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-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.

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

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	191712-2
Date extracted	-			16/05/2018	1	16/05/2018	16/05/2018		16/05/2018	16/05/2018
Date analysed	-			21/05/2018	1	21/05/2018	21/05/2018		21/05/2018	21/05/2018
TRH C_6 - C_9	mg/kg	25	Org-016	<25	1	<25	<25	0	87	85
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	1	<25	<25	0	87	85
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	91	91
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	83	80
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	78	75
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	92	89
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	87	83
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	84	1	80	80	0	79	75

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	191712-2
Date extracted	-			18/05/2018	1	16/05/2018	16/05/2018		16/05/2018	16/05/2018
Date analysed	-			18/05/2018	1	17/05/2018	17/05/2018		17/05/2018	17/05/2018
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	1	<50	<50	0	107	98
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	1	<100	<100	0	88	84
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	1	<100	<100	0	123	78
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	1	<50	<50	0	107	98
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	1	<100	<100	0	88	84
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	1	<100	<100	0	123	78
Surrogate o-Terphenyl	%		Org-003	89	1	103	101	2	84	110

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	3	16/05/2018	18/05/2018		[NT]	[NT]
Date analysed	-			[NT]	3	17/05/2018	21/05/2018		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	[NT]	3	98	100	2	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	[NT]	3	280	330	16	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	[NT]	3	310	410	28	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	[NT]	3	91	110	19	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	[NT]	3	530	660	22	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	[NT]	3	140	210	40	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	3	80	105	27	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	191712-2
Date extracted	-			17/05/2018	1	17/05/2018	17/05/2018		17/05/2018	17/05/2018
Date analysed	-			18/05/2018	1	18/05/2018	18/05/2018		18/05/2018	18/05/2018
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	89	88
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	93	91
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.2	67	93	92
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	0.3	0.4	29	95	95
Pyrene	mg/kg	0.1	Org-012	<0.1	1	0.3	0.4	29	91	92
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	0.2	0.3	40	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	0.2	0.3	40	90	87
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	0.4	0.6	40	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	0.3	0.4	29	89	88
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	0.2	0.2	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	0.2	0.3	40	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	96	1	92	90	2	114	113

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	191712-2
Date extracted	-			16/05/2018	1	16/05/2018	16/05/2018		16/05/2018	16/05/2018
Date analysed	-			18/05/2018	1	18/05/2018	18/05/2018		18/05/2018	18/05/2018
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	88	96
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	85	91
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	88	95
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	90	98
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	88	94
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	94	102
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	97	105
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	85	92
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	89	96
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	81	86
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	100	1	110	108	2	120	129

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	191712-2
Date extracted	-			16/05/2018	1	16/05/2018	16/05/2018		16/05/2018	16/05/2018
Date analysed	-			18/05/2018	1	18/05/2018	18/05/2018		18/05/2018	18/05/2018
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	106	110
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	105	95
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	90	96
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	112	104
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	102	92
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	111	109
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	106	108
Surrogate TCMX	%		Org-008	100	1	110	108	2	98	101

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	191712-2
Date extracted	-			16/05/2018	1	16/05/2018	16/05/2018		16/05/2018	16/05/2018
Date analysed	-			18/05/2018	1	18/05/2018	18/05/2018		18/05/2018	18/05/2018
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	102	103
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	100	1	110	108	2	98	101

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	191712-2
Date prepared	-			16/05/2018	1	16/05/2018	16/05/2018		16/05/2018	16/05/2018
Date analysed	-			16/05/2018	1	16/05/2018	16/05/2018		16/05/2018	16/05/2018
Arsenic	mg/kg	4	Metals-020	<4	1	4	7	55	109	98
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	103	101
Chromium	mg/kg	1	Metals-020	<1	1	12	11	9	104	100
Copper	mg/kg	1	Metals-020	<1	1	65	60	8	103	104
Lead	mg/kg	1	Metals-020	<1	1	360	260	32	98	87
Mercury	mg/kg	0.1	Metals-021	<0.1	1	1.1	1.0	10	125	109
Nickel	mg/kg	1	Metals-020	<1	1	10	13	26	99	98
Zinc	mg/kg	1	Metals-020	<1	1	220	250	13	101	94

