

Report on Detailed Site Contamination Investigation

Proposed Commercial & Educational Development 2b-6 Hassall Street, Parramatta

Prepared for Solutions Consulting Australia

Project 86415.02 April 2019



# **Douglas Partners** Geotechnics | Environment | Groundwater

# **Document History**

#### Document details

86415.02	Document No.	R.001
It title Report on Detailed Site Contamination Investigation		vestigation
Proposed Commercial	& Educational Dev	velopment
2b-6 Hassall Street, Pa	arramatta	
Solutions Consulting Australia		
86415.02.R.001.Rev2		
	86415.02 Report on Detailed Sit Proposed Commercial 2b-6 Hassall Street, Pa Solutions Consulting A 86415.02.R.001.Rev2	86415.02Document No.Report on Detailed Site Contamination Ir Proposed Commercial & Educational Detailed2b-6 Hassall Street, ParramattaSolutions Consulting Australia86415.02.R.001.Rev2

#### Document status and review

Status	Prepared by	Reviewed by	Date issued
Revision 0	Celine Li	Paul Gorman	29 October 2018
Revision 1	Celine Li	Paul Gorman	14 November 2018
Revision 2	Celine Li	Tim Wright	11 April 2019

#### Distribution of copies

Status	Electronic	Paper	Issued to
Revision 0	1	0	Gary Singh, Solutions Consulting Australia
Revision 1	1	0	Gary Singh, Solutions Consulting Australia
Revision 2	1	0	Gary Singh, Solutions Consulting Australia

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.

Şignature	Date
Author	11 April 2019
Reviewer pp: J. Boanco	11 April 2019



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 Phone (02) 9809 0666 Fax (02) 9809 4095



# Table of Contents

#### Page

1.	Introd	uction	1		
2.	Scope of Work1				
3.	Site Description2				
4.	Site G	Geology, Topography and Hydrogeology	3		
5.	Revie	w of DP (2018)	4		
6.	Lotse	arch Report Review	3		
	6.1	Contaminated Land and Waste Management Facilities	5		
	6.2	EPA PFAS investigation programme	7		
	6.3	UPSS Sensitive Zones	7		
	6.4	Historical Business Activities	7		
	6.5	Other Records	3		
7.	SafeV	Vork Search	Э		
8.	Revie	w of Asbestos and Hazardous Material Pre-Demolition Survey	Э		
9.	Conc	eptual Site Model10	)		
10.	Field	vork and Analysis1	1		
	10.1	Data Quality Objectives and Project Quality Procedures11	I		
	10.2	Data Quality Indicators	2		
	10.3	Soil Sampling and Rationale	2		
	10.4 Drilling Methods13				
	10.5	Soil Sampling Procedures	3		
	10.6	Analytical Rationale	3		
11.	Site Assessment Criteria14				
	11.1	Health Investigation and Screening Levels14	1		
	11.2	Ecological Investigation Levels and Ecological Screening Levels	7		
	11.3	Management Limits for Petroleum Hydrocarbons	7		
	11.4	Asbestos in Soil	3		
	11.5	Preliminary Waste Classification18	3		
12.	Field	Work Results19	9		
13.	Resu	ts of Laboratory Analysis20	)		
	13.1 Laboratory Results				
	13.2	Quality Assurance and Quality Control Results	)		



Discussion	20
14.1 Contaminants in Soil	20
14.2 Waste Classification	21
14.3 Groundwater Impacts	21
Conclusion and Recommendations	22
Limitations	22
	Discussion 14.1 Contaminants in Soil 14.2 Waste Classification 14.3 Groundwater Impacts Conclusion and Recommendations Limitations

Appendix A:	Drawing and Notes About this Report
Appendix B:	Data Quality Assurance and Quality Control Procedures and Results
Appendix C:	Borehole Logs and Groundwater Field Sheets
Appendix D:	Tabulated Summary Results for Soil and Waste classification
Appendix E:	Laboratory Certificated of Analysis and Chain of Custody Documentation
Appendix F:	Lot Search Report, SafeWork Search Letter and Asbestos and Hazardous Materials Pre-Demolition Survey



# Report on Detailed Site Contamination Investigation Proposed Commercial & Educational Development 2b-6 Hassall Street, Parramatta

# 1. Introduction

This report presents the results of a detailed site contamination investigation (DSI) undertaken for a proposed commercial and educational development at 2b-6 Hassall Street, Parramatta (the site). The investigation was commissioned in an email dated 19 September 2018 by Gary Singh of Solutions Consulting Australia (SCA) and was undertaken in accordance with Douglas Partners' proposal SYD180976.P.001.Rev1 dated 28 September 2018.

It is understood that the development of the site will include the demolition of existing structures and the construction of a 19-storey commercial / tertiary education building including one basement level for car parking. It is understood that the proposed basement will cover the whole of the site area.

DP has previously undertaken a preliminary (contamination) site investigation (PSI)<sup>1</sup> (DP, 2018) of the site, which reviewed the site history, undertook intrusive investigation and identified some contaminants above the adopted site assessment criteria adopted for the proposed land use. Accordingly, the PSI recommended that a DSI be conducted to characterise contamination at the site and enable recommendations to be made on the requirements (if any) for remediation/ management of site contamination issues in accordance with SEPP55.

The primary objective of the DSI was to assess the suitability of the site for the proposed development and to further identify contamination (or potential contamination) issues that require remediation or management as part of the proposed development. The DSI also presents a preliminary waste classification assessment to assist in budgeting for the disposal of surplus soils created as a result of the proposed development.

# 2. Scope of Work

The scope of work is as follows:

- Review of previous PSI report;
- Obtain and review a Lotsearch Enviro Professional report for the site (Reference LS0004521 EP dated 2 November 2018 the Lotsearch report);
- Obtain and review the results of a SafeWork NSW search for the storage of hazardous chemicals at the site;
- Review of an Asbestos and Hazardous Materials Pre-Demolition Survey for the site provided by SCA;

<sup>&</sup>lt;sup>1</sup> Report on *Preliminary Site Investigation for Contamination, Proposed Commercial Development, 2-6 Hassall Street, Parramatta,* dated 17 July 2018 (project reference: 86514.00.R.001.Rev1)



- Complete a Dial Before You Dig underground services records search and engage a Telstra accredited underground services locator to identify underground services;
- Set out of the borehole locations including concrete coring of concrete slabs encountered (i.e. inside the building and on the driveway);
- Drill two boreholes, using a truck mounted drill rig, 0.5 m into natural soils, a maximum of 3 m or prior refusal (whichever is the lesser);
- Auger three boreholes with a hand auger in areas with limited access (i.e. within the building) 0.5 m into natural soils, a maximum of 3 m or prior refusal (whichever is the lesser);
- Auger two boreholes with a hand auger 0.5 m into natural soils, a maximum of 3 m or prior refusal (whichever is the lesser) to further characterise previously identified contamination in the soil (i.e. near BH3 and BH4);
- Survey of borehole locations using a differential GPS;
- Log and collect soil samples from all boreholes at regular intervals and upon signs of contamination (i.e. odours and staining);
- Screen each sample for volatile organic compounds (VOC) using a photoionisation detector (PID);
- Dispatch selected soil samples (plus quality assurance and quality control (QA/QC) samples) to a NATA-accredited laboratory for analysis;
- Conduct laboratory analysis on selected samples for the following:
  - o Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc);
  - o Total recoverable hydrocarbons (TRH);
  - o Benzene, toluene, ethylbenzene and xylenes (BTEX);
  - o Polycyclic aromatic hydrocarbons (PAH);
  - o Organochlorine pesticides (OCP);
  - o Organophosphorus pesticides (OPP);
  - o Polychlorinated biphenyls (PCB);
  - o Phenols;
  - o Asbestos; and
  - o Toxicity characteristic leaching procedure (TCLP) metals and/ or PAH (as required for waste classification).
- Prepare a DSI report which describes the methodology and results of the investigation. The report comments on the suitability of the site for the proposed development and/or the need for further investigation and/or remediation. The report also provides a provisional waste classification for off-site disposal of the (excavated) soil to landfill.

# 3. Site Description

The site is located at 2b-6 Hassall Street, Parramatta. It is understood to comprise three adjacent land parcels as follows:

• Lot 22 Deposited Plan 608861 with street address 2 Hassall Street;



- Lot 62 Deposited Plan 1006215 with street address 4 Hassall Street; and
- Lot 7 Deposited Plan 128820 with street addresses 6 Hassall Street.

The site covers (approximately) 2790 m<sup>2</sup> and is located within the local government authority of the City of Parramatta. The site is approximately rectangular in shape with street frontage of approximately 62 m along Hassall Street and a width of about 45 m.

The site has a gentle fall to the south-east. The site is currently occupied by a two storey office building (No. 2), a vacant block (No. 4) and a three storey residential apartment building (No. 6).

The layout of the site at the time of undertaking the DSI is shown on Drawing 1, Appendix A.

A summary of observed site features and uses recorded in DP (2018) is provided in Section 5.

The site is bounded by the following:

- North: NSW Police Headquarters and Lancer Military Barracks;
- East: Driveway access to NSW Police Headquarters;
- South: Hassall Street and a high-rise commercial building beyond; and
- West: The Commercial Hotel.

# 4. Site Geology, Topography and Hydrogeology

Reference to the Sydney 1:100 000 Geology Sheet indicates that the site is underlain by Ashfield Shale which comprises black to dark-grey shale and laminite, and is in close proximity to an area of stream and alluvial sediment (which is approximately 20 m to the south-east).

Sydney 1:100,000 Soils Landscape Sheet indicates that the site is in an area where natural soils are residual, and an area of alluvial soils is in close proximity to the site (approximately 30 m to the east).

Reference to the Acid Sulfate Soils Mapping indicates that the site is located outside the areas mapped as being affected by acid sulfate soils (ASS).

The site is at approximately 12 m AHD. Slopes at and adjacent the site are generally gentle and down to the south-east. However, the regional topography slopes to the north east towards Parramatta River. Based on topography, groundwater at the site could flow to the north east in the direction of the Parramatta River approximately 475 m to the north west; or to south-east in the general direction of Clay Cliff Creek (a stormwater drain) which is approximately 150 m to the south-east of the site. Clay Cliff Creek drains into the Parramatta River, approximately 1.25 km to the east of the site

A groundwater bore search of the NSW Department of Primary Industries Office of Water database was conducted on 2 July 2018, as part of DP (2018). There were no registered groundwater bores within 500 m of the site.

The publication of a contour map in the Agricultural Gazette (Old, 1942) describes an assessment of the salinity of groundwater within the Triassic shale strata (Wianamatta Group) for the western Sydney



area which is relevant to this site. The shale terrain of much of Western Sydney is known for saline groundwater, resulting either from the release of connate salt in shales of marine origin or from the accumulation of windblown sea salt.

Further information on the sub-surface profile encountered at the site is provided in Section 12 of this report.

# 5. Review of DP (2018)

The purpose of the DP (2018) investigation was to assess the potential for contamination at the site. A historical title deeds search was reviewed as part of DP (2018), and it appeared that the site has been largely used for residential purposes since 1918.

In order to identify possible changes in land use or potential areas of concern, DP (2018) included a review of aerial photography from 1930 until 2016. A review of DP (2018) indicates that the site has remained largely similar to its current state. The surrounding area had been subject to significant development.

A walkover of the site as part of DP (2018) yielded the following general observations:

- Lot 22 of the site was occupied by a two storey office building which covered approximately three quarters of the site and was bounded by an asphalted car park area on the northern and western sides of the building;
- Lot 62 was a vacant grassed area with two palm trees located on the southern boundary. Rubbish and some building rubble were observed in the grass; and
- Lot 7 contained a three storey residential apartment building, with a small grassed courtyard at the front, a concrete driveway along the eastern boundary, and a small car park area at the northern end of the block.

A limited intrusive investigation was carried out as part of DP (2018) and included:

- Drilling two boreholes (BH2 and BH4) to depths of 1.6? m and 1.9 m;
- Drilling two boreholes (BH1 and BH3) to depths of 8.37? m and 10 m, and installation of groundwater wells;
- Development of a conceptual site model (refer Section 8 of this report); and
- Sampling and testing of selected soil and groundwater samples for identified potential contaminants, including metals, PAH, TRH, BTEX, phenols, OCP, OPP, (PCB), asbestos and VOC.

The analytical results for soil samples were assessed primarily against the health and ecological investigation and screening levels for a commercial / industrial land use, whilst the groundwater analytical results were assessed against threshold for the protection of fresh water aquatic ecosystems and health screening levels. These are discussed further in Section 11 of this report, however, given that the proposed development will cover the whole of the site area, the ecological investigation levels (EIL) and ecological screening levels (ESL) are not considered relevant in the context of this DSI.



The general sequence of subsurface materials encountered in the bores comprised shallow fill (to a maximum of 0.7 m below ground level) then residual clay and weathered shale bedrock. Water levels were recorded in the monitoring wells during the groundwater sampling event on 8 June 2018, and were at approximately 7.8 m bgl in BH1 and 8.8 m bgl in BH3. Based on the reduced levels of the groundwater recorded in BH1 (4.6 m relative to Australian height datum (AHD)) and BH3 (4.0 m AHD) the anticipated groundwater flow would be towards the north east and Parramatta River.

Hydrocarbon odours were observed in the fill during drilling BH3 at approximately 0.2 m bgl.

Reported concentrations of BTEX, phenols, OCP, OPP, PCB and asbestos in the soil samples were below the laboratory limits of reporting (LOR) and therefore the adopted site assessment criteria (SAC). Reported concentrations of metals were below the adopted assessment criteria with the exception of:

• Copper in sample BH3 0.2-0.3 (440 mg/kg) - exceeding the EIL (310 mg/kg).

Reported concentrations of TRH were below SAC with the exception of:

• F2- Naphthalene in BH3 0.2-0.3 (500 mg/kg) – exceeding the ESL (170 mg/kg).

Reported concentrations of PAH were below the adopted assessment criteria with the exception of:

- B(a)P in sample BH3 0.2-0.3 (4.7 mg/kg)- exceeding the health investigation level (HIL) (3 mg/kg); and
- B(a)P in sample BH3 0.5-0.6 (0.9 mg/kg), BD1/ 20180698 (0.95 mg/kg) and BH4 0.3-0.4 (1.1 mg/kg) exceeding the ESL (0.7 mg/kg).

All of the above exceedances occurred at or close to the surface, in the filling layers. The results were considered likely to be associated with the nature of the fill.

Reported concentrations of TRH, BTEX, PAH, phenols, PCB, OCP, OPP, VOCs, As, Cd, Cr, Pb, Hg and Ni in the groundwater samples were below the LOR and therefore the SAC. Reported concentrations of nickel, copper and zinc were above the LOR, but below the SAC, with the exception of:

- Copper in BH1 (6 µg/L) and BH3 (4 µg/L) exceeding the GIL (1.4 µg/L); and
- Zinc in BH1 (29 µg/L) and BH3 (9 µg/L)- exceeding the GIL (8 mg/L).

The minor exceedances are not considered to be significant and are common occurrences in urban groundwater environments, due to degrading of water supply infrastructure.

Based on the scope of works undertaken it was considered that there are not likely to be any significant contamination risks to human health or ecology associated with the site, either presently or under the proposed development. The minor shallow soil contaminants were likely to be removed with the construction of the proposed basement. It was considered that the site can be made suitable for the proposed development, subject to the results of a DSI and confirmation of waste classification for surplus soils.



# 6. Lotsearch Report Review

The following sections summarise the results of searches and data acquired from the Lotsearch Report which was not already included in DP (2018) (Appendix F).

#### 6.1 Contaminated Land and Waste Management Facilities

The Lotsearch report indicated there are no contaminated sites notified to the EPA or contaminated land notices, or sites on the national waste management database listed within 1 km of the site. It should be noted that the EPA record of Notices for contaminated land does not provide a record of all contaminated land in NSW. However, a former gas works within the dataset buffer zone; 467m to the north east of the site and therefore down gradient (pp 7-9, Appendix F):

#### Table 1: Summary of Gas Works within 1 km of the Site

Location	Council	Further Info	Location Confidence	Distance and Direction from site
George Street,	Parramatta City	Contact	Promise Match	467 m North East
Parramatta	Council	Council	FIEITISE Match	407 III, NOITH East

The Lotsearch Report indicated that the following three sites within 1 km of the site were listed as James Hardie Asbestos Waste Sites (p. 12, Lotsearch Appendix F).

Site Name	Site Address	Current Land Use	Location Confidence	Distance and Direction from site
Embankment along stormwater canal	Hassall and Ruse Streets, Parramatta	Hambeldon Cottage. Disposal area covered by grass and vegetation	Premise Match	478 m, East
Embankment along stormwater canal	Albert, Dalby and Prince Streets, Granville	Council assessed and considered the likely disposal location is residential or possibly RTA land	Premise Match	843 m, South
Cumberland Oval	O'Connell Street, Parramatta	Parramatta Stadium Parramatta Pool	Premise Match	968 m, North West

#### Table 2: EPA other Sites with Contamination Issues

The Lotsearch report indicated that Sydney Trains is issued as current Environment Protection Licence for 'railway systems activities' (56 m south west). There were no other issued to sites within 1 km of the site (p. 14, Lotsearch Appendix F).

One delicensed activities was identified within 1 km of the site. It was associated with Australia Red Cross Society at Parramatta Blood Service (722 m north-west). The activity of the site was 'Hazardous, industrial or Group A Waste Generation or Storage'.



There were ten surrendered licensed activities identified within 1 km of the site. The closest activities to the site with surrendered licences were for 'railway systems activities' associated with Laing O'Rourke Australia Construction Pty Ltd (44 m west).

The other nine sites with surrendered licences were more than 100 m from the site and were for activities identified as 'other activities/ non-scheduled activity- application of herbicides', 'metal coating; hazardous, industrial or group A waste generation or storage' and 'hazardous, industrial or Group A waste generation or storage'.

The EPA activities search results are presented on pages 7-18 of the Lotsearch Report, Appendix F.

Due to the locations of the activities relative to the site and / or the nature of the activities they are not considered to be sources of contamination which could impact the site.

#### 6.2 EPA PFAS investigation programme

The Lotsearch report indicated that there were no sites under investigation within 1 km of the site (p. 10, Lotsearch Appendix F).

#### 6.3 UPSS Sensitive Zones

The site is located on the boundary of a UPSS Sensitive Zone (p. 18, Lotsearch Appendix F).

#### 6.4 Historical Business Activities

A review of the UBD Business to Business directories, reported in the Lotsearch Report (pp. 19-45 Appendix F) was conducted. The review identified those businesses which were located on the site (thereby informing likely site use) or immediately adjacent or located up-gradient (within 50 m) and have the greatest potential to be a source of contamination which may have potentially impacted the site. Further details are provided in the Lotsearch Report, Appendix F.



Directory (Year)	Business Activity		Location Relative to Site	
1991	Machinery &/or Parts Merchants &/or Imps	Wm H Matthews	46 m south	
1986/1982/1978	Paint, Enamel Varnish, Stain Mfrs Paint, Solvent / Thinner Mfrs/Suppliers Motor Body Builders Supplies Spray Painting Equipment Mfrs/Dists Paint- Industrial Protective Coating Motor Panel Beaters/Painters Supplies Grease gun/greasing equipment Mfrs/Dists Adhesives Mfrs/Disits Battery Charging/Testing Equipment Mfrs/Dists	Wm H Matthews	46 m south	
	Cotton Waste Mfrs/Dists			
1975	Merchants General	W H Matthews	46 m south	
1970	Merchants General Hardware Merchants	Wm H Matthews	- 46 m south	
	Abrasive Distributors / Merchants	Parramatta Wholesalers		
	Motor Accessories	-		
	Hardware Merchants			
1965	Engineers' Supplies	W M H Matthews		
	Electrical Supplies/ Appliances Retailers		46 m south	
	Abrasive Distributors / Merchants	Parramatta Wholesalers		
	Motor Accessories	Wm H Matthews		
1961	Abrasive Distributors / Merchants	Parramatta Wholesalers	46 m south	

#### **Table 3: Summary of Historical Business Activities**

# 6.5 Other Records

In addition to the above information the following table summarises the results of searches and data acquired from the Lotsearch Report included in Appendix F.



Record / Source of Information	Comments
Dryland Salinity	There was no record of dryland salinity with the National Assessment within the dataset buffer, however, there was area of Moderate salinity potential classified onsite with Dryland Salinity Potential of Western Sydney (pp.89-90, Appendix F)
Mining Subsidence Districts	There were no Mining Subsidence Districts within the report buffer (p.90, Appendix F)
State Environmental Planning	There were no State Environmental Planning Policy Protected Areas onsite or within the dataset buffer (p.91, Appendix F)
Heritage	There were three EPI heritage items located onsite, associated with 1 <sup>st</sup> /15 <sup>th</sup> Royal NSW Lancer Museum collection (North west), Commercial Hotel (West) and Lancer Barracks group (North west). Parramatta Railway Station was also listed as general heritage item within the dataset buffer (44m West)(pp.98-111, Appendix F)
Natural Hazards	There was no record of Natural Hazards that exist within the dataset buffer (p.112, Appendix F)
Ecological Constraints	There were no ecological constraints identified onsite, however, there was urban exotic/ native vegetation located within the dataset buffer (pp. 114- 122, Appendix F).

#### Table 4: Summary of available information from Lotsearch Report

# 7. SafeWork Search

A search of the database held by SafeWork NSW was conducted on the 5 July 2018. The search did not locate any records pertaining to the storage of dangerous goods at the site. A copy of the response from SafeWork NSW is included in Appendix F.

# 8. Review of Asbestos and Hazardous Material Pre-Demolition Survey

The following report provided by SCA was reviewed:

 Coffey Services Australia Pty Ltd report Asbestos and Hazardous Materials Pre-Demolition Survey, 2B-6 Hassall Street, Parramatta NSW 2150, reference 754-SYDEN218212 R03 FINAL dated 28 June 2018 (Coffey, 2018).

The purpose of Coffey (2018) was to assess the likely risks posed by hazardous building materials which may be encountered during the fire control systems upgrade works. Coffey (2018) involved the



investigation and identification of hazardous material inclusive of asbestos-containing materials (ACM). Other hazardous materials included lead-based paint systems (LBP), lead-containing dust (LCD), ozone depleting substances (ODS), polychlorinated biphenyls in light capacitors (PCB) and synthetic mineral fibre (SMF) in accessible areas.

Access was only available to Unit 3 of 6 Hassall Street.

From the site survey and laboratory analysis results (where applicable), a register of hazardous materials has been produced, in accordance with the requirements of the relevant Codes of Practice and Guidance Notes.

ACM, SMF and PCB containing materials were identified or suspected to be present in the buildings at the time of survey. No ODS, LBP or ODS were identified on site.

Asbestos containing fibre cement fragments were identified throughout 4 Hassall Street. Coffey (2018) considered that it is highly likely that asbestos containing fibre cement debris and fragments are present throughout 4 Hassall Street on the surface and within the subsurface. Coffey (2018) recommended that a detailed soil assessment be carried out prior to any excavation works at the site.

### 9. 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).

The CSM from DP (2018) has been reviewed based on the additional information reviewed and is shown in the following Table 5.



#### Table 5: Conceptual Site Model

Source	Transport Pathway	Receptor
S1: Filling associated with site levelling COPC: Metals, TRH, BTEX, PAH, PCB, OCP, OPP, phenols and asbestos.	P1: Ingestion and dermal contact P2: Inhalation of dust and/or vapours	R1: Construction and maintenance workers R2: Site users (current and end users)
S3: Demolition of previous	P2: Inhalation of dust and/or vapours	R3: Adjacent users
buildings and previous land uses impacting filling and surficial soil	P3: Leaching of contaminants and vertical migration to groundwater	R4: Groundwater
COPC: Metals, TRH, BTEX, PAH, PCB, OCP, OPP, phenols and asbestos.	P4: Lateral migration of groundwater which eventually discharges to	P4: Surface water badies
S2: Adjacent land uses	surface water bodies	R4: Surface water bodies
COPC: Metals, TRH, BTEX, PAH.		
S3: Existing buildings	P1: Ingestion and dermal contact	R1: Construction and maintenance
COPC: Asbestos and PCB.	P2: Inhalation of dust and/or vapours	R2: Site users (current and end

Notes to Table 5:

TRH - Total recoverable hydrocarbons including light, mid and heavy fractions

BTEX - Monocyclic aromatic hydrocarbons - benzene, toluene, ethylbenzene and xylenes

PAH – Polycyclic aromatic hydrocarbons

OCP – Organochlorine pesticides

OPP – Organophosphorus pesticides

PCB – Polychlorinated Biphenyls

# 10. Fieldwork and Analysis

#### 10.1 Data Quality Objectives and Project Quality Procedures

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

- 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.

An evaluation of the DQO is presented in Appendix B.

#### **10.2 Data Quality Indicators**

The performance of the investigation in achieving the DQO was assessed through the application of Data Quality Indicators (DQI), defined as follows:

Precision:	A quantitative measure of the variability (or reproducibility) of data;			
Accuracy:	A quantitative measure of the closeness of reported data to the "true" value;			
Representativeness:	The confidence (expressed qualitatively) that data are representative of each media present on the site;			
Completeness:	A measure of the amount of useable data from a data collection activity;			
Comparability:	The confidence (expressed qualitatively) that data can be considered equivalent for each sampling and analytical event.			

An evaluation of the DQI is presented in Appendix B.

#### **10.3 Soil Sampling and Rationale**

Environmental field work, including drilling and soil sampling, was undertaken on 12 October 2018.

The minimum number of sampling points for a site of this size (0.27 ha) in accordance with the NSW EPA *Sampling Design Guidelines (1995)* for contaminated site investigation would be nine sampling points. However, given the previous sampling points (BH1 to BH4) form the PSI, a reduced number of sampling points (BH3A to BH9) was used based on a review of DP (2018) and a targeted area of environmental concern (refer CSM) including filling and the former commercial uses.

BH3A and BH4A were drilled to further characterise previously identified contamination in the soil. The test locations are shown on Drawing 1 in Appendix A.

Selected soil samples were analysed for the contaminants of potential concern (COPC) identified in the CSM. Samples were selected based on site observations (odour, staining etc.), PID readings and their location within the subsoil strata (i.e. filling or natural).



#### 10.4 Drilling Methods

Five boreholes were drilled as part of this DSI with a powered rig mounted on a Bobcat using a solidflight augers and two bores were drilled using hand tools in inaccessible locations with the objective of targeting sampling depths in filling (refer Section 2). The bores were shallow and the depth range achieved was between 0.5 m and 2.1 m bgl, with the filling penetrated where possible. The sampling process was considered adequate given the absence of volatile contaminants in DP (2018) and the absence of identified volatile contaminant sources. The actual depths of drilling are indicated in the borehole logs in Appendix C.

#### **10.5 Soil Sampling Procedures**

Environmental (soil) 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 C and samples selected for laboratory analysis were recorded on DP chain-of-custody (COC) sheets.

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.
- Labelling of sampling containers with individual and unique identification, including project number sample location and sample depth;
- Screening of replicate soil samples collected in sealed plastic bags for total photo-ionisable compounds using a calibrated PID; 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 primary sample analysis and ALS Environmental, accredited by NATA, was employed to conduct analysis of the interlaboratory duplicate. The laboratories are required to carry out in-house QC procedures.

#### 10.6 Analytical Rationale

The analytical scheme for soil samples was designed to obtain an indication of the potential presence and possible distribution of identified CoPC as identified in the CSM. Filling samples were analysed as a priority, and from varying depth, based on fieldwork observations (such as the presence of slag or staining) for the primary contaminants of concerns as identified in Section 6. The results of the analytical testing were compared with the adopted SAC discussed in Section 8.



# 11. Site Assessment Criteria

The proposed use for the site after redevelopment is as follows:

- Construction and use of a 19 storey building comprising:
  - Basement / lower ground level including car parking, a loading dock, back-of-house storage and plant, end-of-trip facilities and tertiary institution floorspace;
  - Ground level including retail tenancies, tertiary education lobby floorspace, a commercial office lobby, plant equipment and driveway ramp;
  - Above Ground levels comprising tertiary education and commercial floorspace;
  - Mid-rise and rooftop terraces and plant equipment;
- Landscaping and public domain works including the provision of a ground level through-site link; and
- Extension and augmentation of services and infrastructure as required.

The proposed development includes a basement across the site and the proposed uses are commercial and tertiary education. Therefore, the assessment criteria have been adopted for a commercial / industrial end use.

The analytical results from the laboratory testing have been assessed (as a Tier 1 assessment) against the investigation and screening levels in Schedule B1 of NEPC (2013). This guideline has been endorsed by the NSW EPA under the *Contaminated Land Management* Act 1997. The Schedule 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.

# 11.1 Health Investigation and Screening Levels

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

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

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



The generic HIL and HSL are considered to be appropriate for the assessment of contamination at the site. HIL D and HSL D have been adopted given that the proposed land use will be for commercial and tertiary education purposes.

As soil types encountered were variable, the most conservative HSL for the different soil types (sand, silt and clay) have been adopted. HSL for a depth of 0 m to < 1 m have been adopted as these are more conservative than those for greater depths.

The adopted HILs and HSLs for the contaminants of concern are shown in Table 6.



#### Table 6: Health Investigation Levels and Health Screening Levels for Soil Contaminants

Contaminant	HIL D (mg/kg)	HSL D for vapour intrusion (mg/kg)
Metals and Inorganics		
Arsenic	3000	-
Cadmium	900	-
Chromium (VI)	3600	-
Copper	240 000	-
Lead	1500	-
Mercury (inorganic)	730	-
Nickel	6000	-
Zinc	400 000	-
TRH		
C <sub>6</sub> – C <sub>10</sub> (less BTEX)	-	250
>C10-C16 (less Naphthalene)	-	NL
BTEX		
Benzene	-	4
Toluene	-	NL
Ethylbenzene	-	NL
Xylenes	-	NL
PAHs		
Benzo(a)pyrene TEQ	40	-
Naphthalene	-	NL
Total PAHs	4000	-
OCP		
DDT+DDE+DDD	3600	-
Aldrin + Dieldrin	45	-
Chlordane	530	-
Endosulfan (total)	2000	-
Endrin	100	-
Heptachlor	50	-
НСВ	80	-
Methoxychlor	2500	-
OPP		
Chlorpyrifos	2000	-
Other Organics		
PCBs (non dioxin- like PCB only)	7	-

Note: TEQ is Toxic Equivalency Quotient.

NL is 'Not Limiting'. If the derived soil HSL exceeds the soil saturation concentration, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, the HSL is given as NL.



### **11.2 Ecological Investigation Levels and Ecological Screening Levels**

Ecological Investigation Levels (EILs) and ecological screening levels (ESLs) to be determined in accordance with NEPC (2013), if ultimately deemed appropriate.

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; and
- 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'.* 

Based on the architectural drawings provided for the proposed development, it is understood that the proposed development will include excavation of a one level basement across the entire site footprint with minimal landscaping. Therefore, the value of the site for soil organisms and the risk of exposure of soil contamination to transitory wildlife is considered very low.

Therefore, it is considered that human health risk screening levels are more appropriate and EILs and ESLs are not relevant to the current assessment.

#### **11.3 Management Limits for Petroleum Hydrocarbons**

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

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

Management Limits to avoid or minimise these potential effects have been adopted in NEPC (2013) as interim Tier 1 guidance. Management Limits have been derived in NEPC (2013) for the same four petroleum fractions as the HSLs (F1 to F4). The adopted Management Limits, from Table 1B(7), Schedule B1 of NEPC (2013) are shown on Table 3. The following site specific data and assumptions have been used to determine the Management Limits:

- The Management Limits will apply to any depth within the soil profile;
- The Management Limits for commercial and industrial apply; and
- The soils encountered at the site comprised various types including sand and clay. A "coarse" soil texture (being the most conservative soil type) has been adopted.



#### **Table 7: Management Limits**

Analyte		Management Limit (mg/kg)
TRH	$C_{6} - C_{10}$	700
	>C10-C16	1,000
	>C16-C34	3,500
	>C <sub>34</sub> -C <sub>40</sub>	10,000

#### 11.4 Asbestos in Soil

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

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

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

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

A detailed asbestos assessment was not undertaken as part of these works as it was unknown at the time of preparing the proposal if asbestos was a likely contaminant. As an initial screen, the site assessment criteria for asbestos are as follows:

- No visible asbestos cement materials (ACM) at the sampling locations; and
- No asbestos detected at the laboratory reporting limit of 0.1 g/kg.

#### 11.5 Preliminary Waste Classification

The preliminary waste classification was generally done in accordance with the NSW EPA *Waste Classification Guidelines* 2014 (EPA, 2014).



Step	Comments	Rationale	
1. Is the waste special waste?	No	No asbestos containing materials (ACM), clinical or related waste, or waste tyres were observed in the test pits. Asbestos was not detected by the analytical laboratory.	
2. Is the waste liquid waste?	No	The fill comprised a soil matrix.	
3. Is the waste "pre-classified"?	No	The filling material is not pre-classified with reference to EPA (2014). The natural material, if classified as VENM, is pre-classified as General Solid Waste (non-putrescible).	
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 D2.	
6. Is the waste putrescible or non-putrescible?	No	The fill does not contain materials considered to be putrescible <sup>1</sup> .	

#### Table 8: Six Step Procedure for Waste Classification

Notes

1. 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).

# **12. Field Work Results**

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

The subsurface conditions encountered in the previous bores (DP 2018) and current site investigation can be summarised as:

CONCRETE PAVEMENT/ ASPHALTIC CONCRETE:	Typically 5-150 mm bgl of concrete pavement/asphaltic concrete in all boreholes.
FILLING:	Dark brown sandy clay filling, to depths of up to 1.6 m bgl, with traces of sandstone gravel and igneous gravel in all boreholes, traces of sandstone gravel, terracotta, glass fragments, rootlets, metal, plastic, tile and charcoal. Slag was observed in BH3 and BH6.Hydrocarbon odour were observed in BH3 at approximately 0.2 m bgl. Possible clinker was observed in BH4.



CLAY:	Red–brown to grey clay between depths of 0.4 m to 2.1 m bgl.		
SHALE:	Light brown, low strength weathered shale from 0.7 m, increasing to		

No free groundwater was observed whilst drilling boreholes, however water levels were recorded in the monitoring wells during the groundwater sampling event on 8 June 2018, and were at approximately 7.8 m bgl in BH1 and 8.8 m bgl in BH3. Groundwater sampling field sheets extracted from DP (2018) are included in Appendix C.

medium strength shale at 5.0 m in BH1 and 5.4 m in BH3.

# 13. Results of Laboratory Analysis

#### 13.1 Laboratory Results

The tabulated analytical results are summarised together with the SAC in Table D1 in Appendix D. The laboratory certificates of analysis and associated chain of custody documentation are provided in Appendix E.

For waste classification purposes, the results of laboratory analysis for soil samples are compared to criteria sourced from NSW EPA *Waste Classification Guidelines*, 2014 in Table D2 in Appendix D.

#### 13.2 Quality Assurance and Quality Control Results

The methodology, results and discussion of the field and laboratory QA/QC assessment are provided in Appendix B. Based on the results of the QA/QC assessment the analytical data is considerate to be suitable for use in assessing the contamination status of the site.

# 14. Discussion

#### 14.1 Contaminants in Soil

Concentrations of arsenic, cadmium, chromium, lead, mercury, nickel and zinc were within the respective SAC.

Concentrations of TRH, BTEX and naphthalene were within the respective SAC.

Concentrations of OCP and OPP were not detected above the laboratory's practical quantitation limits (PQL) and are within the respective SAC.

Concentrations of PCB were not detected above the laboratory's PQL and were within the SAC.



Concentrations of total phenols were not detected above the laboratory's PQL and were within the SAC.

Reported concentrations of PAH were below the adopted SAC.

It is noted that although no asbestos was detected at the laboratory's limit of reporting of 0.1 g/kg, the presence of terracotta, metal and plastic within filling indicates the possible presence of hazardous materials (including asbestos) within filling in untested locations and in existing structures at the site.

#### 14.2 Waste Classification

Concentrations of chemical contaminants for analysed filling samples are within the CT1 criteria for general solid waste classification under EPA (2014) with the exception of:

- Lead in primary samples BH3/0.2-0.3 m, BH3/0.5-0.6 m and BH4/0.3-0.4 m exceeding the GSW CT1 (100 mg/kg);
- B(a)P in primary samples BH3/0.2-0.3 m, BH3/0.5-0.6 m and BH4/0.3-0.4 m exceeding the GSW CT1 (0.8 mg/kg).

TCLP test were conducted on samples BH3A/0.2-0.3 and BH4A/0.3-0.4 m (near BH3 and BH4 respectively) for the analytes exceeding the CT1 thresholds. The SCC and TCLP concentrations for those samples were within the contaminant thresholds SCC1 and TCLP1, for GSW.

On the basis of the observation that the time of sampling and the reported analytical results, the extent of filling with a preliminary *in situ* waste classification of general solid waste (non-putrescible) (with TCLP) is classified. Further assessment and testing will need to be undertaken to provide final waste classification.

#### 14.3 Groundwater Impacts

Groundwater testing was conducted as part of the PSI. DP (2018) reported that concentrations of the selected analytes were below the SAC, with the exception of:

- Copper in BH1 and BH3- exceeding the GIL (1.4 μg/L); and
- Zinc in BH1 and BH3- exceeding the GIL (8 mg/L).

The minor exceedances are not considered to be significant and are common occurrences in urban groundwater environments, due to degrading of water supply infrastructure.



# **15. Conclusion and Recommendations**

On the basis of the findings of this DSI and the previous PSI, and in the context of the conceptual site model, it is concluded the site can be made suitable, from a site contamination standpoint, for the proposed commercial and tertiary education redevelopment subject to the following:

- Post demolition inspection and clearance for hazardous building materials by a qualified occupational hygienist;
- Inspection of the building footprints, once demolished, by an Environmental Consultant, for any signs of contamination;
- Additional sampling and testing in the demolished building footprint areas as a confirmation of the waste classification prior to excavation and off-site disposal;
- Visual confirmation of the removal of all fill, once completed, with a limited regime of sampling ad testing to (a) confirm the virgin excavated natural material (VENM) classification of the natural soils and (b) validate the removal of fill from the site, and the subsequent suitability of the site for the proposed development.

# 16. Limitations

Douglas Partners (DP) has prepared this report (or services) for this project at 2b-6 Hassall Street, Parramatta in accordance with DP's proposal SYD180976 dated 28 September 2018 and acceptance received from Gary Singh dated 19 September 2018. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Solution Consulting Australia 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.

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 (geotechnical / environmental / groundwater) components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

# Douglas Partners Pty Ltd

# Appendix A

Drawing

Notes About this Report



<b>d</b> N	<b>Douglas Partners</b>
Y	Geotechnics   Environment   Groundwater

CLIENT:	Charter Hall Pty Ltd		TITLE:	
OFFICE:	Sydney	DRAWN BY:	CL	
SCALE:	1:500@A3	DATE:	19.10.2018	

Site Plan
Detailed Site Investigation
2b-6 Hassall Street, Parramatta

# Legend





PROJECT No: 86415.02

1

**REVISION**:

DRAWING No:

0



#### Introduction

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

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

#### Copyright

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

#### **Borehole and Test Pit Logs**

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

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

#### Groundwater

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

 In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

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

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

#### Reports

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

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

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

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

# About this Report

#### **Site Anomalies**

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

#### **Information for Contractual Purposes**

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

#### **Site Inspection**

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

# Appendix B

Data Quality Assurance and Quality Control Procedures and Results



# DATA QUALITY ASSESSMENT

# Q1. Data Quality Objectives

The Detailed Site Investigation (DSI) 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.

Data Quality Objective	Report Section where Addressed
State the Problem	S1 Introduction
Identify the Decision	S1 Introduction (objective)
	S15 Conclusions and Recommendations
Identify Inputs to the Decision	S1 Introduction
	S2 Scope of Works
	S3 Site Identification and Description
	S4 Geology and Hydrogeology
	S5 Site History
	S6 Lot Search Report Review
	S7 Safe work Search
	S8 Review of Asbestos and Hazardous Material Pre-
	Demolition Survey
	S11 Site Assessment Criteria
	S13 Laboratory Results
Define the Boundary of the Assessment	S3 Site Identification and Description
	Site Drawings - Appendix A
Develop a Decision Rule	S11Site Assessment Criteria
Specify Acceptable Limits on Decision Errors	S10 Fieldwork and Analysis
	S11 Site Assessment Criteria
	QA/QC Procedures and Results – Sections Q2, Q3
Optimise the Design for Obtaining Data	S2 Scope of Works
	S2 Sample Location and Rationale
	QA/QC Procedures and Results – Sections Q2, Q3

#### Table Q1: Data Quality Objectives



# 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 8 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 <sup>1</sup>
Inter-laboratory replicates	5% primary samples	RPD <30% inorganics), <50% (organics)	yes <sup>2</sup>
Trip Spikes	1 per field batch	60-140% recovery	yes
Trip Blanks	1 per field batch	<pql lor<="" td=""><td>yes</td></pql>	yes

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

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

#### Table Q3: Laboratory QC

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

NOTES:

1

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

ALS: <10xPQL - any RPD; 10-20xPQL - 0-50%RDP; >20xPQL - 0-20%RPD

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

# Q2.1 Intra-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.



#### PAH TRH BTEX Metals Naphthalene Ethylbenzene Xylene Total >C10-C16 >C34-C40 >C16-C34 BaP TEQ Benzene Toluene C6-C10 Lab Sample ID Date Sampled Media Units total ВаР As Cd Cr Cu Pb Hg Ni Zn Fe Mn SOIL BH6/ 0.2-0.3 ELS 12/10/2018 filling 17 5 0.6 <25 <50 <0.2 <1 mg/kg 8 <0.4 32 120 0.4 93 0.4 <0.1 <100 <100 <1 <0.5 --4 filling ELS BD2/20181012 12/10/2018 mg/kg 7 <0.4 20 38 190 0.4 7 110 --3 0.5 0.3 <0.1 <25 <50 <0.2 <1 <100 <100 <1 <0.5 Difference 0 3 6 0 2 7 0 0 0 0 0 mg/kg 1 70 0.1 0 0 0 0 --1 0.1 RPD % 13 16 33 0 17 45 0 17 29 18 29 0 0 0 0 0 0 0 0 0 --

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

Notes: - not applicable, not tested
Page 5 of 8

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

- The typical low actual difference in concentrations of the replicated pairs where one RPD exceedances occurred. High RPD value reported for Pb reflect the small differences between two small numbers.
- The number of replicate pairs being collected from fill soils which were heterogeneous in nature;
- Soil replicates, rather than homogenised soil duplicates, were used to minimise the risk of possible volatile loss, hence greater variability can be expected;
- 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.



				Metals						РАН			TRH			BTEX										
Lab	Sample ID	Date Sampled	Media	Units	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Fe	Mn	total	BaP TEQ	BaP	Naphthalene	C6-C10	>C10-C16	>C16-C34	>C34-C40	Benzene	Ethylbenzene	Toluene	xylene
ELS	BH7/ 0.2-0.3	11/10/2018	filling	mg/kg	<4	<0.4	11	73	2	0.1	85	34	-	-	4.6	0.7	0.4	<0.1	<25	<50	<100	<100	<0.2	<1	<0.5	<1
ALS	BD1/20181012	11/10/2018	filling	mg/kg	<5	<1	18	87	<5	<0.1	130	53	-	-	<0.5	1.2	<0.5	<0.5	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5
	Diffe	erence		mg/kg	1	0.6	7	14	3	0	45	19	-	-	4.1	0.5	0.1	0.4	15	0	0	0	0	0.5	0	0.5
	R	PD		%	0	0	48	18	0	0	42	44	-	-	0	53	0	0	0	0	0	0	0	0	0	0

#### Table Q5: Relative Percentage Difference Results – Inter-laboratory Replicates

Notes: - not applicable, not tested

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

- The inhomogeneity of the samples. There is a high variability in concentration of some of the metals (Cr, Ni, and Zn) in the soil samples and therefore high RPD values reported;
- 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;
- Almost all 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 onsite;
- 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.



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

#### Table Q6: Data Quality Indicators

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.

Page 8 of 8

## Appendix C

Borehole Logs and Groundwater Field Sheets

#### 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 thinwalled 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 insitu 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:

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

15, 30/40 mm

## Sampling Methods

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

#### Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

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

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

# Soil Descriptions

#### **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:

Туре	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:

Туре	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**

s Pai

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		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 Descriptions

#### **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 <sub>(50)</sub> 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	М	0.3 - 1.0	6 - 20
High	Н	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:

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

#### Introduction

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

#### **Drilling or Excavation Methods**

С	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

$\triangleright$	Water seep
$\bigtriangledown$	Water level

#### Sampling and Testing

- A Auger sample
- B Bulk sample
- D Disturbed sample
- E Environmental sample
- 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**

В	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

21

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

#### Coating or Infilling Term

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

#### **Coating Descriptor**

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

#### Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

#### Roughness

ро	polished
ro	rough
sl	slickensided
sm	smooth
vr	verv rouah

#### Other

fg	fragmented
bnd	band
qtz	quartz

## Symbols & Abbreviations

#### Graphic Symbols for Soil and Rock

#### General

oo	
A. A. A. A A. D. A. A	

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



Talus

#### Sedimentary Rocks



#### Limestone

#### Metamorphic Rocks

Slate, phyllite, schist

Quartzite

#### Igneous Rocks



Granite

Dolerite, basalt, andesite

Dacite, epidote

Tuff, breccia

Porphyry

อบเมอเ

Gneiss

SURFACE LEVEL: 12.4 AHD EASTING: 315560 **NORTHING:** 6256226 DIP/AZIMUTH: 90°/--

BORE No: 1 **PROJECT No: 86415.00 DATE:** 1/6/2018 SHEET 1 OF 1

Γ			Description	Degree of Weathering	<u>.</u>	Rock Strenath	Fracture	Discontinuities	Sa	amplir	ng & I	n Situ Testing
Ъ	Dep (m	oth   )	of		Log		Spacing (m)	B - Bedding J - Joint	be	sre : %	۵° ۵	Test Results
	Ň	<i>,</i>	Strata	HW HW SK	G	Ex Lo Very High Ex High	0.01 0.10 0.10	S - Shear F - Fault	Ty	Rec	Å Å	∝ Comments
12	- C - - - -	0.4	ASPHALTIC CONRETE FILLING - grey, silty sand filling with some fine to medium sandstone gravel 0.3m: wet						A/E A/E A/E			PID <1ppm PID <1ppm PID <1ppm
-	- 1	1.1	CLAY - red mottled yellow-grey, clay, damp 0.9m: becoming shaley clay					Note: Unless otherwise stated, rock is fractured	<u>A/E*</u>			PID <1ppm
-==	-		SHALE: extremely low to very low strength, extremely to highly weathered fragmented grey and					bedding dipping 0-10° with iron staining or clay	A/E			PID <1ppm
10	-2	2.0	SHALE: very low and medium strength banded, extremely to highly weathered, fragmented, pale grey		X			1.7m: CORE LOSS: 300mm	с	66	0	
-	- 2	2.78	and brown shale					2.52m: CORE LOSS: 260mm				
- 6	- 3	3.55 ·	SHALE: low strength, highly to					3.41m: J50° pl, ro, fe ∖ 3.59m: J20° pl, ro, cly	С	79	0	PL(A) = 0.9
	- 4	3.88	moderately weathered, fractured and fragmented, dark grey shale					1 1mm 3.6m: J35° pl, ro, cly 3mm 3.79m: CORE LOSS: 90mm 3.90m: Ds 20mm -3.95-4.05m: J(x2) 40.50° pl, ro, fo	с	100	21	PL(A) = 0.2
	-5	5.0	SHALE: low to medium strength, highly to moderately weathered, fractured, dark grey shale					4.10-4.15m: J(x2) 15-30° pl, ro, cly 2mm 14.20m: Ds 80mm 14.28m: J15° pl, ro, fe 14.42m: J45°, st, ro, fe				
9	-6	5.55	SHALE - medium strength, slightly weathered then fresh stained, fragmented then fractured, dark grey shale					4.45m: Ds 50mm 4.50m: J70° pl, ro, fe 4.51-4.60m: J(x5) 20°, pl, ro, fe 4.62m: Ds 80mm 4.78m: J70° pl, ro, fe 4.81m: Ds 90mm	с	94	17	PL(A) = 0.2 PL(A) = 0.7
-		6.5	SHALE: medium strength, fresh stained, slightly fractured, dark grey shale					4.95m: J15° pl, ro, cly 1mm 5.06-5.34m: J85°, pl, ro, fe				
	- 8			· · · · · · · · · · · · · · · · · · ·				120mm 5.60-5.63m: J(x2) 25°, pl, ro, fe 5.70-5.79m: J(x2) 80°, pl, ro, fe 5.8m: J45° pl, ro, fe 6.10m: J(x2) 20° pl, ro, fe -6.21-6.29m: J(x5)	с	100	60	PL(A) = 0.7 PL(A) = 0.4
3 4	- 8  - 9 - 9    	s.37 ·	Bore discontinued at 8.37m - Target depth reached					120-45° pl, ro, fe 6.40m: J40°, pl, ti, fe 6.51m: J45° pl, ro, fe 6.58m: J40°, pl, ro, fe 7.00-7.25m: J (x3) 60° pl, ro, cln 7.45m: J45°, st, ro, fe 8.06m: J20°, pl, ro, fe 8.10-8.18m: J(x3) 60° pl, ro, fe 8.27m: J65°, pl, ro, fe				
RI	<b>G</b> : В	obc	at <b>DRILL</b>	<b>ER:</b> GM	1	LOG	GED: NW/L	LS CASING: HC	to 1.	5m	I	

#### TYPE OF BORING: SFA (TC-bit) to 1.5m; NMLC Coring to 8.37m WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: \*BD1/20180601 taken at 0.9-1.0m Well installed. Screen 1.5-8.37m. Blank 0.0-1.5m. Gravel Bentonite 1.0-1.5m.