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date prepared	-			16/05/2018	[NT]	[NT]	[NT]	[NT]	16/05/2018	[NT]
Date analysed	-			16/05/2018	[NT]	[NT]	[NT]	[NT]	16/05/2018	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	[NT]	[NT]	99	[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: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

svTRH (C10-C40) in Soil - (2 SURROGATE)# Percent recovery is not possible to report as the high concentration of analytes in the sample/s
have caused interference.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying
40-50g of sample in its own container.
Note: Sample 191712-4 was sub-sampled from jar provided by the client.

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment
Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.
This is reported outside our scope of NATA accreditation.

Note: All samples analysed as received. However, samples 191712-1, 3, 5 to 18 are below the minimum 500mL
sample volume as per National Environment Protection (Assessment of Site Contamination)
Measure, Schedule B1, May 2013.

PCBs in Soil (smaple 3) - PQL has been raised due to interference from analytes(other than those being tested) in the sample/s.

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	86361.01	**Suburb:**	Kensington	**To:**	Envirolab Services
Project Name:	UNSW - Project Area 1	**Order Number**			12 Ashley Street Chatswood
Project Manager:	Kurt Plambeck	**Sampler:**	JN	**Attn:**	Aileen
Emails:	urt.plameck@douglaspartners.com.a			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☐			**Email:**	
Prior Storage:	☐ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Date Sampled	Sample Type: S - soil W - water	Container Type: G - glass P - plastic	Analytes: Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols	asbestos	combo 8a	Combo 3	500 ml Asbestos	Notes/preservation
22/0.9-1	1				X	X	X	X	X	X	X		X	
23/0.4-0.5	2				X	X	X	X	X	X	X		X	
24/0.4-0.5	3				X	X	X	X	X	X	X		X	
25/0.4-0.5	4				X	X	X	X	X	X	X			
26/0-0.1	5				X	X	X	X	X	X	X		X	
BD 201805 # 7	AU				X		X	X						interlab

Envirolab Services
12 Ashley St
Chatswood NSW 2067
PH: (02) 9910 6200

ENVIROLAB

Job No: 191712
Date Received: 15/5/18
Time Received: 17:10
Received By: MT
Temp: Cool/Ambient 18.5
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 191712

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

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

Signed: **Received by:** **Date & Time:** 15/5/18 17:10

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	86361.01	**Suburb:**	Kensington	**To:**	Envirolab Services
Project Name:	UNSW - Project Area 1	**Order Number**			12 Ashley Street Chatswood
Project Manager:	Kurt Plambeck	**Sampler:**	JN	**Attn:**	Aileen
Emails:	urt.plameck@douglaspartners.com.a			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☐			**Email:**	
Prior Storage:	☐ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐	No ☐	(If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID 191712	Lab ID	Sampling Date	Sample Type: S - soil W - water	Container Type: G - glass P - plastic	Analytes: Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols	asbestos	combo 8a	Combo 3	500 ml Asbe	Notes/preservation
7/0.4-0.5	6												X	
10/0.4-0.5	7												X	
12/0.2-0.3	8												X	
13/0.4-0.5	9												X	
14/0.2-0.3	10												X	
15/0.5-0.6	11												X	
17/0.4-0.5	12												X	
18/2-2.5	13												X	
8/0.4-0.5	14												X	
9/0.9-1.0	15												X	
19/0.4-0.5	16												X	
20/0.9-1.0	17												X	
21/0.2-0.3	18												X	
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 191712

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

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

Signed: **Received by:** M7 **Date & Time:** 15/5/18 17:20

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

CERTIFICATE OF ANALYSIS 191712-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Kurt Plambeck
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**86361.01, Kensington**
Number of Samples	18 soil
Date samples received	15/05/2018
Date completed instructions received	24/05/2018

Analysis Details

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

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

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

Report Details

Date results requested by	31/05/2018
Date of Issue	29/05/2018

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
Long Pham, Team Leader, Metals

Authorised By

Jacinta Hurst, Laboratory Manager

Metals in TCLP USEPA1311		
Our Reference		191712-A-1
Your Reference	UNITS	22
Depth		0.9-1
Type of sample		soil
Date extracted	-	28/05/2018
Date analysed	-	28/05/2018
pH of soil for fluid# determ.	pH units	7.3
pH of soil TCLP (after HCl)	pH units	1.6
Extraction fluid used	-	1
pH of final Leachate	pH units	5.0
Lead in TCLP	mg/L	0.1

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

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			28/05/2018	[NT]	[NT]	[NT]	[NT]	28/05/2018	[NT]
Date analysed	-			28/05/2018	[NT]	[NT]	[NT]	[NT]	28/05/2018	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	96	[NT]

Result Definitions

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PQL	Practical Quantitation Limit
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RPD	Relative Percent Difference
LCS	Laboratory Control Sample
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NEPM	National Environmental Protection Measure
NR	Not Reported

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Measurement Uncertainty estimates are available for most tests upon request.

Andrew Fitzsimons

From: Nancy Zhang
Sent: Thursday, 24 May 2018 10:21 AM
To: Kurt Plambeck
Cc: Aileen Hie; Samplereceipt
Subject: RE: Results for Registration 191712 86361.01, Kensington

ELS: 191712-A
TAT: 5 days
Due: 31/5/18

Hi Kurt,

No problem, will do.

Regards,

Nancy Zhang | Assistant Lab Manager | Envirolab Services Pty Ltd

Great Science, Great Service.

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

From: Kurt Plambeck [mailto:kurt.plambeck@douglaspartners.com.au]
Sent: Thursday, 24 May 2018 9:49 AM
To: Nancy Zhang <NZhang@envirolab.com.au>
Cc: Aileen Hie <AHie@envirolab.com.au>
Subject: RE: Results for Registration 191712 86361.01, Kensington