	SAME	PLIN	G & IN SITU TESTING	LEG	END		
	A Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)		
	B Bulk sample	Р	Piston sample	PL(A	A) Point load axial test Is(50) (MPa)		
	BLK Block sample	U,	Tube sample (x mm dia.)	PL(E	) Point load diametral test ls(50) (MPa)		Inningiae Darthere
	C Core drilling	Ŵ	Water sample	pp	Pocket penetrometer (kPa)		
	D Disturbed sample	⊳	Water seep	S	Standard penetration test		
	E Environmental sample	Ŧ	Water level	V	Shear vane (kPa)		Geotechnics   Environment   Groundwater
-						 _	



CHDPM Ltd and WSU & WGD Pty Ltd **Proposed Commercial Development** LOCATION: 2-6 Hassall Street, Parramatta

CHDPM Ltd and WSU & WGD Pty Ltd

Proposed Commercial Development

LOCATION: 2-6 Hassall Street, Parramatta

CLIENT:

PROJECT:

SURFACE LEVEL: 13.0 AHD **EASTING:** 315553 NORTHING: 6256255 **DIP/AZIMUTH:** 90°/--

BORE No: 2 **PROJECT No:** 86415.00 **DATE:** 8/6/2018 SHEET 1 OF 1

Г		Description	Degree of	0	Rock	<u> </u>	Fracture	Discontinuities	Sa	mplir	ng & l	n Situ Testing
뉟	Depth	of	vveathering	ind bo		ate	Spacing	B Bedding I loint	e	۵%	0	Test Results
[	(m)	Strata	2 2 3 2 10 10	ل ق	gradiu   lo		88 98 3 (III)	S - Shear F - Fault	Typ	č č	RQI %	&
te e	0.02	ASHPHALIC CONCRETE /	面上をの開催	$\sim$		1 	<u> </u>			ш		Comments
Ł	- 0.3	FILLING: dark brown, silty sand		$\bigotimes$					A			PID < 1 ppm
ŧ	-	filling, trace fine sandstone gravel		$\bigotimes$		¦			A			PID < 1 ppm
ŧ	0.7	The full ling or single mottled red-arev		$\boxtimes$								
Ē	1	clay filling, trace igneous gravel				¦			A			PID < 1 ppm
Ē	E'	SHALE: light brown mottled grey,				į	i ii ii					
ŧ	È.	extremely weathered shale			-             -							
ŧ	- 1.6	Para diagontinued at 1 6m		==		i l			A,			PID = 54 ppm
F	-	- Target depth reached										
Ę÷	2					i						
ŀ												
ŧ	-					i						
ŧ	F											
F_	-					¦						
Ē						į –						
Ł	-					¦						
ŧ	-					į						
F	F					¦						
-0	4					į						
Ł	-					¦						
ŧ	-					i	i ii ii					
F	-					¦						
Ē	5					i						
Ē												
ŧ	-					i						
ŧ	-											
F	F					¦						
Fr	6											
Ł	ļ					¦						
ŧ	F					į						
ŧ	-					¦						
E	[					j						
Ē	ľ					¦						
ŧ	-					i	i ii ii					
ŧ	-											
Ē	E											
-00	-8											
ŧ	ļ											
ŧ	ļ											
ŧ	F											
Ē.,	La											
Ę												
ŧ	-					į						
ŧ	ţ					¦						
Ē	Ē											
Ľ		1										

RIG: Bobcat

DRILLER: GM TYPE OF BORING: SFA (TC-Bit) to 1.6m

LOGGED: NW

CASING: Uncased

WATER OBSERVATIONS: No free groundwater observed whilst augering **REMARKS:** 

SAM	PLIN	G & IN SITU TESTING	LEG	END					
A Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)					
B Bulk sample	Р	Piston sample	PL(A	A) Point load axial test Is(50) (MPa)			-		_
BLK Block sample	U,	Tube sample (x mm dia.)	PL(I	D) Point load diametral test Is(50) (MPa)			6	Partner	G
C Core drilling	Ŵ	Water sample	pp	Pocket penetrometer (kPa)		Budgia	3		J
D Disturbed sample	⊳	Water seep	S	Standard penetration test					
E Environmental sample	Ŧ	Water level	V	Shear vane (kPa)		Geotechnics   En	iviro	onment   Groundwat	ter
			-					ereanana	

CLIENT: PROJECT:

CHDPM Ltd and WSU & WGD Pty Ltd Proposed Commercial Development LOCATION: 2-6 Hassall Street, Parramatta

SURFACE LEVEL: 12.8 AHD EASTING: 315590 **NORTHING:** 6256267 **NORTHING:** 6256267 **DIP/AZIMUTH:** 90°/-- BORE No: 3 **PROJECT No:** 86415.00 **DATE:** 8/6/2018 SHEET 1 OF 1

Γ		Description	Degree of	Rock Strength	Fracture	Discontinuities	Sampling & I	n Situ Testing
ā	Depth	of			Spacing (m)	B - Bedding J - Joint	e e%O	Test Results
	(11)	Strata	Gr Gr		0.100	S - Shear F - Fault	Reconstruction	& Comments
	- - - - - - - - - - - - - - - - - - -	FILLING: dark brown, silty clay filling with some sand, sandstone gravel (10-20mm) and trace rootlets, charcoal and fragments of glass and terracotta. 0.2m: Slag and hydrocarbon odour					<u>A</u> <u>A</u> <u>A*</u>	PID < 1 ppm PID = 9 ppm PID < 1 ppm
È	-1	0.4m: with some orange clay					A	PID < 1 ppm
	1.2	CLAY: orange mottled red-grey clay with trace charcoal					A	PID < 1 ppm
	=-2	weathered, grey mottled orange shale						
-		1.5m: becoming grey 1.7m: very low strength with medium strength bands (inferred from auger refusal and surrounding geology)						
Ĭĭ	0							
- - - - - - - - - - - -	-4 							
	- 6	5.4m: medium strength (inferred from rock roller refusal and drill cuttings)						
	- 7 - 7 7 							
	- 8 - 8 							
	2 - - - - - - - - - - - - -							
L F T	RIG: Bobo	Bore discontinued at 10.0m - Target adepth reached DRILL	<b>-ER:</b> GM	LOG(	GED: NW	CASING: HQ	to 4.6m	
۷	VATER O	BSERVATIONS: No free groundwat	er observed whilst			0 10.0m		
- F		SU1/20180608 taken at 0 5-0 6m	Auger refusal at	1 /m				

Well installed. Screen 1.8-10.0m. Blank 0.0-1.8m. Gravel Bentonite 0.9-1.5m.

	SAM	PLIN	G & IN SITU TESTING	LEG	END		
	A Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)		
	B Bulk sample	Р	Piston sample	PL(/	A) Point load axial test Is(50) (MPa)		
	BLK Block sample	U,	Tube sample (x mm dia.)	PL(I	D) Point load diametral test Is(50) (MPa)		l Dollaise Dartnere
	C Core drilling	Ŵ	Water sample	pp	Pocket penetrometer (kPa)		
	D Disturbed sample	⊳	Water seep	S	Standard penetration test	' I	
	E Environmental sample	Ŧ	Water level	V	Shear vane (kPa)		Geotechnics   Environment   Groundwater
1							

CHDPM Ltd and WSU & WGD Pty Ltd

Proposed Commercial Development

LOCATION: 2-6 Hassall Street, Parramatta

CLIENT:

PROJECT:

SURFACE LEVEL: 11.8 AHD **EASTING:** 315595 NORTHING: 6256240 **DIP/AZIMUTH:** 90°/--

BORE No: 4 **PROJECT No: 86415.00 DATE:** 8/6/2018 SHEET 1 OF 1

Γ		Description	Degree of	<u>.</u>	Rock Strength	Fracture	Discontinuities	Sampling &	In Situ Testing
Ъ	Depth (m)	of	Wednering	iraph Log		Spacing (m)	B - Bedding J - Joint	»DD DD	Test Results
		Strata	H M N N N H M N N N N N N N N N N N N N	U	Ex Low Low Medi High Ex H	0.01	S - Shear F - Fault	É C a K .	Comments
ŧ	-	FILLING: brown, silty sand filling with some terracotta tile fragments		$\bigotimes$				A	PID < 1 ppm
F	-	and trace rootlets, fine sandstone gravel and possible asphalt or		$\bigotimes$				A	PID < 1 ppm
Ē.	0.7			$\bigotimes$					
-	- - 1	0.3m: light grey and red sandstone cobble				, ,, ,, ,, , ,, ,, ,, , ,, ,, ,,		_ <u>A*</u>	PID = 1 ppm
	- 1.5	CLAY: red-orange clay with trace						A	PID = 2 ppm
- - -	- 1.9	SHALE: light brown, weathered shale						<u> </u>	PID < 1 ppm
ŧ	-2	Bore discontinued at 1.9m - Target depth reached							
ŀ	-								
Ē	-								
-00	-								
ŀ									
Ē	-								
Ē									
F	-4								
E	-								
ŧ									
	-								
Ē	-5								
Ē	-								
ŧ	-								
-0	-								
ŧ	-6								
F	-								
Ē	-								
	-								
F	Ę								
Ē	-								
ŧ.	-								
Ę	-8								
ŧ	t L								
ł	ŀ								
	Ē								
ŧ	-9								
F	-								
È									
-~	-								
Ľ	[]			I					

RIG: Bobcat

DRILLER: GM TYPE OF BORING: SFA (TC-Bit) to 1.9m

LOGGED: NW

CASING: Uncased

WATER OBSERVATIONS: No free groundwater observed whilst augering **REMARKS:** 

SAM	PLIN	G & IN SITU TESTING	LEG	END		
A Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)		
B Bulk sample	Р	Piston sample	PL(A	A) Point load axial test Is(50) (MPa)		
BLK Block sample	U,	Tube sample (x mm dia.)	PL(C	) Point load diametral test ls(50) (MPa)	1.1	I Dollaise Darthere
C Core drilling	Ŵ	Water sample	pp	Pocket penetrometer (kPa)		<b>Dugias Fai liicis</b>
D Disturbed sample	⊳	Water seep	S	Standard penetration test	/	
E Environmental sample	Ŧ	Water level	V	Shear vane (kPa)		Geotechnics   Environment   Groundwater

Charter Hall Holdings Pty Ltd

LOCATION: 2-6 Hassall Street, Parramatta

Proposed Commercial Development

CLIENT: PROJECT: **SURFACE LEVEL:** 12.8 AHD **EASTING:** 315590 **NORTHING:** 6256267 **DIP/AZIMUTH:** 90°/-- BORE No: BH3A PROJECT No: 86415.02 DATE: 12/10/2018 SHEET 1 OF 1

### Sampling & In Situ Testing Well Description Graphic Log Water Depth Sample Ъ of Depth Construction Type Results & Comments (m) Strata Details FILLING: Dark brown silty clay filling with some sandstone gravel, trace of rootlets and slag 0.2 А 0.3 0.5 Bore discontinued at 0.5m Target Depth Reached • 1 1 -2 -2 .0 - 3 -3 •4 -4

RIG: Bobcat DRILLER: SS

LOGGED: CL

CASING: Uncased

TYPE OF BORING: Solid Flight Auger WATER OBSERVATIONS: No Free Groundwater Observed REMARKS:

	SAMF	PLINO	<b>3 &amp; IN SITU TESTING</b>	LEGE	IND
Α	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
В	Bulk sample	Р	Piston sample	PL(A	) Point load axial test Is(50) (MPa)
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D	) Point load diametral test Is(50) (MPa)
С	Core drilling	w	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	⊳	Water seep	S	Standard penetration test
E	Environmental sample	Ŧ	Water level	V	Shear vane (kPa)



Charter Hall Holdings Pty Ltd

LOCATION: 2-6 Hassall Street, Parramatta

Proposed Commercial Development

CLIENT: PROJECT: **SURFACE LEVEL:** 11.8 AHD **EASTING:** 315595 **NORTHING:** 6256240 **DIP/AZIMUTH:** 90°/-- BORE No: BH4A PROJECT No: 86415.02 DATE: 12/10/2018 SHEET 1 OF 1

## Sampling & In Situ Testing Graphic Log Well Description Water Depth Sample Ъ of Depth Construction Type Results & Comments (m) Strata Details FILLING: Red-brown silty sand filling with some sandstone gravel and rootlets 0.3 А 0.4 0.5 Bore discontinued at 0.5m Target Depth Reached • 1 1 -2 -2 - 3 -3 •4 -4

RIG: Bobcat DRILLER: SS

LOGGED: CL

CASING: Uncased

TYPE OF BORING: Solid Flight Auger WATER OBSERVATIONS: No Free Groundwater Observed REMARKS:

	SAMPLING & IN SITU TESTING LEGEND											
А	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)							
В	Bulk sample	Р	Piston sample	PL(A	) Point load axial test Is(50) (MPa)							
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D	) Point load diametral test Is(50) (MPa)							
С	Core drilling	Ŵ	Water sample	pp	Pocket penetrometer (kPa)							
D	Disturbed sample	⊳	Water seep	S	Standard penetration test							
E	Environmental sample	Ŧ	Water level	V	Shear vane (kPa)							



SURFACE LEVEL: --EASTING: 315565 NORTHING: 6256245 DIP/AZIMUTH: 90°/-- BORE No: BH5 PROJECT No: 86415.02 DATE: 12/10/2018 SHEET 1 OF 1

#### Sampling & In Situ Testing Well Description Graphic Water Depth Log Ъ Sample Construction of Depth Type Results & Comments (m) Strata Details CONCRETE PAVEMENT 0.15 FILLING: Brown sandy clay filling with fine to medium 0.2 А igneous gravel 0.3 0.4 0.4 CLAY: Red-brown clay with trace of ironstone gravel А 0.5 0.9 А 1.0 1.0 1 Bore discontinued at 1.0m Target Depth Reached - 2 -2 • 3 •3 •4 -4 LOGGED: CL CASING: Uncased

 RIG: Hand Tools
 DRILLER: SS

 TYPE OF BORING:
 Hand auger to 1.0m

 WATER OBSERVATIONS:
 No Free Groundwater Observed

 REMARKS:

CLIENT:

PROJECT:

LOCATION:

Charter Hall Holdings Pty Ltd

2-6 Hassall Street, Parramatta

Proposed Commercial Development

 SAMPLING & IN SITU TESTING LEGEND

 A
 Auger sample
 G
 Gas sample
 PID
 Photo ionisation detector (ppm)

 B
 Bulk sample
 Piston sample
 PIL(A) Point load axial test Is(50) (MPa)

 BLK Block sample
 Ux
 Tube sample (x mm dia.)
 PL(D) Point load axial test Is(50) (MPa)

 C
 Core drilling
 W
 Water sample
 pp
 Pocket penetrometer (kPa)

 D
 Disturbed sample
 F
 Water seep
 S
 Standard penetration test

 E
 Environmental sample
 F
 Water level
 V
 Shear vane (kPa)



Charter Hall Holdings Pty Ltd

LOCATION: 2-6 Hassall Street, Parramatta

Proposed Commercial Development

CLIENT:

PROJECT:

SURFACE LEVEL: --EASTING: 315584 NORTHING: 6256234 DIP/AZIMUTH: 90°/-- BORE No: BH6 PROJECT No: 86415.02 DATE: 12/10/2018 SHEET 1 OF 1

Γ		Description	. <u>0</u>		Sam	npling &	& In Situ Testing		Well
RL	Depth (m)	of	raph Log	be	oth	alqr	Results &	Vater	Construction
		Strata	Ū	۲ ۲	Dep	Sam	Comments	>	Details
Γ	-	CONCRETE PAVEMENT	4.4	•					-
	0.15	FILLING: Dark brown sandy clay filling with fine to medium igneous gravel and trace of sandstone gravel, metal, plastic, tile, charcoal and wire		A*	0.2				-
	-			A	0.5 0.6				-
	- - - 1 -	0.8m : trace of slag		A	0.9 1.0				- - -1 -
	-			> > >					-
	- 1.6	CLAY: Red-brown clay with fine to medium igneous gravel							-
	-2				2.0				-2
	- 2.1	Bore discontinued at 2.1m			-2.1-				
	-	Target Depin Reached							
	-3								3 
	-								-
	-								-
	-4								
	-								
	-								-
R	I <b>G</b> : Hand	Tools DRILLER: SS		1.00	GFD	·CI	CASIN	з·п	ncased

RIG: Hand ToolsDRILLER: SSTYPE OF BORING:Hand auger to 2.1mWATER OBSERVATIONS:No Free Groundwater ObservedREMARKS:BD2/20181012 taken from 0.2-0.3m

 SAMPLING & IN SITU TESTING LEGEND

 A
 Auger sample
 G
 Gas sample
 PID
 Photo ionisation detector (ppm)

 B
 Bulk sample
 P
 Piston sample
 PIL
 Pioint bad axial test Is(50) (MPa)

 BLK Block sample
 U
 Tube sample (x mm dia.)
 PL(A) Point load diametral test Is(50) (MPa)

 C
 Core drilling
 W
 Water sample
 pp
 Pocket penetrometer (kPa)

 D
 Disturbed sample
 V
 Water seep
 S
 Standard penetration test

 E
 Environmental sample
 ¥
 Water level
 V
 Shear vane (kPa)



Charter Hall Holdings Pty Ltd

LOCATION: 2-6 Hassall Street, Parramatta

Proposed Commercial Development

CLIENT:

PROJECT:

**SURFACE LEVEL:** 12.9 AHD **EASTING:** 315578 **NORTHING:** 6256263 **DIP/AZIMUTH:** 90°/-- BORE No: BH7 PROJECT No: 86415.02 DATE: 12/10/2018 SHEET 1 OF 1

RL	Depth (m)	of Strata ASPHALTIC CONCRETE	Graph Log	ype	ţ	ple		ater	Construction	
	0.1	Strata ASPHALTIC CONCRETE	Ū	2		=	Results &	) Š	Construction	1
	0.	ASPHALTIC CONCRETE		-	Dep	Sam	Comments	>	Details	
	0.								-	
		FILLING: Dark brown sandy clay filling with fine to medium igneous gravel and trace of sandstone gravel	$\bigotimes$	A*	0.2 0.3				-	
	0.4	FILLING : Red-brown clay filling with trace of igneous gravel		A	0.5 0.6				-	
12-	0.8	8 SHALE: Light brown extremely weather shale	<u> </u>		0.9				-	
	· 1			A	1.0				-1	
+ +				А	1.4				-	
	1.	<sup>5</sup> Bore discontinued at 1.5m Target Depth Reached			—1.5—				-	
	-2								- -2 -	
									-	
									-	
-9-	•3								-3	
									-	
									-	
-の- 	- 4								- -4 -	
									-	
									-	

LOGGED: CL

 RIG:
 Bobcat
 DRILLER:
 SS

 TYPE OF BORING:
 Solid Flight Auger

 WATER OBSERVATIONS:
 No Free Groundwater Observed

 REMARKS:
 BD1/20181012 taken from 0.2-0.3m

 SAMPLING & IN SITU TESTING LEGEND

 A
 Auger sample
 G
 Gas sample
 PID
 Photo ionisation detector (ppm)

 B
 Buik sample
 P
 Piston sample
 PIL(A) Point load axial test Is(50) (MPa)

 BLK Block sample
 Ux
 Tube sample (x mm dia.)
 PL(A) Point load diametral test Is(50) (MPa)

 C
 Core drilling
 W
 Water sample
 pp
 Pocket penetrometer (kPa)

 D
 Disturbed sample
 F
 Water seep
 S
 Standard penetration test

 E
 Environmental sample
 Water level
 V
 Shear vane (kPa)



CASING: Uncased

SURFACE LEVEL: 11.5 AHD EASTING: 315614 NORTHING: 6256242 DIP/AZIMUTH: 90°/-- BORE No: BH8 PROJECT No: 86415.02 DATE: 12/10/2018 SHEET 1 OF 1

#### Sampling & In Situ Testing Well Description Graphic Water Depth Log 뭅 Sample Construction of Depth Type Results & Comments (m) Strata Details CONCRETE PAVEMENT 0.1 FILLING : Dark brown sandy clay filling with fine to medium igneous gravel and trace of slag 0.2 А 0.3 0.3 FILLING : Shaly clay filling with fine to medium igneous 0.4 gravel and trace of slag А 0.5 0.5 CLAY: Red-brown clay 0.6 А 0.7 1.0 • 1 1 А 1.1 1.1 Bore discontinued at 1.1m Target Depth Reached - 2 -2 3 -3 -4 - 4 LOGGED: CL CASING: Uncased

 RIG: Hand Tools
 DRILLER: SS

 TYPE OF BORING:
 Hand auger to 1.1m

 WATER OBSERVATIONS:
 No Free Groundwater Observed

 REMARKS:

CLIENT:

PROJECT:

LOCATION:

Charter Hall Holdings Pty Ltd

2-6 Hassall Street, Parramatta

Proposed Commercial Development

 SAMPLING & IN SITU TESTING LEGEND

 A
 Auger sample
 G
 Gas sample
 PIL
 Photo ionisation detector (ppm)

 B
 Bulk sample
 P
 Piston sample
 PL(A) Point load axial test Is(50) (MPa)

 BLK Block sample
 U
 Tube sample (x mm dia.)
 PL(D) Point load axial test Is(50) (MPa)

 C
 Core drilling
 W
 Water sample
 p
 Pocket penetrometer (kPa)

 D
 Disturbed sample
 V
 Water level
 V
 Sharar vane (kPa)