Nancy,

Can you please run sample 22/0.9-1.0 for TCLP (lead) 1

Kurt Plambeck | Senior Associate/Environmental Scientist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 9809 0666 | F: 02 9809 4095 | M: 0402 057 147 | E: kurt.plambeck@douglaspartners.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1814103**	Page	: 1 of 6
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR KURT PLAMBECK	Contact	: Shirley LeCornu
Address	: PO BOX 472 96 HERMITAGE ROAD WEST RYDE NSW, AUSTRALIA 1685	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 98090666	Telephone	: +61-3-8549 9630
Project	: 86361.01 UNSW - Project Area 1	Date Samples Received	: 16-May-2018 15:30
Order number	:	Date Analysis Commenced	: 21-May-2018
C-O-C number	: ----	Issue Date	: 23-May-2018 17:57
Sampler	: JN		
Site	: Kensington		
Quote number	: EN/222/17		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- EG035: Positive Hg result for ES1814103 #1 has been confirmed by reanalysis
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BD 201805 #7	----	----	----	----
			Client sampling date / time	16-May-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1814103-001	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**14.9**	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**6**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**19**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**23**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**6**	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**47**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**1.0**	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BD 201805 #7	----	----	----	----
				Client sampling date / time	16-May-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1814103-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**87.9**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**80.7**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**75.7**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**102**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**111**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**109**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**97.9**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**109**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BD 201805 #7	----	----	----	----
				Client sampling date / time	16-May-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1814103-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**104**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1814103**	Page	: 1 of 7
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR KURT PLAMBECK	Contact	: Shirley LeCornu
Address	: PO BOX 472 96 HERMITAGE ROAD WEST RYDE NSW, AUSTRALIA 1685	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 98090666	Telephone	: +61-3-8549 9630
Project	: 86361.01 UNSW - Project Area 1	Date Samples Received	: 16-May-2018
Order number	:	Date Analysis Commenced	: 21-May-2018
C-O-C number	: ----	Issue Date	: 23-May-2018
Sampler	: JN		
Site	: Kensington		
Quote number	: EN/222/17		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1660791)									
ES1814110-001	Anonymous	EA055: Moisture Content	----	0.1	%	39.7	40.0	0.930	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 1662563)									
ES1814434-028	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	8	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	7	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
ES1814073-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	15	19.7	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	41	42	0.00	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	14	45.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	45	48	6.64	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	21	56.3	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	111	96	14.2	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1662564)									
ES1814434-028	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1814073-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1658447)									
ES1814201-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1658447) - continued									
ES1814201-001	Anonymous	EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1813948-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1652399)									
ES1813947-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1813947-011	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1658446)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1658446) - continued									
ES1814201-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1813948-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	590	690	15.9	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	80	90	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1652399)									
ES1813947-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1813947-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1658446)									
ES1814201-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1813948-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	370	420	13.9	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	230	240	5.92	No Limit
EP080: BTEXN (QC Lot: 1652399)									
ES1813947-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES1813947-011	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1662563)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	94.2	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	95.8	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	86.8	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.6	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	101	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	97.1	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	104	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1662564)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	74.9	70	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1658447)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	92.9	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	88.8	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	98.4	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	88.2	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	92.6	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	92.6	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	93.3	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	91.8	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	98.9	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	91.9	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	95.8	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	98.3	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	89.8	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	83.5	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	84.1	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	86.3	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1652399)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	92.0	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1658446)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	100	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	100	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	104	71	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1652399)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1652399) - continued								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	99.2	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1658446)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	250 mg/kg	98.2	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	102	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	150 mg/kg	99.7	63	131
EP080: BTEXN (QCLot: 1652399)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	106	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	102	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	103	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	103	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	103	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	115	63	119

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1662563)							
ES1814073-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	97.4	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	91.0	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	82.8	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	95.4	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	91.2	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	84.0	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	94.8	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1662564)							
ES1814073-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	85.0	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1658447)							
ES1813948-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	94.0	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	97.8	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1652399)							
ES1813947-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	86.6	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1658446)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1658446) - continued							
ES1813948-001	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	92.9	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	77.7	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	114	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1652399)							
ES1813947-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	92.4	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1658446)							
ES1813948-001	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	97.2	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	106	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	105	52	132
EP080: BTEXN (QCLot: 1652399)							
ES1813947-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	94.2	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	90.6	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	92.3	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	91.1	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	93.5	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	91.0	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1814103**	Page	: 1 of 4
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR KURT PLAMBECK	Telephone	: +61-3-8549 9630
Project	: 86361.01 UNSW - Project Area 1	Date Samples Received	: 16-May-2018
Site	: Kensington	Issue Date	: 23-May-2018
Sampler	: JN	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Moisture Content	1	11	9.09	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / *Container* / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
BD 201805 #7	**16-May-2018**	**----**	----	----	**21-May-2018**	30-May-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
BD 201805 #7	**16-May-2018**	**22-May-2018**	12-Nov-2018	✓	**22-May-2018**	12-Nov-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
BD 201805 #7	**16-May-2018**	**22-May-2018**	13-Jun-2018	✓	**22-May-2018**	13-Jun-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BD 201805 #7	**16-May-2018**	**22-May-2018**	30-May-2018	✓	**22-May-2018**	01-Jul-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
BD 201805 #7	**16-May-2018**	**21-May-2018**	30-May-2018	✓	**22-May-2018**	30-May-2018	✓
Soil Glass Jar - Unpreserved (EP071)							
BD 201805 #7	**16-May-2018**	**22-May-2018**	30-May-2018	✓	**22-May-2018**	01-Jul-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
BD 201805 #7	**16-May-2018**	**21-May-2018**	30-May-2018	✓	**22-May-2018**	30-May-2018	✓
Soil Glass Jar - Unpreserved (EP071)							
BD 201805 #7	**16-May-2018**	**22-May-2018**	30-May-2018	✓	**22-May-2018**	01-Jul-2018	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
BD 201805 #7	**16-May-2018**	**21-May-2018**	30-May-2018	✓	**22-May-2018**	30-May-2018	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	11	**9.09**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