**SURFACE LEVEL:** 12.3 AHD **EASTING:** 315605 **NORTHING:** 6256272 **DIP/AZIMUTH:** 90°/-- BORE No: BH9 PROJECT No: 86415.02 DATE: 12/10/2018 SHEET 1 OF 1

Γ			Description	. <u>ט</u>		San	npling &	& In Situ Testing		Well
Ч	De (r	epth m)	of	raph Log	be	pth	aldr	Results &	Nate	Construction
		,	Strata	Ū	L _	Del	San	Comments		Details
	_	01	CONCRETE PAVEMENT	44						-
12	-	0	FILLING : Dark brown clay filling with fine to medium igneous gravel and trace of slag		A	0.2				-
-					A	0.5 0.6				
-	-	0.8	CLAY: Red-brown clay with trace of ironstone gravel			0.9				
-	-1					1.0				-1
-==	-	1.5			A	1.4				-
-	-		Bore discontinued at 1.5m Target Depth Reached							-
-	-2									-2
-10	-									-
-										-
-	-									
-	-3									-3
-6 -	-									-
-										
-	- 4									-4
-	-									
	[									
-	-									

RIG: Bobcat DRILLER: SS TYPE OF BORING: Solid Flight Auger

CLIENT:

PROJECT:

Charter Hall Holdings Pty Ltd

LOCATION: 2-6 Hassall Street, Parramatta

Proposed Commercial Development

LOGGED: CL

CASING: Uncased

WATER OBSERVATIONS: No Free Groundwater Observed REMARKS:

	SAMPLING & IN SITU TESTING LEGEND										
A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)						
В	Bulk sample	Р	Piston sample	PL(A	) Point load axial test Is(50) (MPa)						
BLK	Block sample	U,	Tube sample (x mm dia.)	PL(D	) Point load diametral test Is(50) (MPa)						
С	Core drilling	W	Water sample	рр	Pocket penetrometer (kPa)						
D	Disturbed sample	⊳	Water seep	S	Standard penetration test						
E	Environmental sample	Ŧ	Water level	V	Shear vane (kPa)						



# **Douglas Partners** Geotechnics | Environment | Groundwater

#### Proundwater Field Sheet

Groundwater Field She	et		Bore	Bore Volume = caung volume + filter pack = volume				
Project and Bore Installation	Details				$= \pi h_1 d_2^{3/4} +$	n(zh,d,²/4-zh:d:²/4)		
Bore / Standpipe ID:	BHI		Whe	re: ⊼=3.14				
Project Name:	Proposed	Commerc	ial Devela	)mont	n = peretaty (0.3 i	for most filter pack		
Project Number:	86415.0	0	· · · · · · · · · · · · · · · · · · ·		maternal)			
Site Location:	2-6 Has	sall st. P.	arramatta		h: = height of wat	er column *		
Bore GPS Co-ord:		<u> </u>		······	h <sub>2</sub> = length of film	r pack		
Installation Date:	116/18				$d_1 = d_2 $ meter of c	annä .		
GW Level (during drilling):	nla -	m bgl		Bor	e Vol Normally	: 7.2*h		
Well Depth:	A.C	m bgl						
Screened Interval:	15-8.5	m bgl						
Contaminants/Comments:	-							
Bore Development Details								
Date/Time:	8.6.18	1100		<u> </u>				
Purged By:	5141	CIN						
GW Level (pre-purge):	5-96	m bgl						
GW Level (post-purge):	8.15	m bal						
PSH observed:	Yes / (No)(	interface /	visual). Thickn	ess if observed	•			
Observed Well Depth:	8 45	m bal		·····				
Estimated Bore Volume:	18	L		_				
Total Volume Purged:	(target: no drill	mud. min 3 w	ell vol. or drv ).	-50c-10	RY-U	able ha		
Equipment:	Tudde	1 Avanda 1	20, er ol		/	Nump.		
Micropurge and Sampling De	tails	<u></u>		1	/	/		
Date/Time:	12612	1, 200	<u> </u>	2				
Sampled By:	NWITT	1	<i></i>					
Weather Conditions:	Cloudy	1 . L. u Ofici			Ø			
GW Level (pre-purge):	7 7/	m bal						
GW Level (pre-purge).	7:20	m bal	·····					
DSH observed:	Yes / (No) (	interface /	visual ) Thickn	ess if observed	•			
Observed Well Depth:	V dr Ch	m hal						
Estimated Bore Volume:	4.(							
Total Volume Purged:	4.0	<u> </u>						
rotal volume r diged.	0							
Equipment:	renpump							
	L	Water Quality	/ Parameters			· · · · · · · · · · · · · · · · · · ·		
Time / Volume	Temp (°C)	DO (mg/L)	EC (µS or mS/cm)	pН	Turbidity	Redox (mV)		
Stabilisation Criteria (3 readings)	0.1°C	+/- 0.3 mg/L	+/- 3%	+/- 0.1	+/- 10%	+/- 10 mV		
13/107	2014	3.72	1742	5:37	18.5	22020		
13 (12	20.4	3.50	1712	5:37	2.611	213		
	20.0	3.17	1245	5.60	1.51	206		
12 11	70.7	2.2 -7	17 81	5.25	7611	Cer O		
	20.2							
· · · · · · · · · · · · · · · · · · ·								
······································								
	<u> </u>							
Additional Readings Following	DO % Sat	SPC	TDS					
stabilisation:								
		Sample	Details	I				
Sampling Depth (rationale):	8	m bal. Mich	la col Ce	1				
Sample Appearance (e.g.	0		<u></u>					
colour, siltiness odour):	der,	colourle	55					
Sample ID:	BHI							
QA/QC Samples:		·			<u>Λ</u>			
Sampling Containers and	14 Anto	- X Cen	1 Lacht	, filtered	. )			
filtration:	14 1.16	- 2.	le le	1	/			
			<u>`````````````````````````````````````</u>			/*		
Comments / Observations:	well ion	olig i Sar	-plas tales	- setere	skehis	ation		
		1	1			•		

## Douglas Partners

Geotechnics I El	nvironment l	Groundwater				
Groundwater Field She	et			Bon	e Volume = caung vol	me + filter pack
Project and Bore Installation	Details				volume = $\pi h_1 d_2^2 4 +$	n(7h,d, <sup>2</sup> /4-7h;d, <sup>2</sup> /4)
Bore / Standpipe ID:	BH3			Ш	me: = 3.14	
Project Name	Propose	d come	pucial Der	relacoment	n = percury (0.3 :	for most filter pack
Project Number:	86415	· 00	Cevent po-	the product of the pr	material)	
Site Location:	2-6 Has	call st	Parvama	the	$\mathbf{b}_i = \mathbf{beight} \text{ of wat}$	er cohumn
Bore GPS Co-ord:					a = clameter of 11 h; = length of filte	r pack
Installation Date:	8/6/18				d <sub>2</sub> = diameter of c	aung
GW Level (during drilling):	nia -	m bgl		Boi	re Vol Normally	: 7.2*h
Well Depth:	10.0	m bgl	· · · · · · · · · · · · · · · · · · ·			
Screened Interval:	1.8 - 10.0	m bgl				
Contaminants/Comments:	-					
Bore Development Details			· · · · · · · · · · · · · · · · · · ·			
Date/Time:	12/6/18	2pm				
Purged By:	NW	J				
GW Level (pre-purge):	7.75	m bgl		· · · ·	· · ·	
GW Level (post-purge):	9.8	m bgl				
PSH observed:	Yes / (No) (	interface /	visual), Thickn	ess if observed	d:	
Observed Well Depth:	9.95	m bgl	·····			
Estimated Bore Volume:	15.8	L	•••••••••••••••••••••••••••••••••••••••			
Total Volume Purged:	(target: no drill	mud, min 3 w	/ell vol. or dry)	Run dr	1 w/pump	r bailer
Equipment:	Twister	Pump		<u>````</u>	<u>ن</u>	
Micropurge and Sampling Do	etails	· · · · · ·				
Date/Time:	18.6.18	1400				
Sampled By:	35-111	7				
Weather Conditions:	ources	34-				
GW Level (pre-purge):	8.81	m bgl				
GW Level (post sample):	9.62	m bgl				
PSH observed:	Yes / No>(	interface /	visual). Thickn	ess if observed	d:	
Observed Well Depth:	10.0	m bgl				
Estimated Bore Volume:	8.6	L		*		
Total Volume Purged:	~5.8	L				
	Prining	5				
		Mater Ovelity	Derematore	11111 1111 111 111 111 111 111 11 1 1 1		
	T (PO)		FC (uS or mS/om)	러년	Turbidity	Redox (m\/)
Time / Volume						
Stabilisation Criteria (3 readings)	<u>0.1°C</u>	+/- 0.3 mg/L	+/- 3%	+/- 0.1	+/- 10%	+/- 10 mv
2:30	16.0	4.35	10.8	<u> </u>	2.5	escatt
2:51	7.9	4.67	1-1C-T	6.61	<u></u>	
2:54			544	6 95	2:5	
2:33	11.6	5.87	1914		<u> </u>	
2:54	<u> </u>	5:55	1023	6.16	23	
2-35	10.7	2.01	1011	6.76	127.0	198
2:36	10.0	2 22	1716	6.0	427	ISA
2:51	18.8	2 71	1-194	(		
2:38	16.8	5.41	1 101	6 65	155.0	1-31
Additional Readings Following	DO % Sat	SPC	TOS			
stabilication:	00 / 00	0.0	100			
Stabilisation.	1	Sample	Details		ļ,	
Sampling Depth (rationale):	<u> </u>	m hal			. ,	
Sample Appearance (e.g.			1 11111 100 1000 <b>1000</b>			
colour siltiness odour):	Brown,	silly				
Sample ID:	RHS				·····.	
QA/QC Samples:	BD1120	180618				
Sampling Containers and	14 500-	L Ambre	~ 3× mat	S. Ix rea	d 250mL	(fillered)
filtration:		10 250	, <u> </u>	-1		
Comments / Observationer	1 - 1 - 1	and the second s	·····			
Comments / Observations:					°#	

7 ÷

## Appendix D

Tabulated Summary Results for Soil and Waste classification

				ſ	<b>Aetals</b>									ТРН								BTEX			Halog	enated Benzenes	
	Maximum     Maximum     Maximum       Maximum     Maximum     Maximum       Maximum     Maximum     Maximum       Nickel     Maximum     1       Nickel     1     1       Maximum     1     1						Nickel	Zinc	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	ce - cə	C10 - C14	C15 - C28	C29-C36	C10 - C40 (Sum of total)	C6-C10 less BTEX (F1) C6-C10	Benzene	Ethylbenzene		louene	Xylene (m & p)	Xvlene Total		Hexachlorobenzene	Acenaphthene
	mg/kg	g 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/k	g mg/k	mg/k	g mį	g/kg   n	ng/kg   mg	/kg mg/	kg	mg/kg	mg/kg
PQL	4	0.4	1	1	1	0.1	1	1	50	100	100	50	25	50	100	100	50	25 25	0.2	1	0	.5	2 1	. 1		0.1	0.1
CRC Care Direct Contact HSL-D									20000	27000	38000							2600	430	2700	) 99	000		810	00		
NEPM 2013 EILs Comm/Ind Fresh	160			310	1800		290	750																			
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil	3000	900	3600	240000	1500	730	6000	400000											100	4500	14	000		12,0	00	80	
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion																											
0-1m												NL						250 260 310	3 4	NL	1	VL		NL 2	30		
NEPM 2013 Table 1B(6) ESLs for Comm/Ind																											
0-2m										1700 2500	3300 6600	170						215	75 95	165 1	35 1	35		95 1	.80		
NEPM 2013 Table 1B(7) Management Limits Comm / Ind									1000	3500   5000	10000							700 8	0								

#### Field\_ID LocCode Sample\_Depth\_Range Sampled\_Date-Time Matrix\_Description

Loccouc	Sumple_Beptil_hunge	samples_sate time	Matrix_Bescription																											
BD2/20181012			FILL	7	<0.4	20	38	190	0.4	7	110	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	-	<0.1
BH5	0.2-0.3		FILL	<4	<0.4	12	23	13	0.7	7	34	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	<0.1	<0.1
BH5 - [TRIPLICATE]	0.2-0.3		FILL	<4	<0.4	14	23	27	0.3	7	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6	0.2-0.3		FILL	8	<0.4	17	32	120	0.4	5	93	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	<0.1	<0.1
BH6	0.9-1		FILL	7	<0.4	20	36	190	0.4	7	120	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	-	<0.1
BH7	0.2-0.3		FILL	<4	<0.4	11	73	2	0.1	85	34	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	<0.1	<0.1
BH7	0.5-0.6		FILL	6	<0.4	18	36	27	0.2	8	28	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	-	<0.1
BH8	0.2-0.3		FILL	6	1	16	59	500	3.5	11	370	<50	110	<100	<50	<25	<50	<100	<100	110	<25	<25	<0.2	<1	<0.5	<2	<1	<1	<0.1	<0.1
BH8	0.4-0.5		FILL	<4	<0.4	12	37	80	0.3	7	75	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	-	<0.1
BH9	0.2-0.3		FILL	8	0.8	23	96	710	1.2	10	440	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	<0.1	<0.1
BH9	0.5-0.6		FILL	6	0.6	20	77	480	1.2	8	280	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	-	<0.1
trip blank				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<1	<0.5	<2	<1	-	-	-
	BD2/20181012 BH5 BH5 - [TRIPLICATE] BH6 BH6 BH7 BH7 BH7 BH8 BH8 BH8 BH8 BH9 BH9 BH9 trip blank	BD2/20181012         BD2/20181012           BH5         0.2-0.3           BH5 - [TRIPLICATE]         0.2-0.3           BH6         0.9-1           BH7         0.2-0.3           BH7         0.2-0.3           BH7         0.2-0.3           BH7         0.2-0.3           BH7         0.2-0.3           BH8         0.2-0.3           BH8         0.2-0.3           BH9         0.2-0.3           BH9         0.5-0.6           trip blank         0.5-0.6	BD2/20181012         Imple_prixig           BH5         0.2-0.3           BH5 - [TRIPLICATE]         0.2-0.3           BH6         0.2-0.3           BH6         0.9-1           BH7         0.2-0.3           BH7         0.2-0.3           BH7         0.5-0.6           BH8         0.2-0.3           BH9         0.2-0.3           BH9         0.5-0.6           Image: State of the state of th	BD2/20181012         FILL           BH5         0.2-0.3         FILL           BH5         0.2-0.3         FILL           BH6         0.2-0.3         FILL           BH6         0.9-1         FILL           BH7         0.2-0.3         FILL           BH7         0.5-0.6         FILL           BH8         0.2-0.3         FILL           BH7         0.5-0.6         FILL           BH8         0.2-0.3         FILL           BH7         0.5-0.6         FILL           BH8         0.2-0.3         FILL           BH8         0.2-0.3         FILL           BH8         0.2-0.3         FILL           BH9         0.5-0.6         FILL           BH9         0.5-0.6         FILL           BH9         0.5-0.6         FILL	BD2/20181012         FILL         7           BH5         0.2-0.3         FILL         <4	BD2/20181012         FILL         7         <0.4           BH5         0.2-0.3         FILL         <4	BD2/20181012         FILL         7         <0.4         20           BH5         0.2-0.3         FILL         <4	BD2/20181012         FILL         7         <0.4         20         38           BH5         0.2-0.3         FILL         <4	BD2/20181012         FILL         7         <0.4         20         38         190           BH5         0.2-0.3         FILL         <4	BD2/20181012         FILL         7         <0.4         20         38         190         0.4           BH5         0.2-0.3         FILL         <4	BD2/20181012         FILL         7         <0.4         20         38         190         0.4         7           BH5         0.2-0.3         FILL         <4	BD2/20181012         FILL         7         <0.4         20         38         190         0.4         7         110           BH5         0.2-0.3         FILL         <4	BD2/20181012         FILL         FILL         FILL         Co.4         Co.4         Co.3         190         O.4         T         110         <50           BH5         0.2-0.3         FILL         <4	BD2/20181012         Initial of the stress of the stre	BD2/20181012         FILL         FILL         7         <0.4         20         38         190         0.4         7         110         <50         <100         <100           BH5         0.2-0.3         FILL         <4	BD2/20181012         FILL         FILL         7         <0.4         20         38         190         0.4         7         110         <50         <100         <50           BH5         0.2-0.3         FILL         <4	BD2/20181012         FILL         FILL         7         <0.4         20         38         190         0.4         7         110         <50         <100         <100         <50         <25           BH5         0.2-0.3         FILL         <4	BD2/20181012         FILL         FILL         7         <0.4         20         38         190         0.4         7         110         <50         <100         <100         <50         <25         <50           BH5         0.2-0.3         FILL         <4	BD2/20181012         FILL         FILL         7         <0.4         20         38         190         0.4         7         110         <50         <100         <50         <25         <50         <100           BH5         0.2-0.3         FILL         <4	B02/20181012         FILL         FILL         7         <0.4         20         38         190         0.4         7         110         <50         <100         <50         <25         <50         <100         <100         <50         <100         <50         <100         <50         <25         <50         <100         <100         <50         <100         <100         <50         <100         <50         <100         <100         <50         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100	B02/2018/012         ILL         7         <0.4         20         38         190         0.4         7         110         <50         <100         <50         <25         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <100         <100         <100         <100         <100	BD2/2018/012         FILL         FILL         FILL         FIL         FIL	BD2/D181012         FILL         FILL         7         0.0         20         38         190         0.4         7         110         <50         <100         <50         <100         <100         <50         <100         <50         <100         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100         <100        <100	bD2/D181012         FILL         FILL         7         0.0         20         38         190         0.4         7         110         <50         <100         <50         <50         <100         <50         <25         <50         <100         <50         <25         <50         <100         <50         <25         <50         <100         <50         <25         <50         <100         <50         <25         <50         <100         <50         <25         <50         <100         <50         <25         <50         <100         <50         <25         <50         <100         <50         <25         <50         <100         <100         <50         <25         <50         <100         <100         <50         <25         <50         <100         <100         <50         <25         <50         <100         <100         <50         <25         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <100         <100         <100         <100<	BD2/2018/012         FILL         FILL         7         0.4         20         38         190         0.4         7         110         <50         <100         <50         <25         <50         <100         <50         <25         <50         <100         <50         <25         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100         <50         <100         <100        <100         <100 <t< td=""><td>BD2/2018/012         FILL         FILL</td><td>BD2/20181012         Fill         Fill</td><td>BD2/2018012         FIL         FIL         7         0.4         20         38         190         0.4         7         110         c50         c100         c100         c50         c25         c50         c100         c100         c50         c25         c50         c100         c50         c25         c25         c10         c10         c50         c10         c10         c50         c10         c10         c50         c10         c10         c50         c10         c10</td><td>barry         barry         <th< td=""><td>bar bar bar bar bar bar bar bar bar bar</td></th<></td></t<>	BD2/2018/012         FILL         FILL	BD2/20181012         Fill         Fill	BD2/2018012         FIL         FIL         7         0.4         20         38         190         0.4         7         110         c50         c100         c100         c50         c25         c50         c100         c100         c50         c25         c50         c100         c50         c25         c25         c10         c10         c50         c10         c10         c50         c10         c10         c50         c10         c10         c50         c10         c10	barry         barry <th< td=""><td>bar bar bar bar bar bar bar bar bar bar</td></th<>	bar

			APPLICATION CONTRACTOR															Polyc	hlorinat	ed Biph	enyls											Orgar	ochlorine	a Pest
	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Phenolics Total	Total PAH	Pyrene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	4,4-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	рот	DDT+DDE+DDD	Dieldrin
	mg/kg r	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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg m	ng/kg
PQL	0.1	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
CRC Care Direct Contact HSL-D											11000																							
NEPM 2013 EILs Comm/Ind Fresh											370																					640		
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil														4000									7										3600	
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion																																		
0-1m											NL																							
NEPM 2013 Table 1B(6) ESLs for Comm/Ind																																		
0-2m				0.7																														
NEPM 2013 Table 1B(7) Management Limits Comm / Ind																																		

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Matrix_Description

BD2/20181012	BD2/20181012		FILL	<0.1	<0.1	0.4	0.4	0.2	0.4	<0.1	0.8	<0.1	0.1	<0.1	0.4	-	4	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH5	BH5	0.2-0.3	FILL	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH5 - [TRIPLICATE]	BH5 - [TRIPLICATE]	0.2-0.3	FILL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH6	BH6	0.2-0.3	FILL	<0.1	<0.1	0.3	0.3	0.2	0.3	<0.1	0.6	<0.1	0.1	<0.1	0.2	<5	3	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH6	BH6	0.9-1	FILL	<0.1	<0.1	0.4	0.4	0.3	0.4	<0.1	0.9	<0.1	0.2	<0.1	0.4	-	4.6	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH7	BH7	0.2-0.3	FILL	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH7	BH7	0.5-0.6	FILL	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.05	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH8	BH8	0.2-0.3	FILL	0.4	0.5	3	3.5	1.8	2.5	0.4	5	0.1	1.6	<0.1	2.2	<5	31	4.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH8	BH8	0.4-0.5	FILL	0.1	<0.1	0.9	1.3	0.8	0.8	0.1	1.3	<0.1	0.7	<0.1	0.5	-	9.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH9	BH9	0.2-0.3	FILL	0.1	0.1	0.9	0.93	0.6	0.9	0.1	1.8	<0.1	0.4	<0.1	0.7	<5	9.8	1.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH9	BH9	0.5-0.6	FILL	<0.1	<0.1	0.5	0.4	0.2	0.4	<0.1	1	<0.1	0.2	<0.1	0.5	-	5	0.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trip blank	trip blank			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



	cides												Org	anopho	sphorou	s Pestici	des		
	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion
	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
PQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
CRC Care Direct Contact HSL-D																			
NEPM 2013 EILs Comm/Ind Fresh																			
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil				100			50		2500			2000							
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion																			
0-1m																			
NEPM 2013 Table 1B(6) ESLs for Comm/Ind																			
0-2m																			
NEPM 2013 Table 1B(7) Management Limits Comm / Ind																			
Field_ID LocCode Sample_Depth_Range Sampled_Date-Time Matrix_Description																			
BD2/20181012 BD2/20181012 FILL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-

502/20181012	BD2/20101012		TILL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3H5	BH5	0.2-0.3	FILL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3H5 - [TRIPLICATE]	BH5 - [TRIPLICATE]	0.2-0.3	FILL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3H6	BH6	0.2-0.3	FILL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3H6	BH6	0.9-1	FILL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3H7	BH7	0.2-0.3	FILL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3H7	BH7	0.5-0.6	FILL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3H8	BH8	0.2-0.3	FILL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3H8	BH8	0.4-0.5	FILL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3H9	BH9	0.2-0.3	FILL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
3H9	BH9	0.5-0.6	FILL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
rip blank	trip blank			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

		Pesticides
	Ronnel	Parathion
٢g	mg/kg	mg/kg
	0.1	0.1

	-	-
L	<0.1	<0.1
	-	-
L	<0.1	<0.1
	-	-
L	<0.1	<0.1
	-	-
L	<0.1	<0.1
	-	-
L	<0.1	<0.1
	-	-
	-	-



								Metals										TPH								BTE	X							
				Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Lead in TCLP	Mercury	Nickel	Zinc	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	62 - <del>3</del> 3	C10 - C14	C15 - C28	C29-C36	C10 - C40 (Sum of total)	C6-C10 less BTEX (F1)	C6-C10	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	Acenaphthene	Acenaphthylene	Anthracene	Benz(a) anthracene	Benzo(a) pyrene
				mg/kg	mg/kg	mg/kg	g mg/kg	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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PQL				4	0.4	1	1	1		0.1	1	1	50	100	100	50	25	50	100	100	50	25	25	0.2	1	0.5	2	1	1	0.1	0.1	0.1	0.1	0.05
DECCW 2009 - G	SW CT1 (No TCLP)			100	20			100		4	40													10	600	288			1000					0.8
DECCW 2009 - G	SW SCC1 (using TCL	.P)		500	100			1500	5	50	1050						650							18	1080	518			1800					10
DECCW 2009 - R	SW CT2 (No TCLP)			400	80			400		16	160													40	2400	1152			4000					3.2
Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time																															
BD1/20180608	BD1/20180608		8/06/2018	6	2	27	70	370		0.2	11	280	54	<100	<100	<50	<25	54	<100	<100	50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	0.1	<0.1	1.5	1.3	0.95
BH1	BH1	0.3-0.4	1/06/2018	<4	<0.4	82	43	6		<0.1	88	45	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.05

BD1/20180608	BD1/20180608		8/06/2018	6	2	27	70	370		0.2	11	280	54	<100	<100	<50	<25	54	<100	<100	50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	0.1	<0.1	1.5	1.3	0.95
BH1	BH1	0.3-0.4	1/06/2018	<4	<0.4	82	43	6		<0.1	88	45	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.05
BH2	BH2	0.2-0.3	8/06/2018	<4	<0.4	13	76	3		<0.1	89	40	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.05
BH2	BH2	1.5-1.6	8/06/2018	-	-	-	-	-		-	-	-	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.05
BH3	BH3	0.2-0.3	8/06/2018	7	4.7	29	440	630		0.5	17	680	520	670	<100	500	<25	510	600	190	1200	<25	<25	<0.2	<1	<0.5	<2	<1	<1	0.8	0.6	6.2	8.3	4.7
BH3A	BH3A	0.2-0.3	17/10/2018						0.1																									
BH3	BH3	0.5-0.6	8/06/2018	6	0.9	25	140	130		<0.1	7	100	60	<100	<100	51	<25	60	<100	<100	60	<25	<25	<0.2	<1	<0.5	<2	<1	<1	0.2	<0.1	1.2	1.3	0.9
BH4	BH4	0.3-0.4	8/06/2018	<4	<0.4	9	14	270		0.1	5	97	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	<0.1	<0.1	0.1	0.8	1.1
BH4A	BH4A	0.3-0.4	17/10/2018						<0.03																									
BH4	BH4	0.8-0.9	8/06/2018	5	<0.4	24	24	31		<0.1	6	22	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.05
Trip Blank	Trip Blank		8/06/2018	-	-	-	-	-		-	-	-	-	-	-	-	<25	-	-	-	-	<25	<25	<0.2	<1	<0.5	<2	<1	<1	-	-	-	-	-
Trip Spike	Trip Spike		8/06/2018	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<1	<0.5	<2	<1	-	-	-	-	-	-

NAD No asbestos detected



			PAH/Ph				Poly	chlorina	ed Biph	enyls											Orgar	ochlorin	e Pesti							
	Benzo(a) pyrene in TCLP	Magnetic in TCLI     Indenzo(a) pyrene in TCLI       Magnetic in TCLI     Benzo(g,h,i)perylene       Magnetic in TCLI     Baylow       Magnetic in TCLI     Baylow									Pyrene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Second Active Ac	Arochlor 1254	s Arochlor 1260	PCBs (Sum of total)	4,4-DDE	a-BHC	Aldrin	b-BHC	chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	bieldrin
	mg/i	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	mg/kg	ng/kg
PQL		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DECCW 2009 - GSW CT1 (No TCLP)																														
DECCW 2009 - GSW SCC1 (using TCLP)	0.04																		<50											
DECCW 2009 - RSW CT2 (No TCLP)																														

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time																														
BD1/20180608	BD1/20180608		8/06/2018		0.4	1.1	<0.1	2.5	1.2	0.4	6.5 - 11	4.2	-	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1	BH1	0.3-0.4	1/06/2018		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1 - 0.3	0.2	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH2	BH2	0.2-0.3	8/06/2018		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH2	BH2	1.5-1.6	8/06/2018		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 1	-	-	-
BH3	BH3	0.2-0.3	8/06/2018		3.2	5.5	1	12	5.7	3	17 - 45	20	<5	12	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH3A	BH3A	0.2-0.3	17/10/2018	<0.001																													
BH3	BH3	0.5-0.6	8/06/2018		0.4	1	<0.1	2.6	1.2	0.4	6.3 - 9	4.1	-	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	BH4	0.3-0.4	8/06/2018		1	0.7	0.2	1.1	<0.1	0.7	<0.1	0.5	<5	1.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH4A	BH4A	0.3-0.4	17/10/2018	<0.001																										,			
BH4	BH4	0.8-0.9	8/06/2018		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 1	-	-	-
Trip Blank	Trip Blank		8/06/2018		-	-	-	-	-	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	- 1	-	-	-
Trip Spike	Trip Spike		8/06/2018		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NAD No asbestos detected



	cides												Org	anopho	sphorou	s Pestici	ides				Asbestos	Pesticides
	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Ronnel	Asbestos	Parathion
	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
PQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DECCW 2009 - GSW CT1 (No TCLP)												4										
DECCW 2009 - GSW SCC1 (using TCLP)												7.5										
DECCW 2009 - RSW CT2 (No TCLP)												16										
Field_ID LocCode Sample_Depth_Range Sampled_Date-Time																						

BD1/20180608	BD1/20180608		8/06/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH1	BH1	0.3-0.4	1/06/2018	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	<0.1
BH2	BH2	0.2-0.3	8/06/2018	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	<0.1
BH2	BH2	1.5-1.6	8/06/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH3	BH3	0.2-0.3	8/06/2018	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1	<1	NAD	<1
BH3A	BH3A	0.2-0.3	17/10/2018																						
BH3	BH3	0.5-0.6	8/06/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH4	BH4	0.3-0.4	8/06/2018	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	<0.1
BH4A	BH4A	0.3-0.4	17/10/2018																						
BH4	BH4	0.8-0.9	8/06/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Blank	Trip Blank		8/06/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	Trip Spike		8/06/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NAD No asbestos detected

## Appendix E

Laboratory Certificated of Analysis

and Chain of Custody Documentation



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

#### **CERTIFICATE OF ANALYSIS 203053**

Client Details	
Client	Douglas Partners Pty Ltd
Attention	Paul Gorman, Celine Li
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details	
Your Reference	86415.02, Prop Commercial Development
Number of Samples	23 Soil
Date samples received	15/10/2018
Date completed instructions received	15/10/2018

#### **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
 22/10/2018

 Date of Issue
 22/10/2018

 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 \*

#### Asbestos Approved By

Steven Luong, Senior Chemist

Analysed by Asbestos Approved Identifier: Panika Wongchanda Authorised by Asbestos Approved Signatory: Matt Tang **Results Approved By** Jeremy Faircloth, Organics Supervisor Long Pham, Team Leader, Metals Matthew Tang, Asbestos Analyst Nick Sarlamis, Inorganics Supervisor

#### Authorised By

Jacinta Hurst, Laboratory Manager



#### Client Reference: 86415.02, Prop Commercial Development

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		203053-3	203053-4	203053-5	203053-6	203053-7
Your Reference	UNITS	BH5	BH6	BH6	BD2/20181012	BH7
Depth		0.2-0.3	0.2-0.3	0.9-1.0	-	0.2-0.3
Date Sampled		10/10/2018	10/10/2018	10/10/2018	10/10/2018	11/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	17/10/2018	17/10/2018	17/10/2018	17/10/2018	17/10/2018
TRH C6 - C9	mg/kg	<25	<25	<25	<25	<25
TRH C6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPH C <sub>6</sub> - C <sub>10</sub> 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	%	105	112	110	103	116
vTRH(C6-C10)/BTEXN in Soil						
vTRH(C6-C10)/BTEXN in Soil Our Reference		203053-8	203053-9	203053-10	203053-11	203053-12
vTRH(C6-C10)/BTEXN in Soil Our Reference Your Reference	UNITS	203053-8 BH7	203053-9 BH8	203053-10 BH8	203053-11 BH9	203053-12 BH9
<b>vTRH(C6-C10)/BTEXN in Soil</b> Our Reference Your Reference Depth	UNITS	203053-8 BH7 0.5-0.6	203053-9 BH8 0.2-0.3	203053-10 BH8 0.4-0.5	203053-11 BH9 0.2-0.3	203053-12 BH9 0.5-0.6
vTRH(C6-C10)/BTEXN in Soil Our Reference Your Reference Depth Date Sampled	UNITS	203053-8 BH7 0.5-0.6 11/10/2018	203053-9 BH8 0.2-0.3 11/10/2018	203053-10 BH8 0.4-0.5 11/10/2018	203053-11 BH9 0.2-0.3 11/10/2018	203053-12 BH9 0.5-0.6 10/10/2018
vTRH(C6-C10)/BTEXN in Soil Our Reference Your Reference Depth Date Sampled Type of sample	UNITS	203053-8 BH7 0.5-0.6 11/10/2018 Soil	203053-9 BH8 0.2-0.3 11/10/2018 Soil	203053-10 BH8 0.4-0.5 11/10/2018 Soil	203053-11 BH9 0.2-0.3 11/10/2018 Soil	203053-12 BH9 0.5-0.6 10/10/2018 Soil
VTRH(C6-C10)/BTEXN in Soil Our Reference Your Reference Depth Date Sampled Type of sample Date extracted	UNITS -	203053-8 BH7 0.5-0.6 11/10/2018 Soil 16/10/2018	203053-9 BH8 0.2-0.3 11/10/2018 Soil 16/10/2018	203053-10 BH8 0.4-0.5 11/10/2018 Soil 16/10/2018	203053-11 BH9 0.2-0.3 11/10/2018 Soil 16/10/2018	203053-12 BH9 0.5-0.6 10/10/2018 Soil 16/10/2018
VTRH(C6-C10)/BTEXN in Soil Our Reference Your Reference Depth Date Sampled Type of sample Date extracted Date analysed	UNITS - -	203053-8 BH7 0.5-0.6 11/10/2018 Soil 16/10/2018 17/10/2018	203053-9 BH8 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018	203053-10 BH8 0.4-0.5 11/10/2018 Soil 16/10/2018 17/10/2018	203053-11 BH9 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018	203053-12 BH9 0.5-0.6 10/10/2018 Soil 16/10/2018 17/10/2018
VTRH(C6-C10)/BTEXN in Soil Our Reference Your Reference Depth Date Sampled Type of sample Date extracted Date analysed TRH C <sub>6</sub> - C <sub>9</sub>	UNITS - - mg/kg	203053-8 BH7 0.5-0.6 11/10/2018 Soil 16/10/2018 17/10/2018 <25	203053-9 BH8 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25	203053-10 BH8 0.4-0.5 11/10/2018 Soil 16/10/2018 17/10/2018 <25	203053-11 BH9 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25	203053-12 BH9 0.5-0.6 10/10/2018 Soil 16/10/2018 17/10/2018 <25
VTRH(C6-C10)/BTEXN in Soil Our Reference Your Reference Depth Date Sampled Type of sample Date extracted Date analysed TRH C <sub>6</sub> - C <sub>9</sub> TRH C <sub>6</sub> - C <sub>10</sub>	UNITS - mg/kg mg/kg	203053-8 BH7 0.5-0.6 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25	203053-9 BH8 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25	203053-10 BH8 0.4-0.5 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25	203053-11 BH9 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25	203053-12 BH9 0.5-0.6 10/10/2018 Soil 16/10/2018 17/10/2018 <25 <25
VTRH(C6-C10)/BTEXN in Soil Our Reference Your Reference Depth Date Sampled Type of sample Date extracted Date analysed TRH C6 - C9 TRH C6 - C10 VTPH C6 - C10 less BTEX (F1)	UNITS - mg/kg mg/kg mg/kg	203053-8 BH7 0.5-0.6 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25	203053-9 BH8 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25	203053-10 BH8 0.4-0.5 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25	203053-11 BH9 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25	203053-12 BH9 0.5-0.6 10/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25
VTRH(C6-C10)/BTEXN in Soil Our Reference Your Reference Depth Date Sampled Type of sample Date extracted Date analysed TRH C6 - C9 TRH C6 - C10 VTPH C6 - C10 less BTEX (F1) Benzene	UNITS - - mg/kg mg/kg mg/kg mg/kg	203053-8 BH7 0.5-0.6 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2	203053-9 BH8 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2	203053-10 BH8 0.4-0.5 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2	203053-11 BH9 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2	203053-12 BH9 0.5-0.6 10/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <0.2
vTRH(C6-C10)/BTEXN in SoilOur ReferenceYour ReferenceDepthDate SampledType of sampleDate extractedDate analysedTRH $C_6 - C_9$ TRH $C_6 - C_{10}$ vTPH $C_6 - C_{10}$ less BTEX (F1)BenzeneToluene	UNITS - mg/kg mg/kg mg/kg mg/kg mg/kg	203053-8 BH7 0.5-0.6 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2	203053-9 BH8 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2	203053-10 BH8 0.4-0.5 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2	203053-11 BH9 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2	203053-12 BH9 0.5-0.6 10/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <25 <0.2
VTRH(C6-C10)/BTEXN in SoilOur ReferenceYour ReferenceDepthDate SampledType of sampleDate extractedDate analysedTRH C6 - C9TRH C6 - C10vTPH C6 - C10 less BTEX (F1)BenzeneTolueneEthylbenzene	UNITS - - mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	203053-8 BH7 0.5-0.6 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2 <0.5 <1	203053-9 BH8 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2 <0.5 <1	203053-10 BH8 0.4-0.5 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2 <0.5 <1	203053-11 BH9 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2 <0.5 <1	203053-12 BH9 0.5-0.6 10/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2 <0.5
VTRH(C6-C10)/BTEXN in SoilOur ReferenceYour ReferenceDepthDate SampledType of sampleDate extractedDate analysedTRH $C_6 - C_9$ TRH $C_6 - C_{10}$ less BTEX (F1)BenzeneTolueneEthylbenzenem+p-xylene	UNITS - mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	203053-8 BH7 0.5-0.6 11/10/2018 Soil 16/10/2018 (25 <25 <25 <25 <25 <0.2 <0.2 <0.2 <0.5 <1 <2	203053-9 BH8 0.2-0.3 11/10/2018 Soil 16/10/2018 (25 <25 <25 <25 <25 <0.2 <0.2 <0.2 <0.5 <1 <2	203053-10 BH8 0.4-0.5 11/10/2018 Soil 16/10/2018 (25 <25 <25 <25 <25 <0.2 <0.2 <0.5 <1 <2	203053-11 BH9 0.2-0.3 11/10/2018 Soil 16/10/2018 (25 <25 <25 <25 <25 <0.2 <0.2 <0.2 <0.5 <1 <2	203053-12 BH9 0.5-0.6 10/10/2018 Soil 16/10/2018 (25 <25 <25 <25 <25 <0.2 <0.2 <0.5 <1 <2
VTRH(C6-C10)/BTEXN in SoilOur ReferenceYour ReferenceDepthDate SampledType of sampleDate extractedDate analysedTRH C6 - C9TRH C6 - C10vTPH C6 - C10 less BTEX (F1)BenzeneTolueneEthylbenzenem+p-xyleneo-Xylene	UNITS - - mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	203053-8 BH7 0.5-0.6 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2 <0.5 <1 <2 <1	203053-9 BH8 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2 <0.5 <1 <2 <1	203053-10 BH8 0.4-0.5 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2 <0.5 <1 <2 <1 <2 <1	203053-11 BH9 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2 <0.5 <1 <2 <1	203053-12 BH9 0.5-0.6 10/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2 <0.2 <0.5 <1 <2 <1
VTRH(C6-C10)/BTEXN in SoilOur ReferenceYour ReferenceDepthDate SampledType of sampleDate extractedDate analysedTRH C6 - C9TRH C6 - C10vTPH C6 - C10 less BTEX (F1)BenzeneTolueneEthylbenzenem+p-xyleneo-Xylenenaphthalene	UNITS - - mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	203053-8 BH7 0.5-0.6 11/10/2018 Soil 16/10/2018 (25 <25 <25 <25 <0.2 <0.2 <0.5 <1 <1 <2 <1 <2 <1	203053-9 BH8 0.2-0.3 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2 <0.2 <0.5 <1 <2 <1 <2 <1	203053-10 BH8 0.4-0.5 11/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <25 <0.2 <0.2 <0.2 <0.5 <1 <1 <2 <1 <1	203053-11 BH9 0.2-0.3 11/10/2018 Soil 16/10/2018 (25 <25 <25 <25 <0.2 <0.2 <0.5 <1 <1 <2 <1 <2 <1 <1	203053-12 BH9 0.5-0.6 10/10/2018 Soil 16/10/2018 (25 <25 <25 <25 <0.2 <0.2 <0.5 <1 <2 <1 <2 <1
VTRH(C6-C10)/BTEXN in SoilOur ReferenceYour ReferenceDepthDate SampledType of sampleDate extractedDate analysedTRH $C_6 - C_9$ TRH $C_6 - C_{10}$ less BTEX (F1)BenzeneTolueneEthylbenzenem+p-xyleneo-XylenenaphthaleneTotal +ve Xylenes	UNITS - mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	203053-8 BH7 0.5-0.6 11/10/2018 Soil 16/10/2018 (25 <25 <25 <25 <0.2 <0.2 <0.2 <0.2 <0.5 <1 <2 <1 <2 <1 <1 <1	203053-9 BH8 0.2-0.3 11/10/2018 Soil 16/10/2018 (25 <25 <25 <25 <25 <0.2 <0.2 <0.2 <0.5 <1 <2 <1 <2 <1 <1 <1 <1	203053-10 BH8 0.4-0.5 11/10/2018 Soil 16/10/2018 (25 <25 <25 <25 <25 <0.2 <0.2 <0.2 <0.5 <1 <1 <2 <1 <1 <1 <1	203053-11 BH9 0.2-0.3 11/10/2018 Soil 16/10/2018 (25 <25 <25 <25 <25 <0.2 <0.2 <0.2 <0.5 <1 <1 <2 <1 <1 <1 <1	203053-12 BH9 0.5-0.6 10/10/2018 Soil 16/10/2018 17/10/2018 <25 <25 <25 <0.2 <0.2 <0.2 <0.2 <0.5 <1 <2 <1 <1 <1
vTRH(C6-C10)/BTEXN in Soil						
--------------------------------	-------	------------	------------			
Our Reference		203053-13	203053-14			
Your Reference	UNITS	trip spike	trip blank			
Depth		-	-			
Date Sampled		10/10/2018	10/10/2018			
Type of sample		Soil	Soil			
Date extracted	-	16/10/2018	16/10/2018			
Date analysed	-	17/10/2018	17/10/2018			
Benzene	mg/kg	94%	<0.2			
Toluene	mg/kg	94%	<0.5			
Ethylbenzene	mg/kg	96%	<1			
m+p-xylene	mg/kg	96%	<2			
o-Xylene	mg/kg	96%	<1			
Surrogate aaa-Trifluorotoluene	%	103	117			

svTRH (C10-C40) in Soil						_
Our Reference		203053-3	203053-4	203053-5	203053-6	203053-7
Your Reference	UNITS	BH5	BH6	BH6	BD2/20181012	BH7
Depth		0.2-0.3	0.2-0.3	0.9-1.0	-	0.2-0.3
Date Sampled		10/10/2018	10/10/2018	10/10/2018	10/10/2018	11/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	17/10/2018	17/10/2018	17/10/2018	17/10/2018	17/10/2018
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50	<50	<50	<50
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	<100	<100	<100	<100	<100
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	<100	<100	<100	<100	<100
TRH >C10 -C16	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>10</sub> - C <sub>16</sub> less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	<100	<100	<100	<100	<100
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	115	117	117	118	116

svTRH (C10-C40) in Soil						
Our Reference		203053-8	203053-9	203053-10	203053-11	203053-12
Your Reference	UNITS	BH7	BH8	BH8	BH9	BH9
Depth		0.5-0.6	0.2-0.3	0.4-0.5	0.2-0.3	0.5-0.6
Date Sampled		11/10/2018	11/10/2018	11/10/2018	11/10/2018	10/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	17/10/2018	17/10/2018	17/10/2018	17/10/2018	17/10/2018
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	<50	<50	<50	<50	<50
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	<100	<100	<100	<100	<100
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	<50	<50	<50	<50	<50
TRH >C10 - C16 less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	<100	110	<100	<100	<100
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	110	<50	<50	<50
Surrogate o-Terphenyl	%	118	122	116	116	118

PAHs in Soil						
Our Reference		203053-1	203053-2	203053-3	203053-4	203053-5
Your Reference	UNITS	BH3A	BH4A	BH5	BH6	BH6
Depth		0.2-0.3	0.3-0.4	0.2-0.3	0.2-0.3	0.9-1.0
Date Sampled		12/10/2018	11/10/2018	10/10/2018	10/10/2018	10/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	17/10/2018	17/10/2018	17/10/2018	17/10/2018	17/10/2018
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	0.6	0.1	<0.1	0.2	0.4
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	1.4	0.3	<0.1	0.6	0.9
Pyrene	mg/kg	1.3	0.3	<0.1	0.5	0.8
Benzo(a)anthracene	mg/kg	0.7	0.2	<0.1	0.3	0.4
Chrysene	mg/kg	0.7	0.2	<0.1	0.3	0.4
Benzo(b,j+k)fluoranthene	mg/kg	1	0.3	<0.2	0.5	0.8
Benzo(a)pyrene	mg/kg	0.84	0.2	<0.05	0.3	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	0.4	<0.1	<0.1	0.1	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.5	0.1	<0.1	0.2	0.3
Total +ve PAH's	mg/kg	7.9	1.6	<0.05	3.0	4.6
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.1	<0.5	<0.5	<0.5	0.6
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.2	<0.5	<0.5	<0.5	0.6
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.2	<0.5	<0.5	0.5	0.7
Surrogate p-Terphenyl-d14	%	89	90	90	93	93

PAHs in Soil						
Our Reference		203053-6	203053-7	203053-8	203053-9	203053-10
Your Reference	UNITS	BD2/20181012	BH7	BH7	BH8	BH8
Depth		-	0.2-0.3	0.5-0.6	0.2-0.3	0.4-0.5
Date Sampled		10/10/2018	11/10/2018	11/10/2018	11/10/2018	11/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	17/10/2018	17/10/2018	17/10/2018	17/10/2018	17/10/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	0.4	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	0.4	<0.1	<0.1	2.2	0.5
Anthracene	mg/kg	<0.1	<0.1	<0.1	0.5	<0.1
Fluoranthene	mg/kg	0.8	<0.1	<0.1	5.0	1.3
Pyrene	mg/kg	0.7	<0.1	<0.1	4.6	1.2
Benzo(a)anthracene	mg/kg	0.4	<0.1	<0.1	3.0	0.9
Chrysene	mg/kg	0.4	<0.1	<0.1	2.5	0.8
Benzo(b,j+k)fluoranthene	mg/kg	0.6	<0.2	<0.2	5.2	2
Benzo(a)pyrene	mg/kg	0.4	<0.05	<0.05	3.5	1.3
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1	<0.1	1.6	0.7
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	0.4	0.1
Benzo(g,h,i)perylene	mg/kg	0.2	<0.1	<0.1	1.8	0.8
Total +ve PAH's	mg/kg	4.0	<0.05	<0.05	31	9.6
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	4.9	1.8
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5	<0.5	<0.5	4.9	1.8
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.6	<0.5	<0.5	4.9	1.8
Surrogate p-Terphenyl-d14	%	95	94	95	97	94