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

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	86361.01	**Suburb:**	Kensington	**To:**	Envirolab Services
Project Name:	UNSW - Project Area 1	**Order Number**			12 Ashley Street Chatswood
Project Manager:	Kurt Plambeck	**Sampler:**	JN	**Attn:**	Aileen
Emails:	urt.plameck@douglaspartners.com.a			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☐			**Email:**	
Prior Storage:	☐ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐	No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)	

Sample ID	Lab ID	Date Sampled	Sample Type: S - soil W - water	Container Type: G - glass P - plastic	Analytes: Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols	asbestos	combo 8a	Combo 3	500 ml Asbestos	Notes/preservation
22/0.9-1	1				X	X	X	X	X	X	X		X	
23/0.4-0.5	2				X	X	X	X	X	X	X		X	
24/0.4-0.5	3				X	X	X	X	X	X	X		X	
25/0.4-0.5	4				X	X	X	X	X	X	X			
26/0-0.1	5				X	X	X	X	X	X	X		X	
BD 201805 # 7	AU				X		X	X						interlab

Environmental Division Sydney
Work Order Reference
ES1814103
Telephone : + 61-2-8784 8555

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 191712
Date Received: 15/5/18
Time Received: 17:10
Received By: M
Temp: Cool/Ambient 18.8
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

Lab Report/Reference No: 191712

Metals to Analyse: 8HM unless specified here:

Total number of samples in container:

Relinquished by: JE. ELS

Transported to laboratory by:

Send Results to: Douglas Partners Pty Ltd **Address** 16/5/18 12:50 **Phone:** **Fax:**

Signed: **Received by:** **Date & Time:** 15/5/18 17:10

Rec: [signature] 16/5/18 1530 1325

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.14/06/2018 1:39:08 PM
From File	WorkSheet.xls
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Lead

General Statistics

Total Number of Observations	21.000000	Number of Distinct Observations	19.000000
		Number of Missing Observations	0
Minimum	3.0000000	Mean	225.52381
Maximum	1800.0000	Median	130.00000
SD	383.74283	Std. Error of Mean	83.739551
Coefficient of Variation	1.7015624	Skewness	3.7959124

Normal GOF Test

Shapiro Wilk Test Statistic	0.5034384	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.9080000	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.3360390	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.1881000	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	369.95094	95% Adjusted-CLT UCL (Chen-1995)	437.38007
		95% Modified-t UCL (Johnson-1978)	381.51169

Gamma GOF Test

A-D Test Statistic	0.7645682	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.7841958	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.1932429	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.1971306	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.7346928	k star (bias corrected MLE)	0.6614827
Theta hat (MLE)	306.96343	Theta star (bias corrected MLE)	340.93683
nu hat (MLE)	30.857096	nu star (bias corrected)	27.782273
MLE Mean (bias corrected)	225.52381	MLE Sd (bias corrected)	277.28933
		Approximate Chi Square Value (0.05)	16.758629
Adjusted Level of Significance	0.0383000	Adjusted Chi Square Value	16.101341

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	373.87092	95% Adjusted Gamma UCL (use when n<50)	389.13305

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.8924239	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.9080000	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.1812236	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.1881000	Data appear Lognormal at 5% Significance Level