PAHs in Soil			
Our Reference		203053-11	203053-12
Your Reference	UNITS	BH9	BH9
Depth		0.2-0.3	0.5-0.6
Date Sampled		11/10/2018	10/10/2018
Type of sample		Soil	Soil
Date extracted	-	16/10/2018	16/10/2018
Date analysed	-	17/10/2018	17/10/2018
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	0.7	0.5
Anthracene	mg/kg	0.1	<0.1
Fluoranthene	mg/kg	1.8	1.0
Pyrene	mg/kg	1.6	0.9
Benzo(a)anthracene	mg/kg	0.9	0.5
Chrysene	mg/kg	0.9	0.4
Benzo(b,j+k)fluoranthene	mg/kg	2	0.8
Benzo(a)pyrene	mg/kg	0.93	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	0.4	0.2
Dibenzo(a,h)anthracene	mg/kg	0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.6	0.2
Total +ve PAH's	mg/kg	9.8	5.0
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.3	0.6
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.3	0.6
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.3	0.7
Surrogate p-Terphenyl-d14	%	94	96

Organochlorine Pesticides in soil						
Our Reference		203053-3	203053-4	203053-7	203053-9	203053-11
Your Reference	UNITS	BH5	BH6	BH7	BH8	BH9
Depth		0.2-0.3	0.2-0.3	0.2-0.3	0.2-0.3	0.2-0.3
Date Sampled		10/10/2018	10/10/2018	11/10/2018	11/10/2018	11/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	17/10/2018	17/10/2018	17/10/2018	17/10/2018	17/10/2018
НСВ	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	%	89	110	112	82	83

Organophosphorus Pesticides						
Our Reference		203053-3	203053-4	203053-7	203053-9	203053-11
Your Reference	UNITS	BH5	BH6	BH7	BH8	BH9
Depth		0.2-0.3	0.2-0.3	0.2-0.3	0.2-0.3	0.2-0.3
Date Sampled		10/10/2018	10/10/2018	11/10/2018	11/10/2018	11/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	17/10/2018	17/10/2018	17/10/2018	17/10/2018	17/10/2018
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	%	89	110	112	82	83

PCBs in Soil						
Our Reference		203053-3	203053-4	203053-7	203053-9	203053-11
Your Reference	UNITS	BH5	BH6	BH7	BH8	BH9
Depth		0.2-0.3	0.2-0.3	0.2-0.3	0.2-0.3	0.2-0.3
Date Sampled		10/10/2018	10/10/2018	11/10/2018	11/10/2018	11/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	17/10/2018	17/10/2018	17/10/2018	17/10/2018	17/10/2018
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	%	89	110	112	82	83

Acid Extractable metals in soil						
Our Reference		203053-1	203053-2	203053-3	203053-4	203053-5
Your Reference	UNITS	BH3A	BH4A	BH5	BH6	BH6
Depth		0.2-0.3	0.3-0.4	0.2-0.3	0.2-0.3	0.9-1.0
Date Sampled		12/10/2018	11/10/2018	10/10/2018	10/10/2018	10/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Arsenic	mg/kg	[NA]	[NA]	<4	8	7
Cadmium	mg/kg	[NA]	[NA]	<0.4	<0.4	<0.4
Chromium	mg/kg	[NA]	[NA]	12	17	20
Copper	mg/kg	[NA]	[NA]	23	32	36
Lead	mg/kg	900	77	13	120	190
Mercury	mg/kg	[NA]	[NA]	0.7	0.4	0.4
Nickel	mg/kg	[NA]	[NA]	7	5	7
Zinc	mg/kg	[NA]	[NA]	34	93	120

Acid Extractable metals in soil						
Our Reference		203053-6	203053-7	203053-8	203053-9	203053-10
Your Reference	UNITS	BD2/20181012	BH7	BH7	BH8	BH8
Depth		-	0.2-0.3	0.5-0.6	0.2-0.3	0.4-0.5
Date Sampled		10/10/2018	11/10/2018	11/10/2018	11/10/2018	11/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Arsenic	mg/kg	7	<4	6	6	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	1	<0.4
Chromium	mg/kg	20	11	18	16	12
Copper	mg/kg	38	73	36	59	37
Lead	mg/kg	190	2	27	500	80
Mercury	mg/kg	0.4	0.1	0.2	3.5	0.3
Nickel	mg/kg	7	85	8	11	7
Zinc	mg/kg	110	34	28	370	75

Acid Extractable metals in soil				
Our Reference		203053-11	203053-12	203053-24
Your Reference	UNITS	BH9	BH9	BH5 - [TRIPLICATE]
Depth		0.2-0.3	0.5-0.6	0.2-0.3
Date Sampled		11/10/2018	10/10/2018	10/10/2018
Type of sample		Soil	Soil	Soil
Date prepared	-	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	16/10/2018	16/10/2018	16/10/2018
Arsenic	mg/kg	8	6	<4
Cadmium	mg/kg	0.8	0.6	<0.4
Chromium	mg/kg	23	20	14
Copper	mg/kg	96	77	23
Lead	mg/kg	710	480	27
Mercury	mg/kg	1.2	1.2	0.3
Nickel	mg/kg	10	8	7
Zinc	mg/kg	440	280	46

Misc Soil - Inorg											
Our Reference		203053-3	203053-4	203053-7	203053-9	203053-11					
Your Reference	UNITS	BH5	BH6	BH7	BH8	BH9					
Depth		0.2-0.3	0.2-0.3	0.2-0.3	0.2-0.3	0.2-0.3					
Date Sampled		10/10/2018	10/10/2018	11/10/2018	11/10/2018	11/10/2018					
Type of sample		Soil	Soil	Soil	Soil	Soil					
Date prepared	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018					
Date analysed	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018					
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5					

Moisture						
Our Reference		203053-1	203053-2	203053-3	203053-4	203053-5
Your Reference	UNITS	BH3A	BH4A	BH5	BH6	BH6
Depth		0.2-0.3	0.3-0.4	0.2-0.3	0.2-0.3	0.9-1.0
Date Sampled		12/10/2018	11/10/2018	10/10/2018	10/10/2018	10/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	17/10/2018	17/10/2018	17/10/2018	17/10/2018	17/10/2018
Moisture	%	21	19	17	19	22

MOISTUIR						
Our Reference		203053-6	203053-7	203053-8	203053-9	203053-10
Your Reference	UNITS	BD2/20181012	BH7	BH7	BH8	BH8
Depth		-	0.2-0.3	0.5-0.6	0.2-0.3	0.4-0.5
Date Sampled		10/10/2018	11/10/2018	11/10/2018	11/10/2018	11/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Date analysed	-	17/10/2018	17/10/2018	17/10/2018	17/10/2018	17/10/2018
Moisture	%	19	8.8	23	22	17

Moisture			
Our Reference		203053-11	203053-12
Your Reference	UNITS	BH9	BH9
Depth		0.2-0.3	0.5-0.6
Date Sampled		11/10/2018	10/10/2018
Type of sample		Soil	Soil
Date prepared	-	16/10/2018	16/10/2018
Date analysed	-	17/10/2018	17/10/2018
Moisture	%	25	17

. . .

Asbestos ID - soils						
Our Reference		203053-3	203053-4	203053-5	203053-6	203053-7
Your Reference	UNITS	BH5	BH6	BH6	BD2/20181012	BH7
Depth		0.2-0.3	0.2-0.3	0.9-1.0	-	0.2-0.3
Date Sampled		10/10/2018	10/10/2018	10/10/2018	10/10/2018	11/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 30g	Approx. 15g	Approx. 45g
Sample Description	-	Brown coarse- 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						
Our Reference		203053-8	203053-9	203053-10	203053-11	203053-12
Your Reference	UNITS	BH7	BH8	BH8	BH9	BH9
Depth		0.5-0.6	0.2-0.3	0.4-0.5	0.2-0.3	0.5-0.6
Date Sampled		11/10/2018	11/10/2018	11/10/2018	11/10/2018	10/10/2018
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	16/10/2018	16/10/2018	16/10/2018	16/10/2018	16/10/2018
Sample mass tested	g	Approx. 30g	Approx. 40g	Approx. 45g	Approx. 55g	Approx. 35g
Sample Description	-	Brown coarse- 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				

Metals in TCLP USEPA1311			
Our Reference		203053-1	203053-2
Your Reference	UNITS	BH3A	BH4A
Depth		0.2-0.3	0.3-0.4
Date Sampled		12/10/2018	11/10/2018
Type of sample		Soil	Soil
Date extracted	-	17/10/2018	17/10/2018
Date analysed	-	17/10/2018	17/10/2018
pH of soil for fluid# determ.	pH units	8.3	7.9
pH of soil TCLP (after HCI)	pH units	1.8	1.8
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.2	5.1
Lead in TCLP	mg/L	0.1	<0.03

PAHs in TCLP (USEPA 1311)		_	
Our Reference		203053-1	203053-2
Your Reference	UNITS	ВНЗА	BH4A
Depth		0.2-0.3	0.3-0.4
Date Sampled		12/10/2018	11/10/2018
Type of sample		Soil	Soil
Date extracted	-	17/10/2018	17/10/2018
Date analysed	-	19/10/2018	19/10/2018
Naphthalene in TCLP	mg/L	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	122	110

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.
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.
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-020 ICP-AES	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.

Method ID	Methodology Summary
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.
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.
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 actually="" are="" at="" conservative<br="" is="" most="" pql.="" the="" this="">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 and<br="" approach="" are="" conservative="" is="" least="" the="" this="" zero.="">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 a="" are="" half="" hence="" mid-point<br="" pql.="" stipulated="" the="">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.</pql></pql></pql>
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						Du	Spike Recovery %			
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	203053-4
Date extracted	-			16/10/2018	3	16/10/2018	16/10/2018		16/10/2018	16/10/2018
Date analysed	-			17/10/2018	3	17/10/2018	17/10/2018		17/10/2018	17/10/2018
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	25	Org-016	<25	3	<25	<25	0	101	108
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	25	Org-016	<25	3	<25	<25	0	101	108
Benzene	mg/kg	0.2	Org-016	<0.2	3	<0.2	<0.2	0	97	103
Toluene	mg/kg	0.5	Org-016	<0.5	3	<0.5	<0.5	0	98	105
Ethylbenzene	mg/kg	1	Org-016	<1	3	<1	<1	0	104	113
m+p-xylene	mg/kg	2	Org-016	<2	3	<2	<2	0	103	110
o-Xylene	mg/kg	1	Org-016	<1	3	<1	<1	0	103	111
naphthalene	mg/kg	1	Org-014	<1	3	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	114	3	105	110	5	108	114

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]	11	16/10/2018	16/10/2018		[NT]	[NT]	
Date analysed	-			[NT]	11	17/10/2018	17/10/2018		[NT]	[NT]	
TRH C <sub>6</sub> - C <sub>9</sub>	mg/kg	25	Org-016	[NT]	11	<25	<25	0	[NT]	[NT]	
TRH C <sub>6</sub> - C <sub>10</sub>	mg/kg	25	Org-016	[NT]	11	<25	<25	0	[NT]	[NT]	
Benzene	mg/kg	0.2	Org-016	[NT]	11	<0.2	<0.2	0	[NT]	[NT]	
Toluene	mg/kg	0.5	Org-016	[NT]	11	<0.5	<0.5	0	[NT]	[NT]	
Ethylbenzene	mg/kg	1	Org-016	[NT]	11	<1	<1	0	[NT]	[NT]	
m+p-xylene	mg/kg	2	Org-016	[NT]	11	<2	<2	0	[NT]	[NT]	
o-Xylene	mg/kg	1	Org-016	[NT]	11	<1	<1	0	[NT]	[NT]	
naphthalene	mg/kg	1	Org-014	[NT]	11	<1	<1	0	[NT]	[NT]	
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	11	113	108	5	[NT]	[NT]	

QUALITY CO	NTROL: svT	RH (C10	-C40) in Soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	203053-4
Date extracted	-			16/10/2018	3	16/10/2018	16/10/2018		16/10/2018	16/10/2018
Date analysed	-			16/10/2018	3	17/10/2018	17/10/2018		17/10/2018	17/10/2018
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	50	Org-003	<50	3	<50	<50	0	113	110
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	100	Org-003	<100	3	<100	<100	0	100	110
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	100	Org-003	<100	3	<100	<100	0	90	118
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	50	Org-003	<50	3	<50	<50	0	113	110
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	100	Org-003	<100	3	<100	<100	0	100	110
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	100	Org-003	<100	3	<100	<100	0	90	118
Surrogate o-Terphenyl	%		Org-003	117	3	115	115	0	124	117

QUALITY CO	NTROL: svT	RH (C10	-C40) in Soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	16/10/2018	16/10/2018		[NT]	[NT]
Date analysed	-			[NT]	11	17/10/2018	17/10/2018		[NT]	[NT]
TRH C <sub>10</sub> - C <sub>14</sub>	mg/kg	50	Org-003	[NT]	11	<50	<50	0	[NT]	[NT]
TRH C <sub>15</sub> - C <sub>28</sub>	mg/kg	100	Org-003	[NT]	11	<100	<100	0	[NT]	[NT]
TRH C <sub>29</sub> - C <sub>36</sub>	mg/kg	100	Org-003	[NT]	11	<100	<100	0	[NT]	[NT]
TRH >C <sub>10</sub> -C <sub>16</sub>	mg/kg	50	Org-003	[NT]	11	<50	<50	0	[NT]	[NT]
TRH >C <sub>16</sub> -C <sub>34</sub>	mg/kg	100	Org-003	[NT]	11	<100	<100	0	[NT]	[NT]
TRH >C <sub>34</sub> -C <sub>40</sub>	mg/kg	100	Org-003	[NT]	11	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	11	116	117	1	[NT]	[NT]

QUALIT	Y CONTRO	L: PAHs	in Soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	203053-4
Date extracted	-			16/10/2018	3	16/10/2018	16/10/2018		16/10/2018	16/10/2018
Date analysed	-			17/10/2018	3	17/10/2018	17/10/2018		17/10/2018	17/10/2018
Naphthalene	mg/kg	0.1	Org-012	<0.1	3	<0.1	<0.1	0	102	89
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	3	<0.1	<0.1	0	103	90
Phenanthrene	mg/kg	0.1	Org-012	<0.1	3	<0.1	<0.1	0	107	#
Anthracene	mg/kg	0.1	Org-012	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	3	<0.1	0.1	0	99	#
Pyrene	mg/kg	0.1	Org-012	<0.1	3	<0.1	<0.1	0	89	#
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	3	<0.1	<0.1	0	97	123
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	3	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	3	<0.05	<0.05	0	109	131
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	95	3	90	94	4	90	92

QUALIT	Y CONTRO	L: PAHs	in Soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	16/10/2018	16/10/2018		[NT]	[NT]
Date analysed	-			[NT]	11	17/10/2018	17/10/2018		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	11	0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	11	0.7	0.6	15	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	11	0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	11	1.8	1.7	6	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	11	1.6	1.5	6	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	11	0.9	0.8	12	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	11	0.9	0.8	12	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	11	2	2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	11	0.93	0.88	6	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	11	0.4	0.5	22	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	11	0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	11	0.6	0.5	18	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	11	94	95	1	[NT]	[NT]

QUALITY CONTR	ROL: Organo	chlorine l	Pesticides in soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	203053-4
Date extracted	-			16/10/2018	3	16/10/2018	16/10/2018		16/10/2018	16/10/2018
Date analysed	-			17/10/2018	3	17/10/2018	17/10/2018		17/10/2018	17/10/2018
НСВ	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	87	76
gamma-BHC	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	109	95
Heptachlor	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	97	83
delta-BHC	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	95	81
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	95	81
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	116	100
Dieldrin	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	101	87
Endrin	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	92	79
pp-DDD	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	101	88
Endosulfan II	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	84	76
Methoxychlor	mg/kg	0.1	Org-005	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	91	3	89	92	3	113	97

QUALITY CONTR	ROL: Organo	chlorine I	Pesticides in soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	16/10/2018	16/10/2018		[NT]	[NT]
Date analysed	-			[NT]	11	17/10/2018	17/10/2018		[NT]	[NT]
НСВ	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	11	83	106	24	[NT]	[NT]

QUALITY CONT	ROL: Organ	ophosph	orus Pesticides			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	203053-4
Date extracted	-			16/10/2018	3	16/10/2018	16/10/2018		16/10/2018	16/10/2018
Date analysed	-			17/10/2018	3	17/10/2018	17/10/2018		17/10/2018	17/10/2018
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	3	<0.1	<0.1	0	85	79
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	3	<0.1	<0.1	0	98	101
Dimethoate	mg/kg	0.1	Org-008	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	3	<0.1	<0.1	0	90	95
Fenitrothion	mg/kg	0.1	Org-008	<0.1	3	<0.1	<0.1	0	130	99
Malathion	mg/kg	0.1	Org-008	<0.1	3	<0.1	<0.1	0	78	78
Parathion	mg/kg	0.1	Org-008	<0.1	3	<0.1	<0.1	0	114	90
Ronnel	mg/kg	0.1	Org-008	<0.1	3	<0.1	<0.1	0	94	86
Surrogate TCMX	%		Org-008	91	3	89	92	3	99	87

QUALITY CONT	ROL: Organ	ophospho	orus Pesticides			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	16/10/2018	16/10/2018		[NT]	[NT]
Date analysed	-			[NT]	11	17/10/2018	17/10/2018		[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-008	[NT]	11	83	106	24	[NT]	[NT]

QUALIT	Y CONTRO	L: PCBs	in Soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	203053-4
Date extracted	-			16/10/2018	3	16/10/2018	16/10/2018		16/10/2018	16/10/2018
Date analysed	-			17/10/2018	3	17/10/2018	17/10/2018		17/10/2018	17/10/2018
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	3	<0.1	<0.1	0	86	94
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	91	3	89	92	3	99	87

QUALIT	Y CONTRO	L: PCBs	in Soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	16/10/2018	16/10/2018		[NT]	[NT]
Date analysed	-			[NT]	11	17/10/2018	17/10/2018		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	[NT]	11	83	106	24	[NT]	[NT]

QUALITY CONT	ROL: Acid E	Extractabl	e metals in soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	203053-4
Date prepared	-			16/10/2018	3	16/10/2018	16/10/2018		16/10/2018	16/10/2018
Date analysed	-			16/10/2018	3	16/10/2018	16/10/2018		16/10/2018	16/10/2018
Arsenic	mg/kg	4	Metals-020	<4	3	<4	<4	0	107	77
Cadmium	mg/kg	0.4	Metals-020	<0.4	3	<0.4	<0.4	0	101	80
Chromium	mg/kg	1	Metals-020	<1	3	12	11	9	105	84
Copper	mg/kg	1	Metals-020	<1	3	23	17	30	110	115
Lead	mg/kg	1	Metals-020	<1	3	13	15	14	105	#
Mercury	mg/kg	0.1	Metals-021	<0.1	3	0.7	0.4	55	114	111
Nickel	mg/kg	1	Metals-020	<1	3	7	5	33	106	83
Zinc	mg/kg	1	Metals-020	<1	3	34	30	12	106	116

QUALITY CONT	ROL: Acid E	xtractable	e metals in soil			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-				11	16/10/2018	16/10/2018		[NT]	
Date analysed	-				11	16/10/2018	16/10/2018		[NT]	
Arsenic	mg/kg	4	Metals-020		11	8	6	29	[NT]	
Cadmium	mg/kg	0.4	Metals-020		11	0.8	0.8	0	[NT]	
Chromium	mg/kg	1	Metals-020		11	23	24	4	[NT]	
Copper	mg/kg	1	Metals-020		11	96	100	4	[NT]	
Lead	mg/kg	1	Metals-020		11	710	590	18	[NT]	
Mercury	mg/kg	0.1	Metals-021		11	1.2	1.5	22	[NT]	
Nickel	mg/kg	1	Metals-020		11	10	9	11	[NT]	
Zinc	mg/kg	1	Metals-020	[NT]	11	440	440	0	[NT]	[NT]

QUALITY		Du	Spike Recovery %							
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			16/10/2018	[NT]		[NT]	[NT]	16/10/2018	
Date analysed	-			16/10/2018	[NT]		[NT]	[NT]	16/10/2018	
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CON	TROL: Metal	ls in TCLF		Du	Spike Recovery %					
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			17/10/2018	1	17/10/2018	17/10/2018		17/10/2018	[NT]
Date analysed	-			17/10/2018	1	17/10/2018	17/10/2018		17/10/2018	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP- AES	<0.03	1	0.1	0.1	0	105	[NT]

QUALITY CONT	ROL: PAHs	in TCLP	(USEPA 1311)			Du	plicate		Spike Re	covery %
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	203053-2
Date extracted	-			17/10/2018	1	17/10/2018	17/10/2018		17/10/2018	17/10/2018
Date analysed	-			19/10/2018	1	19/10/2018	19/10/2018		19/10/2018	19/10/2018
Naphthalene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	96	75
Acenaphthylene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	107	86
Phenanthrene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	110	99
Anthracene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	120	107
Pyrene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	110	97
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	96	91
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012	<0.002	1	<0.002	<0.002	0	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	104	85
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012	<0.001	1	<0.001	<0.001	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	109	1	122	113	8	111	106

Result Definiti	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.								
Accelling Deindeinen I	Notes Ovidalizes as several that Themsetalement Orliferes, Freed, Fatancessi, & F. Orli laurels are less than								

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

#### Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

#### **Report Comments**

Asbestos: Excessive sample volumes were provided for asbestos analysis. A portion of the supplied sample was sub-sampled according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.

Note: Samples 203053-3-12 were sub-sampled from bags provided by the client.

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 203053-6 was sub-sampled from a jar provided by the client.

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

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 203053-3 for Hg. Therefore a triplicate result has been issued as laboratory sample number 203053-24.

PAHs in Soil - # Percent recovery is not possible to report as the high concentration of analytes in the sample 4 has caused interference.

PAHs in Soil - The RPD for duplicate results is accepted due to the non homogenous nature of the sample/s 4.

		· C	HAIN	OF	USTO	9 <b>D</b> Y	· · · ·					Ø.		glas s I Envi	<b>Pa</b>	rtners
Client:	Charter Hall Holdings Pty Ltd				Project Nut	nber	86415.02		_		To: Envirolab Services					
Contact Per	són:				Project Nan	ne:	Proposed Co	mmercial De	velopment		Contact Per	son:	Aileen Hie			
Project Mgr	@aul Gorman			,	PO No.;		- ·				Address:	•	12 Ashley S	Street		· ·
					lab Quote N	lo. :					Chatswood NSW 2068					
Address:	96 Hermitage Road				Date result	s required:	Standard	-	-		Phone:		02 9910 62	100		
	West Ryde NSW 2114			•	Or choose:						Fax:		02 9910 62	01		
	_				Note: Inform	lab in advance	if urgent turna	around is requ	ired - surcharges	apply	Email:		ahie@enviro	lab.com.au		
Phone:	9809 0666				Report form	nat: esdat / P	DF / Excel				Laboratory	Report No	:			· · · · · · · · · · · · · · · · · · ·
Emali:	paul.gorman@douglaspartner	s.com.au			Comments:		•	•			Lab Comme	nts:				
	celine.li@douglaspartners.cor	<u>n.au</u>														
	Sample Info	mation								Tests Required						Comments
Lab Sample ID	Field Sample ID	Date sampled	Container Type	Type of sample	Combo 8a	Combo 3a	Lead	BaP	Lead in TCLP	BaP in TCLP	BTEX	-				Provide as much information about the sample as you can
i	BH3A/0.2-0.3	12/10/2018	G/P	S			X	1 X	X	Х				· [		
2	BH4A/0.3-0.4	11/10/2018	G/P	5	1		X	X	.X.	Х						
3	BH5/0.2-0.3	10/10/2018	G/P	S	Х								•			
ų.	BH6/0.2-0.3	10/10/2018	G/P	S	х		4									
Ś	BH6/0.9-1.0	10/10/2018	G/P	5	•	X		1		ſ.					1	
6	BD2/20181012	10/10/2018	G	S		X								÷		Intra Lab
7	BH7/0.2-0.3	11/10/2018	G/P	S	X										· ·	•
8	<sup>-</sup> BH7/0.5-0.6	11/10/2018	G/P	S		X										
ଁ ମ୍ପ	BD1/20181012	11/10/2018	G	S		X						-			· · · · · ·	Inter lab ALS
A K	BH8/0.2-0.3	11/10/2018	G/P	S	X		,								1	
10 1-1	BH8/0.4-0.5	11/10/2018	G/P	5		X									1.	
IN PL	· BH9/0.2-0.3	11/10/2018	G/P	S-	x											<u>ــــــــــــــــــــــــــــــــــــ</u>
12KS	BH9/0.5-0.6	10/10/2018	G/P	S		X		Ł			T					
1314	trip spike	10/10/2018	G	S					, , ,		X					· · · · · · · · · · · · · · · · · · ·
JUL 8	trip blank	10/10/2018	G	S							X	_				·
• • •								<u> </u>								
										÷.						
Relinquishe	d by: Douglas Partners				Sample Rec	elpt	- 	·			Lab use only:					
Courier (by whom)					Received by	(Company):	<u>, EL</u> ,	<u> </u>			Samples Received: Cool or Ambient (circle one)					·
Condition of Sample at dispatch Cool or Ambient (circle)					Print Name	<u>. T.</u>	<u>Jauv</u>	en_			Temperature Received at: (if applicable)					
Temperatur	e (if Applicable):				Date & Time:  5  0  Pr 0 12:00					Transported by: Hand delivered / courier						
Print Name:					Signature:					<u> </u>						
Date & Time	e:			•		W	• •	-	-		1					n • -
Signature:	- <u></u>			×					:							Page 1_c
	•				~						· .		-		ERVI	reiae cervices 18 Ashlev St
				1.							•		E		Chatswe	od NSW 2067
	-			<i>.</i>											Ph-	(02) 9910 6200

Chetswood NSW 2067 Ph: (02) 9910 6200 Job No: 200 053 Date Received: 1510118 Time Received: 12:00 Received By: Th Temp Cool Ambient Cooling: Icelice back Security: Intact/Broken/None

•

, *1* 

ſ

6

•

. .