56	**Data appear Approximate Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59						Minimum of Logged Data	1.0986123			Mean of logged Data	4.6013253	
60						Maximum of Logged Data	7.4955419			SD of logged Data	1.4671782	
61												
62	**Assuming Lognormal Distribution**											
63						95% H-UCL	851.17707			90% Chebyshev (MVUE) UCL	572.46342	
64						95% Chebyshev (MVUE) UCL	711.29775			97.5% Chebyshev (MVUE) UCL	903.99441	
65						99% Chebyshev (MVUE) UCL	1282.5097					
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
69												
70	**Nonparametric Distribution Free UCLs**											
71						95% CLT UCL	363.26311			95% Jackknife UCL	369.95094	
72						95% Standard Bootstrap UCL	357.79819			95% Bootstrap-t UCL	664.39463	
73						95% Hall's Bootstrap UCL	887.07156			95% Percentile Bootstrap UCL	377.42857	
74						95% BCA Bootstrap UCL	458.14286					
75						90% Chebyshev(Mean, Sd) UCL	476.74246			95% Chebyshev(Mean, Sd) UCL	590.53605	
76						97.5% Chebyshev(Mean, Sd) UCL	748.47714			99% Chebyshev(Mean, Sd) UCL	1058.7218	
77												
78	**Suggested UCL to Use**											
79						95% Adjusted Gamma UCL	389.13305					
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
85												

Appendix G

Quality Assurance / Quality Control Report

DATA QUALITY ASSESSMENT

Q1. Data Quality Objectives

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

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

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

Table Q1: Data Quality Objectives

Data Quality Objective	Report Section where Addressed
State the Problem	S1 Introduction
Identify the Decision	S1 Introduction (objective) S13 Analysis and Discussion of Results S14 Conclusion and Recommendations
Identify Inputs to the Decision	S1 Introduction S2 Scope of Works S3 Site Identification S10 Site Assessment Criteria S12 Results Summary
Define the Boundary of the Assessment	S3 Site Identification Drawing 1 - Appendix A
Develop a Decision Rule	S10 Site Assessment Criteria
Specify Acceptable Limits on Decision Errors	S9 Fieldwork S10 Site Assessment Criteria QA/QC Procedures and Results – Sections Q2, Q3
Optimise the Design for Obtaining Data	S2 Scope of Works S9 Fieldwork QA/QC Procedures and Results – Sections Q2, Q3

Q2. FIELD AND LABORATORY QUALITY CONTROL

The field and laboratory quality control (QC) procedures and results are summarised in Tables Q2 and Q3. Reference should be made to the fieldwork and analysis procedures in Section 9 and the laboratory results certificates in Appendix F for further details.

Table Q2: Field QC

Item	Frequency	Acceptance Criteria	Achievement
Intra-laboratory replicates	5% primary samples	RPD <30% inorganics), <50% (organics)	yes[1]
Inter-laboratory replicates	5% primary samples	RPD <30% inorganics), <50% (organics)	yes[2]
Trip Spikes	1 per field batch	60-140% recovery	Yes[3]
Trip Blanks	1 per field batch	<PQL/LOR	Yes[4]

NOTES:
1 qualitative assessment of RPD results overall; refer Section Q2.1
2 qualitative assessment of RPD results overall; refer Section Q2.2
3. Trip spike results between for BTEX 99% and 100%
4. Trip blank results for BTEX and TRH <PQL

Table Q3: Laboratory QC

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

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

Q2.1 Laboratory Replicates

Intra-laboratory replicates were analysed as an internal check of the reproducibility within the primary laboratory 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.

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.

Table Q4: Relative Percentage Difference Results

	Intra laboratory Duplicate			
	8	BD201805 #5	Difference	RPD
	0.4-0.5			
As	<4	<4	0	0
Cd	<0.4	<0.4	0	0
Cr	2	1	1	67
Cu	12	1	11	169
Pb	38	3	35	171
Hg	<0.1	<0.1	0	0
Ni	2	<1	0	0
Zn	51	35	16	37
total [b]	0.06	0.2	0.14	108
BaP TEQ	<0.5	<0.5	0	0
BaP	0.06	0.06	0	0
Naphthalene	<0.1	<0.1	0	0
C_6 - C_9	<25	<25	0	0
C_{10} - C_{14}	<50	<50	0	0
C_{15} - C_{28}	<100	<100	0	0
C_{29} - C_{36}	<100	<100	0	0
C_{10} - C_{36} [j]	<50	<50	0	0
C6-C10	<25	<25	0	0
>C10-C16	<50	<50	0	0
F1 - C6 – C10 less BTEX	<25	<25	0	0

	Intra laboratory Duplicate			
	8	BD201805 #5	Difference	RPD
	0.4-0.5			
F2 - >C10-C16 less naphthalene	<50	<50	0	0
>C16-C34	<100	<100	0	0
>C34-C40	<100	<100	0	0
Benzene	<0.2	<0.2	0	0
Toluene	<0.5	<0.5	0	0
Ethylbenzene	<1	<1	0	0
xylene	<1	<1	0	0

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

- 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;
- 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.

Q2.1.1 Inter-Laboratory Analysis

Inter-laboratory replicates were conducted as a check of the reproducibility of results between the primary laboratory ELS and the secondary laboratory ALS and as a measure of consistency of sampling techniques.

The comparative results of analysis between original and inter-laboratory replicate samples are summarised in Table Q5.

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.

Table Q5: Relative Percentage Difference Results

	Inter Laboratory Duplicate							
	25 0.4-0.5	BD 201805 #7	Difference	RPD	17 0.4-0.5	BD/201805#4	Difference	RPD
As	<4	<5	0	0	<5	<4	0	0
Cd	<0.4	<1	0	0	<1	<0.4	0	0
Cr	7	6	1	15	60	10	50	143
Cu	17	19	2	11	56	26	30	73
Pb	21	23	2	9	44	51	7	15
Hg	1.6	1	0.6	46	0.1	0.4	0.3	120
Ni	5	6	1	18	3	2	1	40
Zn	63	47	16	29	45	45	0	0
total [b]	0.5	<0.5	0	0	<0.5	0.4	0	0
BaP TEQ	<0.5	<0.5	0	0	<0.5	<0.5	0	0
BaP	0.05	<0.5	0	0	<0.5	0.1	0	0
Naphthalene	<0.1	<0.5	0	0	<0.5	<0.1	0	0
C_6 - C_9	<25	<10	0	0	<10	<25	0	0
C_{10} - C_{14}	<50	<50	0	0	<50	<50	0	0
C_{15} - C_{28}	<100	<100	0	0	<100	<100	0	0
C_{29} - C_{36}	<100	<100	0	0	<100	<100	0	0
C_{10} - C_{36} [j]	<50	<50	0	0	<50	<50	0	0
C6-C10	<25	<10	0	0	<10	<25	0	0
>C10-C16	<50	<50	0	0	<50	<50	0	0
F1 - C6 – C10 less BTEX	<25	<10	0	0	<10	<25	0	0
F2 - >C10-C16 less naphthalene	<50	<50	0	0	<50	<50	0	0
>C16-C34	<100	<100	0	0	<100	<100	0	0
>C34-C40	<100	-	0	0	<100	<100	0	0
Benzene	<0.2	<0.5	0	0	<0.5	<0.2	0	0
Toluene	<0.5	<0.5	0	0	<0.5	<0.5	0	0
Ethylbenzene	<1	<0.5	0	0	<0.5	<1	0	0
xylene	<1	<0.5	0	0	<0.5	<1	0	0

The calculated RPD values were within the acceptable range of ≤ 30 for inorganic analytes and ≤ 50% for organics with the exception of those shaded 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.

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 Q6.

Table Q6: Data Quality Indicators

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

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