- 5

• '

6

Ellen \	Wanda	ala Gan	nage
---------	-------	---------	------

fob 203053

	From: Sent:	: Celine Li <celine.l Monday, 15 Octob</celine.l 	i@douglaspartners.com.au> per 2018 2:49 PM	
	To	Ellen Wandala Gar	nage	
	Subie	rt: RE: 86415.02 - Pro	posed Commercial Development	
	Gabje			
	Hi Flle			
	in ene			
	Yes th	hey are. Can you please put these extra sample	s on hold?	
	Thank	 <\$,		
	Celin	e Li I Environmental Engineer/Scientist		
	Doug	las Partners Pty Ltd   ABN 75 053 980 117   v	vww.douglaspartners.com.au	FINANCIAL REVIEW
	96 He	ermitage Road West Ryde NSW 2114   PO Box	472 West Ryde NSW 1685	CLIENT CHOICE AWARI
	P: 02	9809 0666   F: 02 9809 4095   M: 0428 199 64	6   E: Celine.Li@douglaspartners.com.au	CLILNT CHOICE AWARD
				WINNER
	<u>ч</u> и 2-			
	distribu	nall is confidential. If you are not the intended recipient, p ition or use of the contents of this information is prohibited	lease notify us immediately and be aware that any di	commitment through emails.
	not con	firmed by fax or letter.		ven 🛫 – efylde skolfennade skar – energen af en engelander
	From	Ellen Wandala Gamage [mailto:EWandalaGan	nage@envirolab.com.au]	
	Sent:	Monday, 15 October 2018 2:47 PM		
	<b>To:</b> C	eline Li		
	Cc: Pa	aul Gorman		
	Subje	ect: 86415.02 - Proposed Commercial Develop	nent	
			<i>i</i>	
	Hi Cel	line,		
	There	were several extra bags received with these s	amples:	
X	BH5 (	0.4-0.5\\$	- · · • • • • • • • • • • • • • • • • •	
K	BH5	0 9-1 0 10		
À		0.5-0.6 <b>N</b>		
$\sqrt{d}$	'вче ·	$2 0_{2} 1_{3} Q$		
74 74				
~	יחסי <u>,</u> הטק ו			
1				
Z				
Æ	генато	$0.9-1.0$ $\nu^{-1}$		
эĽ	( <sup>BH9_3</sup>			
/		· · · · · · · · · · · · · · · · · · ·		
	Can y	ou let me know if any of the above are for the	project received?	
	Thank	<s< th=""><th></th><th></th></s<>		
	Ellen			
	i			
	Doger	 rdc		
	regai	iuo,		
	<b>C</b> 11	Mandala Campon I Customer Comico (12am	(2nm)   Envirolah Convices Dty Ltd	
	Ellen	i wandala Gamage   Customer Service (12pm 	- opini) [ chvirolab services Pty Ltu	
		۱ ۱		
	i		1	
		1		



# **CERTIFICATE OF ANALYSIS**

Work Order	ES1830699	Page	: 1 of 6
Client	: DOUGLAS PARTNERS PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR PAUL GORMAN	Contact	: Shirley LeCornu
Address	: PO BOX 472 96 HERMITAGE ROAD	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
	WEST RYDE NSW, AUSTRALIA 1685		
Telephone	: +61 02 9809 0666	Telephone	: +6138549 9630
Project	: 86415.02 PROPOSED COMMERCIAL DEVELOPMENT	Date Samples Received	: 16-Oct-2018 16:20
Order number	:	Date Analysis Commenced	: 17-Oct-2018
C-O-C number	:	Issue Date	: 23-Oct-2018 13:58
Sampler	:		Hac-MRA NATA
Site	:		
Quote number	: EN/222		Accorditation No. 925
No. of samples received	: 1		Accredited for compliance with
No. of samples analysed	: 1		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
- Descriptive 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
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, 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.
- EA200: As only one sample container was submitted for multiple tests, sub sampling was conducted prior to Asbestos analysis. As this has the potential to understate detection, results should be scrutinised accordingly.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- 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.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No\*' No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.


### Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	BD1/20181012	 	 
	Cli	ent samplii	ng date / time	11-Oct-2018 00:00	 	 
Compound	CAS Number	LOR	Unit	ES1830699-001	 	 
				Result	 	 
EA055: Moisture Content (Dried @	105-110°C)					
Moisture Content		1.0	%	9.7	 	 
EA200: AS 4964 - 2004 Identificatio	on of Asbestos in Soils					
Asbestos Detected	1332-21-4	0.1	g/kg	No	 	 
Asbestos (Trace)	1332-21-4	5	Fibres	No	 	 
Asbestos Type	1332-21-4	-		-	 	 
Sample weight (dry)		0.01	g	53.5	 	 
APPROVED IDENTIFIER:		-		A. SMYLIE	 	 
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	18	 	 
Copper	7440-50-8	5	mg/kg	87	 	 
Lead	7439-92-1	5	mg/kg	<5	 	 
Nickel	7440-02-0	2	mg/kg	130	 	 
Zinc	7440-66-6	5	mg/kg	53	 	 
EG035T: Total Recoverable Mercu	ry by FIMS					
Mercury	7439-97-6	0.1	mg/kg	<0.1	 	 
EP075(SIM)B: Polynuclear Aromati	c 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	 	 



### Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	BD1/20181012	 	 
	Cli	ient sampliı	ng date / time	11-Oct-2018 00:00	 	 
Compound	CAS Number	LOR	Unit	ES1830699-001	 	 
				Result	 	 
EP075(SIM)B: Polynuclear Aromatic Hyd	drocarbons - Cont	inued				
^ 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 Hydrocarbo	ns					
C6 - C9 Fraction		10	mg/kg	<10	 	 
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 Hydrocar	bons - NEPM 201	3 Fraction	ıs			
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	 	 
<sup>^</sup> C6 - C10 Fraction minus BTEX	C6_C10-BTEX	10	mg/kg	<10	 	 
(F1)						
>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		50	mg/kg	<50	 	 
(F2)						
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	 	 
		0.2	mg/kg	<0.2	 	 
^ lotal Xylenes		0.5	mg/kg	<0.5	 	 
	91-20-3	1	mg/kg	<1	 	 
EP075(SIM)S: Phenolic Compound Surre	ogates					
Phenol-d6	13127-88-3	0.5	%	68.0	 	 
2-Chlorophenol-D4	93951-73-6	0.5	%	71.7	 	 
2.4.6-Tribromophenol	118-79-6	0.5	%	55.2	 	 
EP075(SIM)T: PAH Surrogates						



### Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	BD1/20181012	 	 
	Cl	ient sampli	ng date / time	11-Oct-2018 00:00	 	 
Compound	CAS Number	LOR	Unit	ES1830699-001	 	 
				Result	 	 
EP075(SIM)T: PAH Surrogates - Continue	d					
2-Fluorobiphenyl	321-60-8	0.5	%	75.2	 	 
Anthracene-d10	1719-06-8	0.5	%	79.2	 	 
4-Terphenyl-d14	1718-51-0	0.5	%	73.7	 	 
EP080S: TPH(V)/BTEX Surrogates						
1.2-Dichloroethane-D4	17060-07-0	0.2	%	93.9	 	 
Toluene-D8	2037-26-5	0.2	%	96.9	 	 
4-Bromofluorobenzene	460-00-4	0.2	%	96.4	 	 

#### **Analytical Results**

#### **Descriptive Results**

#### Sub-Matrix: SOIL

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos	in Soils	
EA200: Description	BD1/20181012 - 11-Oct-2018 00:00	Mid brown sandy soil.



### Surrogate Control Limits

Sub-Matrix: SOIL		Recovery	Limits (%)
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surroga	tes		
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



### QUALITY CONTROL REPORT

Work Order	ES1830699	Page	: 1 of 7
Client	: DOUGLAS PARTNERS PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR PAUL GORMAN	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 9809 0666	Telephone	: +6138549 9630
Project	: 86415.02 PROPOSED COMMERCIAL DEVELOPMENT	Date Samples Received	: 16-Oct-2018
Order number	:	Date Analysis Commenced	: 17-Oct-2018
C-O-C number	:	Issue Date	23-Oct-2018
Sampler	:		Hac-MRA NATA
Site	:		
Quote number	: EN/222		Accreditation No. 925
No. of samples received	: 1		Accredited for compliance with
No. of samples analysed	: 1		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
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, 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 L	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Cor	ntent (Dried @ 105-110	°C) (QC Lot: 1987291)							
ES1830496-027	Anonymous	EA055: Moisture Content		0.1	%	6.3	6.1	3.17	No Limit
EG005T: Total Metal	by ICP-AES (QC Lot:	: 1991639)							
ES1830434-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	3	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	22	20	13.7	0% - 50%
		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	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
ES1830698-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	2	2	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	294	302	2.41	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	35	34	3.22	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	216	214	0.771	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	103	97	5.64	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	17200	16700	3.07	0% - 20%
EG035T: Total Reco	verable Mercury by FI	MS (QC Lot: 1991640)							
ES1830698-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.3	0.3	0.00	No Limit
EP075(SIM)B: Polyni	clear Aromatic Hydro	carbons (QC Lot: 1987589)							
ES1830681-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	1.0	1.1	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



Sub-Matrix: SOIL						Laboratory I	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: Polynu	clear Aromatic Hydrocarl	oons (QC Lot: 1987589) - continued							
ES1830681-001	Anonymous	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	0.6	0.6	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.8	0.8	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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			205-82-3						
		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		0.5	mg/kg	2.4	3.0	22.2	No Limit
		hydrocarbons							
		EP075(SIM): Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Pet	roleum Hydrocarbons (Q	C Lot: 1986631)							
ES1830703-002	Anonymous	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Pet	roleum Hydrocarbons (Q	C Lot: 1987591)							
ES1830731-002	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
ES1830681-001	Anonymous	EP071: C15 - C28 Fraction		100	mg/kg	4570	4930	7.63	0% - 20%
		EP071: C29 - C36 Fraction		100	mg/kg	2490	2520	1.37	0% - 20%
		EP071: C10 - C14 Fraction		50	mg/kg	380	360	5.86	No Limit
EP080/071: Total Rec	overable Hydrocarbons -	NEPM 2013 Fractions (QC Lot: 1986631)							
ES1830703-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Rec	overable Hydrocarbons -	NEPM 2013 Fractions (QC Lot: 1987591)							
ES1830731-002	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
ES1830681-001	Anonymous	EP071: >C16 - C34 Fraction		100	mg/kg	6450	6780	4.90	0% - 20%
		EP071: >C34 - C40 Fraction		100	mg/kg	1210	1510	22.3	0% - 50%
		EP071: >C10 - C16 Fraction		50	mg/kg	560	550	0.00	0% - 50%
EP080: BTEXN (QC)	Lot: 1986631)								
ES1830703-002	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	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						

Page	: 4 of 7
Work Order	: ES1830699
Client	: DOUGLAS PARTNERS PTY LTD
Project	: 86415.02 PROPOSED COMMERCIAL DEVELOPMENT



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: BTEXN (QC Lot: 1986631) - continued									
ES1830703-002	Anonymous	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	Jb-Matrix: SOIL Laboratory Control Spike (LCS) Report				S) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 19916	339)							
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	103	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	100	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	102	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	108	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	106	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	106	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	106	80	122
EG035T: Total Recoverable Mercury by FIMS(Q	CLot: 1991640)							
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	79.8	70	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbo	ns (QCLot: 1987589)							
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	111	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	117	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	109	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	114	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	121	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	110	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	124	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	120	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	104	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	113	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	88.8	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	103	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	112	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	67.2	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	72.7	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	70.6	63	121
EP080/071: Total Petroleum Hydrocarbons (QCL	.ot: 1986631)							
EP080: C6 - C9 Fraction		10	mg/kg	<10	26 mg/kg	92.5	68	128
EP080/071: Total Petroleum Hydrocarbons (QCL	.ot: 1987591)							
EP071: C10 - C14 Fraction		50	mg/kg	<50	300 mg/kg	99.5	75	129
EP071: C15 - C28 Fraction		100	mg/kg	<100	450 mg/kg	102	77	131
EP071: C29 - C36 Fraction		100	mg/kg	<100	300 mg/kg	96.6	71	129
EP080/071: Total Recoverable Hydrocarbons - N	EPM 2013 Fractions (QCLo	ot: 1986631)						



Sub-Matrix: SOIL			Method Blank (MB)	Laboratory Control Spike (LCS) Report					
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EP080/071: Total Recoverable Hydrocarbons - NEP	M 2013 Fractions (QC	:Lot: 1986631) - co	ontinued						
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	101	68	128	
EP080/071: Total Recoverable Hydrocarbons - NEP	M 2013 Fractions (QC	:Lot: 1987591)							
EP071: >C10 - C16 Fraction		50	mg/kg	<50	375 mg/kg	101	77	125	
EP071: >C16 - C34 Fraction		100	mg/kg	<100	525 mg/kg	99.9	74	138	
EP071: >C34 - C40 Fraction		100	mg/kg	<100	225 mg/kg	86.3	63	131	
EP080: BTEXN (QCLot: 1986631)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	100	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	105	67	121	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	100	65	117	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	102	66	118	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	102	68	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	98.5	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	Matrix Spike (MS) Report						
				Spike	SpikeRecovery(%)	Recovery Li	mits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Meta	als by ICP-AES (QCLot: 1991639)						
ES1830434-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	95.9	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.2	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	101	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	96.2	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	96.5	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	102	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	98.4	70	130
EG035T: Total Rec	overable Mercury by FIMS (QCLot: 1991640)						
ES1830434-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	82.3	70	130
EP075(SIM)B: Poly	nuclear Aromatic Hydrocarbons (QCLot: 1987589)						
ES1830681-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	115	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	125	70	130
EP080/071: Total P	etroleum Hydrocarbons (QCLot: 1986631)						
ES1830703-002	Anonymous	EP080: C6 - C9 Fraction		32.5 mg/kg	76.2	70	130
EP080/071: Total P	etroleum Hydrocarbons (QCLot: 1987591)						



Sub-Matrix: SOIL				Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Recovery L	imits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
EP080/071: Total F	Petroleum Hydrocarbons (QCLot: 1987591) - continued								
ES1830681-001 Anonymous		EP071: C10 - C14 Fraction		523 mg/kg	83.6	73	137		
		EP071: C15 - C28 Fraction		2319 mg/kg	93.1	53	131		
		EP071: C29 - C36 Fraction		1714 mg/kg	106	52	132		
EP080/071: Total F	Recoverable Hydrocarbons - NEPM 2013 Fractions(QCL	.ot: 1986631)							
ES1830703-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	83.0	70	130		
EP080/071: Total F	Recoverable Hydrocarbons - NEPM 2013 Fractions(QCL	.ot: 1987591)							
ES1830681-001	Anonymous	EP071: >C10 - C16 Fraction		860 mg/kg	104	73	137		
		EP071: >C16 - C34 Fraction		3223 mg/kg	96.0	53	131		
		EP071: >C34 - C40 Fraction		1058 mg/kg	94.9	52	132		
EP080: BTEXN (Q	CLot: 1986631)								
ES1830703-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	85.1	70	130		
		EP080: Toluene	108-88-3	2.5 mg/kg	87.4	70	130		
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	86.5	70	130		
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	89.9	70	130		
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	89.4	70	130		
		EP080: Naphthalene	91-20-3	2.5 mg/kg	95.7	70	130		



	QA/QC Compliance Assess	n Quality Review	
Work Order	ES1830699	Page	: 1 of 5
Client	: DOUGLAS PARTNERS PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR PAUL GORMAN	Telephone	: +6138549 9630
Project	: 86415.02 PROPOSED COMMERCIAL DEVELOPMENT	Date Samples Received	: 16-Oct-2018
Site	:	Issue Date	: 23-Oct-2018
Sampler	:	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.
- <u>NO</u> Duplicate outliers occur.
- <u>NO</u> Laboratory Control outliers occur.
- <u>NO</u> Matrix Spike outliers occur.
- For all regular sample matrices, <u>NO</u> surrogate recovery outliers occur.

#### **Outliers : Analysis Holding Time Compliance**

• <u>NO</u> 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

Matrix: SOIL

Quality Control Sample Type	Count Rate (%) Qua		(%)	Quality Control Specification	
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Total Mercury by FIMS	1	20	5.00	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 <u>VOC in soils</u> 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.

Evaluation:  $\mathbf{x}$  = Holding time breach ;  $\mathbf{v}$  = Within holding time.

Method	Sample Date	Ex	traction / Preparation			Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) BD1/20181012	11-Oct-2018				17-Oct-2018	25-Oct-2018	~
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200) BD1/20181012	11-Oct-2018				19-Oct-2018	09-Apr-2019	1
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) BD1/20181012	11-Oct-2018	19-Oct-2018	09-Apr-2019	1	19-Oct-2018	09-Apr-2019	1
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) BD1/20181012	11-Oct-2018	19-Oct-2018	08-Nov-2018	1	22-Oct-2018	08-Nov-2018	~
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) BD1/20181012	11-Oct-2018	18-Oct-2018	25-Oct-2018	~	19-Oct-2018	27-Nov-2018	~
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) BD1/20181012	11-Oct-2018	17-Oct-2018	25-Oct-2018	1	18-Oct-2018	25-Oct-2018	~
Soil Glass Jar - Unpreserved (EP071) BD1/20181012	11-Oct-2018	18-Oct-2018	25-Oct-2018	~	19-Oct-2018	27-Nov-2018	~
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) BD1/20181012	11-Oct-2018	17-Oct-2018	25-Oct-2018	1	18-Oct-2018	25-Oct-2018	~
Soil Glass Jar - Unpreserved (EP071) BD1/20181012	11-Oct-2018	18-Oct-2018	25-Oct-2018	1	19-Oct-2018	27-Nov-2018	~

Page	: 3 of 5
Work Order	: ES1830699
Client	: DOUGLAS PARTNERS PTY LTD
Project	: 86415.02 PROPOSED COMMERCIAL DEVELOPMENT



Matrix: SOIL				Evaluation	: × = Holding time	e breach ; ✓ = Withi	n holding time.
Method		Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
BD1/20181012	11-Oct-2018	17-Oct-2018	25-Oct-2018		18-Oct-2018	25-Oct-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			Evaluatio	on: × = Quality Co	ntrol frequency	not within specification ; ✓ = Quality Control frequency within specification.	
Quality Control Sample Type		С	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	OC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	10.00	x	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	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	7	14.29	10.00	~	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	10.00	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	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	10.00	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	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	10.00	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	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	7	14.29	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).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Total Metals by ICP-AES	EG005T	SOIL	<ul> <li>Analysis by Polarised Light Microscopy including dispersion starling</li> <li>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)</li> </ul>
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.



### SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: ES1830699					
Client Contact Address	<ul> <li>DOUGLAS PARTNERS PTY LTD</li> <li>MR PAUL GORMAN</li> <li>PO BOX 472 96 HERMITAGE ROAD</li> <li>WEST RYDE NSW, AUSTRALIA 1685</li> </ul>	Laboratory : E Contact : S Address : 2 N	Environmental Division Sydney Shirley LeCornu 177-289 Woodpark Road Smithfield NSW Australia 2164			
E-mail	: paul.gorman@douglaspartners.com.	E-mail : s	hirley.lecornu@Alsglobal.com			
Telephone	: +61 02 9809 0666	Telephone : +	61-3-8549 9630			
Facsimile	: +61 02 9809 4095	Facsimile +	61-2-8784 8500			
Project	86415.02 PROPOSED COMMERCIAL	Page : 1	: 1 of 2			
Order number	:	Quote number : E	M2017DOUPAR0002 (EN/222)			
C-O-C number	:	QC Level : N	EPM 2013 B3 & ALS QC Standard			
Site	:					
Sampler	:					
Dates						
Date Samples Receive	d : 16-Oct-2018 16:20	Issue Date	: 17-Oct-2018			
Client Requested Due Date	: 23-Oct-2018	Scheduled Reporting Date	23-Oct-2018			
Delivery Details	3					
Mode of Delivery	: Undefined	Security Seal	: Not Available			
No. of coolers/boxes	: 1	Temperature	: 16.1'c - Ice Bricks present			
Receipt Detail		No. of samples received /	analysed 1/1			

#### **General Comments**

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
- Asbestos analysis will be conducted by ALS Newcastle.
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal Aqueous (3 weeks), Solid (2 months) from receipt of samples.
- EA200: As only one sample container was submitted for multiple tests, sub sampling was conducted prior to Asbestos analysis. As this has the potential to understate detection, results should be scrutinised accordingly.



#### Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

#### • No sample container / preservation non-compliance exists.

#### Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component 055-103

#### Matrix: SOIL

default 00:00 on is provided, the laboratory and	the date of samplin sampling date wi	ig. If no sampling Il be assumed by ckets without a	date the		n in Soils -	/PAH
component Matrix: SOIL				EA055-103 e Content	EA200 os Identificatio	S-26 s/TRH/BTEXN
Laboratory sample ID	Client sampling date / time	Client sample ID		SOIL - I Moistur	SOIL - I Asbesto	SOIL - 8 8 metal
ES1830699-001	11-Oct-2018 00:00	BD1/20181012		✓	✓	1

#### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

#### **Requested Deliverables**

#### ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	accounts@douglaspartners.com.au
CELINE LI		
<ul> <li>*AU Certificate of Analysis - NATA (COA)</li> </ul>	Email	celine.li@douglaspartners.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	celine.li@douglaspartners.com.au
<ul> <li>*AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)</li> </ul>	Email	celine.li@douglaspartners.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	celine.li@douglaspartners.com.au
- Chain of Custody (CoC) (COC)	Email	celine.li@douglaspartners.com.au
- EDI Format - ENMRG (ENMRG)	Email	celine.li@douglaspartners.com.au
- EDI Format - ESDAT (ESDAT)	Email	celine.li@douglaspartners.com.au
- EDI Format - XTab (XTAB)	Email	celine.li@douglaspartners.com.au
PAUL GORMAN		
<ul> <li>*AU Certificate of Analysis - NATA (COA)</li> </ul>	Email	paul.gorman@douglaspartners.com
		.au
<ul> <li>*AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)</li> </ul>	Email	paul.gorman@douglaspartners.com
		.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	paul.gorman@douglaspartners.com
		.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	paul.gorman@douglaspartners.com
Chain of Custody (CoC) (COC)	[ree]	.au
- Chain of Custody (CoC) (COC)	Email	paul.gorman@douglaspartners.com
EDI Format ENMPG (ENMPG)	Emoil	.au
	Email	paul.gorman@douglaspartners.com
EDI Format - ESDAT (ESDAT)	Email	.au
	Emai	au
- EDI Format - XTab (XTAB)	Fmail	naul dorman@douglaspartners.com
		all

WORKORDER No:

		-	LIAI	N OF	CUS	10DY					-		bnoc	las	Partnei	y
Client:	Charter Hall Holdings Pty Ltd				1							Ŭ N	otechnics	l Environ	ment / Groundwa	ter
Contact	Person:				Project h	umber	86415.02				į					
Project A	Mgr@au! Gorman				Project N	ame:	Proposed Ct	mmercial De	velopment		Contact P	arson-	Alloca Ura	vices		
											Address:					
Address:	96 Hermitage Road				Date resu	ts required:	Standard						Chatswind N	jet Islar Joce		
	west Kyde NSW 2114				Or choose						Phone:		02 9910 6200	0007 10		
Phone:	9809 0666				Note: Info	m lab in advance	, if urgent turna	round is requir.	ed - Surcharges	-Annte	Fax:		02 9910 6201			
Email:	paul.gorman@doitelasnartn	Torr com au			Report for	mat: esdat / p	DF / Excel			, Andria	Email:		ahie@envirolab.c	om.au		
	celine.li@douglasnartners	Tom au			Comment	"					Laboratory	r Report No:				
	Sample in	formation									Lab Comm	ents:				
Lab Samp. ID	ie Field Sample ID	Date sampled	Container	Type of						ests Required						
╞	RH34/0 2-0 2	10,00,00	Type	sample	Combo 8a	Combo 3a	, peal	Bap	Lead in TCLP	BaP in TCLP	BTEX				Brankla	mments
d	BH4A/0.3-0.4	12/10/2018	45	S			×	×	×	>						Information about th e as you can
h	BH5/0.2-0.3	10/10/2018		s 0			×	×	×				*			
ð	BH6/0.2-0.3	10/10/2018		~ u	× ;								+			
4	BH6/0.9-1.0	10/10/2018	d/b			>	Ī							+		
ال	BD2/20181012	10/10/2018	0	, v		< >							$\frac{1}{1}$			
-0	BH7/0.2-0.3	11/10/2018	G/P	s	×	<								+		
0	BH7/0.5-0.6	11/10/2018	G/P	s.		×								-	Ing Lab	
	BU1/20181012	11/10/2018	ს	s		×					Ÿ					
	RHR/0 4-0 E	11/10/2018	6/P	S	×										Inter lah A4 5	
X	BH9/0.2-0.3	11/10/2018	6/b	s,		×										
र्द्र	BH9/0.5-0.6	10/10/2018	d/9	nu	×									5		
4 7 7	trip spike	10/10/2018	50	n in		×								-	-	
8	Inp blank	10/10/2018	ບ	s	-						×			-		
											×					
linquisher	d by: Douglas Partners							-				+			,	
urier (by v	whom)		5	2	Sample Rece	pt									Environmer	ntal Division
ndition of Mneraturo	Sample at dispatch Cool or Ambie	ent (circle)	H	T	Received by Print Name:	Company):				- 5	amples Rece	ived: Cool or A	mbiant (circle -		Sydney	
nt Name:					Date & Time:		₽¥				emperature I	Received at:	fif applica	hla)		
te & Time:			اللونيك	Werd	Signature:	B	•				ransported b	y: Hand delive	ved / courier	6		20022
matures	Commond ( ah 1 C.	ALAN ASK	10/191	2018		S										
	Everes court of															
11820	Jy / Date: Not	Nov-	1 1 1	-		$\frown$		(1 a/la			-			En		
A STATES	red Sv / Date:	<u>V-toit</u>	1 [ {	*	X	じつ	Sicc.		ئ							
OTE /			1 L L		>	Ì	2	00	ŧ			an.	N doL	n C Si	Telephone: + 61:2	8784 8555
			e t L				191	10)	20	1621	20	2-10	Data De		11010	
	PO / Internal Sh	leet:	{ [								-	-	Time R	sceived: 1	B	ŧ
			1 1										Receive	Fight	つ	
													Cooling:	2001 Ambien		
													522555			

		,									er					
			HAIN	I OF (	CUSTC	λQ					Ň.	D D C		S Pá vironmen	I Groundwater	
										ľ		Ē	irolah Services			
Chent:	Charter Hall Holdings Pty Ltd				Project Num	Der	Tonneed Com	nerriai Develc	ument		Contact Perso	ai Ai	en Hie			
Dentart Me	cisuit. Mataul Gorman				PO No.:	5					Address:	12	Ashley Street			
					lab Quote N							ΰ	atswood NSW 20	68		-
Address:	96 Hermitage Road				Date results	required:	standard				hone:	02	910 6200			
	West Ryde NSW 2114				Or choose: Mate: Inform	lah in advance	f urgent hurgerof	md is remired	- surcharges ap	- <u>-</u>	ax: Fmail:	ahi ahi	<b>9910 6201</b> @envirolab.com.au			
Phone:	9809 0666				Report form	at: esdat / PD	F / Excel				aboratory Re	sport No:				
Email:	paul.gorman@douglaspartne	ers.com.au			Comments:						ab Comment					
	celine.ii@douglaspartners.cc	<u>ormation</u>							Tes	ts Required					Contributis	
Lab Sampl ID	le Field Sample ID	Date sampled	Container Type	Type of sample	Combo 8a	Combo 3a	Lead	deg	ead in TCLP	3aP in TCLP	втех	-			Provide as much information sample as you can	about the
-	BH3A/0.2-0.3	12/10/2018	G/P	s			×	×	×	×			£			
d	BH4A/0.3-0.4	11/10/2018	G/P	S	-		×	×	×	×						
ŝ	BH5/0.2-0.3	10/10/2018	d/b	S	×				_							
2	BH6/0.2-0.3 BH6/0.9-1.0	10/10/2018		n v	<	×										
20	BD2/20181012	10/10/2018	; 0	s S		×									Intra Lab	
7	BH7/0.2-0.3	11/10/2018	G/P	S	×								- -			
00	BH7/0.5-0.6	11/10/2018	G/P	s		×				×					T. 1	
8	VI/BD1/20181012	11/10/2018	υ (	s i	,	×			_							
8) 5 1	BER8/0.2-0.3	11/10/2018 11/10/2018	4/9	νv	<	×										2
	BH9/0.2-0.3	11/10/2018	G/P	s N	×											
5	BH9/0.5-0.6	10/10/2018	G/P	s		×										
22	trip spike	10/10/2018	0	s					-		×		-			Ţ
PT h	trip blank	10/10/2018	ט	<u>م</u>							<b>-</b>				-	-
															Environmental Di	VISION
Relinquis	hed by: Douglas Partners			215	Sample Rec	eipt					Lab use only:				Sydney work Order Befere	ence
Courier (1	y whom)		+		Received by	(Company):		K			Samples Rec	lived: Cool or A	nbient (circle one			000
Condition Toward	of Sample at dispatch Cool or Amt	bient (circle)			Print Name		シーション	1) 20	0		ransnorted	keceived at: w: Hand defive	(IT applicable red / courier			>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
Print Nam	ure (il Applicable). Ne:		16.51	111	Signature:											
Date & Tir	me:		116/1	0/2018		R	at.									
Signature	Provension of a color of	Spit W		A R										1 		. 82
	aolysis.	- Les		•	Ś	$\subset$		Q10/			u.			la chats		
STRATES STRATES	ee ey/late.ly	Actor		,a'	-2-	XOV	< 50C		,			,л	oN dol	e g	Telephone: + 61:2-8784,85	<b>1</b> 2
ROME.							16	(0)	<b>8</b> (/)	162	ð	16-10	Date Re	ceived: 15	110118	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	医外的 化合合合合合合合合合合合合合合合合合合合合合合合合合合合合合合合合合合合合		     				) -						Time Re Receive	ceived: 1.	30	
er an The The The The The The		sheet:	[ ] ]										Temp: Cooling:	ool Ambier Icelleepar	τQ	
													Security	(Intact/Bro	ken/None	

à.

# Appendix F

Lot Search Report

SafeWork Search Letter

and Asbestos and Hazardous Materials Pre-Demolition Survey



## Date: 02 Nov 2018 17:32:40 Reference: LS004521 EP Address: 2-6 Hassall Street, Parramatta, NSW 2150

Disclaimer:

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

# **Table of Contents**

# **Location Confidences**

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

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

# **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	02/11/2018	02/11/2018	Daily	-	-	-	-
Topographic Data	Dept. Finance, Services & Innovation	17/07/2018	17/07/2018	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	17/10/2018	17/10/2018	Monthly	1000	0	0	0
Contaminated Land Records of Notice	Environment Protection Authority	10/10/2018	10/10/2018	Monthly	1000	0	0	0
Former Gasworks	Environment Protection Authority	04/10/2018	11/10/2017	Monthly	1000	0	0	1
National Waste Management Facilities Database	Geoscience Australia	07/08/2018	07/03/2017	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	05/10/2018	05/10/2018	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	11/01/2018	11/01/2018	As required	1000	0	0	3
Licensed Activities under the POEO Act 1997	Environment Protection Authority	01/11/2018	01/11/2018	Monthly	1000	0	1	1
Delicensed POEO Activities still Regulated by the EPA	Environment Protection Authority	01/11/2018	01/11/2018	Monthly	1000	0	0	1
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	01/11/2018	01/11/2018	Monthly	1000	0	4	10
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	4	6
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	54	56
UBD Business to Business Directory 1986 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	10
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	59	62
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	4
UBD Business Directory 1978 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	61	62
UBD Business Directory 1978 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	3
UBD Business Directory 1975 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	1	3
UBD Business Directory 1975 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	3
UBD Business Directory 1970 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	4	5
UBD Business Directory 1970 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	8
UBD Business Directory 1965 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	8	9
UBD Business Directory 1965 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	3
UBD Business Directory 1961 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	3	5
UBD Business Directory 1961 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	9
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	1	1
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	4	22

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	0	47
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	0	24
Points of Interest	Dept. Finance, Services & Innovation	12/10/2018	12/10/2018	Quarterly	1000	0	5	114
Tanks (Areas)	Dept. Finance, Services & Innovation	15/10/2018	15/10/2018	Quarterly	1000	0	0	0
Tanks (Points)	Dept. Finance, Services & Innovation	15/10/2018	15/10/2018	Quarterly	1000	0	0	0
Major Easements	Dept. Finance, Services & Innovation	12/10/2018	12/10/2018	Quarterly	1000	0	0	3
State Forest	Dept. Finance, Services & Innovation	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	18/01/2018	30/09/2017	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Botany Groundwater Management Zones	NSW Department of Primary Industries	15/03/2018	01/10/2005	As required	1000	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	0	45
Geological Units 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	1	-	4
Geological Structures 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	0	-	0
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Soil Landscapes	NSW Office of Environment & Heritage	12/08/2014		None planned	1000	1	-	10
Atlas of Australian Soils	CSIRO	19/05/2017	17/02/2011	As required	1000	1	1	1
Environmental Planning Instrument - Acid Sulfate Soils	NSW Department of Planning and Environment	23/10/2018	12/10/2018	As required	500	1	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	2	3
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	0
Dryland Salinity Potential of Western Sydney	NSW Office of Environment & Heritage	12/05/2017	01/01/2002	None planned	1000	1	1	3
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
EPI - Land Zoning	NSW Planning and Environment	23/10/2018	12/10/2018	Quarterly	1000	1	5	114
EPI - Minimum Lot Size	NSW Planning and Environment	23/10/2018	12/10/2018	Quarterly	0	0	-	-
EPI - Height of Buildings	NSW Planning and Environment	23/10/2018	12/10/2018	Quarterly	0	1	-	-
EPI - Floor Space Ratio	NSW Planning and Environment	23/10/2018	12/10/2018	Quarterly	0	1	-	-
EPI - Land Application	NSW Planning and Environment	23/10/2018	12/10/2018	Quarterly	0	1	-	-
EPI - Land Reservation Acquisition	NSW Planning and Environment	23/10/2018	12/10/2018	Quarterly	0	0	-	-
State Heritage Register - Curtilages	NSW Office of Environment & Heritage	18/10/2018	19/01/2018	Quarterly	1000	0	0	29

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Environmental Planning Instrument - Heritage	NSW Department of Planning and Environment	10/09/2018	27/07/2018	Quarterly	1000	0	4	252
Bush Fire Prone Land	NSW Rural Fire Service	08/08/2018	31/07/2018	Quarterly	1000	0	0	0
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment & Heritage	01/03/2017	16/12/2016	As required	1000	0	0	7
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	2
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	1
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	29/10/2018	29/10/2018	Daily	10000	-	-	-

## Aerial Imagery 2017

2-6 Hassall Street, Parramatta, NSW 2150





## **Contaminated Land & Waste Management Facilities**

2-6 Hassall Street, Parramatta, NSW 2150





# **Contaminated Land & Waste Management Facilities**

2-6 Hassall Street, Parramatta, NSW 2150

## 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
N/A	No records in buffer								

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

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

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

# **Contaminated Land & Waste Management Facilities**

2-6 Hassall Street, Parramatta, NSW 2150

## **Contaminated Land: Records of Notice**

Record of Notices within the dataset buffer:

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

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

### **Former Gasworks**

#### Former Gasworks within the dataset buffer:

Map Id	Location	Council	Further Info	Location Confidence	Distance	Direction
13	George Street, Parramatta	Parramatta City Council	Contact council	Premise Match	467m	North East

Former Gasworks Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

## **National Waste Management Site Database**

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

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

Waste Management Facilities Data Source: Geoscience Australia

Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

# **EPA PFAS Investigation Program**

2-6 Hassall Street, Parramatta, NSW 2150

## **EPA PFAS Investigation Program**

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

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

EPA PFAS Investigation Program: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

## **EPA Other Sites with Contamination Issues**

2-6 Hassall Street, Parramatta, NSW 2150





# **EPA Other Sites with Contamination Issues**

2-6 Hassall Street, Parramatta, NSW 2150

## **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
4	Embankment along stormwater canal.	Hassall and Ruse Streets, Parramatta	James Hardie Asbestos Waste Sites	Current Land Use: Hambeldon Cottage. Disposal area covered by grass and vegetation.	Premise Match	478m	East
5	Embankment along stormwater canal	Albert, Dalby and Prince Streets, Granville	James Hardie Asbestos Waste Sites	Current Land Use: Council assessed and considered the likely disposal location is residential or possibly RTA land.	Premise Match	843m	South
26	Cumberland Oval	O'Connell Street, Parramatta	James Hardie Asbestos Waste Sites	Current Land Use: Parramatta Stadium Parramatta Pool	Premise Match	968m	North West

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

## **Current EPA Licensed Activities**

2-6 Hassall Street, Parramatta, NSW 2150





# **EPA Activities**

2-6 Hassall Street, Parramatta, NSW 2150

## Licensed Activities under the POEO Act 1997

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

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
12208	SYDNEY TRAINS		PO BOX K349, HAYMARKET, NSW 1238		Railway systems activities	Road Match	56m	South West

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

## **Delicensed & Former Licensed EPA Activities**

2-6 Hassall Street, Parramatta, NSW 2150




## **EPA Activities**

2-6 Hassall Street, Parramatta, NSW 2150

#### 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
6848	AUSTRALIAN RED CROSS SOCIETY	PARRAMATTA BLOOD SERVICE	4 GEORGE ST	PARRAMATTA	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	722m	North West

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

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

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

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
20762	Laing O'Rourke Australia Construction Pty Ltd	, within the rail corridor between Hawksbury Rd, Westmead and Marion St, Harris Park, PARRAMATTA, NSW 2150,	Surrendered	19/04/2016	Railway systems activities	Road Match	44m	West
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	100m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	100m	-
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	100m	-
20560	JOHN HOLLAND PTY LTD	, 143 and 169 Macquarie Street, PARRAMATTA, NSW 2150,	Surrendered	15/04/2015	Extractive Activities	Premise Match	214m	North West
2730	NATIONWIDE NEWS PTY. LIMITED	142-154 MACQUARIE STREET, PARRAMATTA, NSW 2150	Surrendered	17/01/2000	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	269m	North East
1031	WYETH AUSTRALIA PTY LIMITED	GREGORY PLACE, PARRAMATTA, NSW 2150	Surrendered	09/05/2000	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	510m	East
10744	THE HOSPITALS CONTRIBUTION FUND OF AUSTRALIA LTD	6/128 MARSDEN STREET, PARRAMATTA, NSW 2150	Surrendered	03/04/2000	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	571m	West
6588	SYDNEY WEST AREA HEALTH SERVICE	MARSDEN ROAD, PARRAMATTA, NSW 2150	Surrendered	30/03/2000	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	770m	North West

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
20567	CPB CONTRACTORS PTY LIMITED	, Between Pitt Street, Parramatta and Homebush Bay Drive, Homebush , PARRAMATTA, NSW 2150,	Surrendered	20/04/2015	Road Construction	Road Match	945m	South

Former Licensed Activities Data Source: Environment Protection Authority

 $\ensuremath{\mathbb{C}}$  State of New South Wales through the Environment Protection Authority

#### **UPSS Sensitive Zones**









2-6 Hassall Street, Parramatta, NSW 2150

#### **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
Machinery &/or Parts Merchants &/or Imps	Matthews Wm H. Pty Ltd, 60 Station St Parramatta 2150	51012	Premise Match	46m	South
Abrasive Mfrs &/or Imps &/or Dists	Matthews, Wm. H. Pty. Ltd., 60 Station St., Parramatta 2150	33332	Premise Match	46m	South
Radio Communication Systems Mfrs &/or Dists	Audio Telex Communications Pty. Ltd, 1 Little St., Parramatta. 2150	60054	Premise Match	55m	North East
Trade Unions	Liquor & Allied Indust Employees Union of Aust, 3 Little St Parramatta 2150	64826	Premise Match	55m	North East
Property Consultants	Kenny & Good Pty Ltd, 4/4 Charles St Parramatta 2150	59537	Premise Match	139m	North East
Valuers Real Estate	Kenny & Good Pty Ltd, 4/4 Charles St Parrmatta 2150	65523	Premise Match	139m	North East

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

#### **1991 Business to Business Directory Records Road or Area Matches**

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

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





2-6 Hassall Street, Parramatta, NSW 2150

#### **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
PIPE &/OR PIPE FITTINGS MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	73960	Premise Match	46m	South
PAINT, ENAMEL, VARNISH, STAIN MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St.,. Parramatta.	71517	Premise Match	46m	South
PAINT - SOLVENT &/OR THINNER - MFRS. &/OR IMPS. &/OR SUPPLIERS.	Matthews, W.M.H., Pty. Ltd., 60 Station St., Parramatta,	71694	Premise Match	46m	South
TOOL IMPORTERS &/OR DISTRIBUTORS.	Matthews, WM. H., Pty. Ltd, 60 Station St., Parramatta.	93914	Premise Match	46m	South
MOTOR BODY BUILDERS SUPPLIES.	Matthews, WM H., Pty. Ltd, 60 Station St., Parramatta.	61341	Premise Match	46m	South
SPRAY PAINTING EQUIPMENT MFRS. &/OR DISTS.	Matthews, WM H., Pty. Ltd., 60 Station St, Parramatta.	87709	Premise Match	46m	South
SCREW MFRS. &/OR W/SALERS.	Matthews, WM H., Pty. Ltd., 60 Station St, Parramatta.	85312	Premise Match	46m	South
TRANSMISSION BELTING MFRS. &/OR DISTS.	Matthews, WM H., Pty. Ltd., 60 Station St., Parramatta.	95090	Premise Match	46m	South
SPRAY GUN MFRS. &/OR DISTS.	Matthews, WM, H., Pty. Ltd., 60 Station St., Parramatta.	87686	Premise Match	46m	South
TOOL - HIGH SPEED CUTTING.	Matthews, WM. H, Pty. Ltd., 60 Station St., Parramatta.	93866	Premise Match	46m	South
ELECTRIC TOOLS- PORTABLE-MFRS. &/OR DISTS.	Matthews, WM. H, Pty. Ltd, 60 Station St., Parramatta.	26910	Premise Match	46m	South
WELDING EQUIPMENT &/OR SUPPLIES MFRS. &/OR DISTS.	Matthews, WM. H., Fly. Ltd., 60 Station St., Parramatta.	98859	Premise Match	46m	South
PAINT – INDUSTRIAL PROTECTIVE COATING.	Matthews, WM. H., My. Ltd., 60 Station St., Parramatta.	71596	Premise Match	46m	South
MOTOR PANEL BEATERS &/OR PAINTERS SUPPLIES.	Matthews, WM. H., My. Ltd., 60 Station St., Parramatta.	66955	Premise Match	46m	South
TOOL WHOLESALERS.	Matthews, WM. H., Pty. Ltd, 60 Station St., Parramatta.	94007	Premise Match	46m	South
GREASE GUN &/OR GREASING EQUIPMENT MFRS.	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta,	40286	Premise Match	46m	South
SAW BLADES - BAND, CIRCULAR, - MFRS. &/OR IMPS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta.	84518	Premise Match	46m	South
WOODWORKING MACHINERY MFRS. &/OR IMPS. &/OR MERCHANTS.	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta.	99901	Premise Match	46m	South
COTTON WASTE MFRS. &/OR MERCHANTS.	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta.	20585	Premise Match	46m	South
PLASTIC PIPE &/OR FITTINGS MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	74808	Premise Match	46m	South
PNEUMATIC TOOLS MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	75353	Premise Match	46m	South

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
FILE & TWIST DRILL MFRS. &/OR IMPS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	32471	Premise Match	46m	South
HYDRAULIC JACK MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	47336	Premise Match	46m	South
INSTRUMENT- INDUSTRIAL-MFRS. &/OR IMPS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	48294	Premise Match	46m	South
LATHE MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	51056	Premise Match	46m	South
MACHINE TOOL MFRS. &/OR IMPS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	51977	Premise Match	46m	South
MACHINERY MERCHANTS &/OR IMPORTERS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	52161	Premise Match	46m	South
DRILLING MACHINES- INDUSTRIAL MFRS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	25178	Premise Match	46m	South
ELECTRIC MOTOR MFRS. &/OR IMPS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	26600	Premise Match	46m	South
BUILDERS EQUIPMENT & MACHINERY MFRS. &/OR IMPS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	8445	Premise Match	46m	South
ADHESIVES MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	1359	Premise Match	46m	South
AIR COMPRESSOR MFRS. &/OR IMPS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	1981	Premise Match	46m	South
BATTERY CHARGING &/OR TESTING EQUIPMENT MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	5471	Premise Match	46m	South
BELTING MFRS. &/OR IMPS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	5960	Premise Match	46m	South
GRINDING MACHINES ¬PRECISION MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	40395	Premise Match	46m	South
GRINDING WHEEL MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	40424	Premise Match	46m	South
PUMP MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	78508	Premise Match	46m	South
FASTENER MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	32118	Premise Match	46m	South
ELECTRODES-WELDER MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta.	27790	Premise Match	46m	South
HYDRAULIC HOISTS &/OR EQUIPMENT MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta	47275	Premise Match	46m	South
CHAIN BLOCK IMPS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta	13407	Premise Match	46m	South
HYDRAULIC PRESS MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta	47360	Premise Match	46m	South
MOTOR GARAGE EQUIPMENT &/OR TOOL MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta	63812	Premise Match	46m	South
RUBBER HOSE &/OR TUBING MFRS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta	83863	Premise Match	46m	South
TAPE - ADHESIVE - MFRS. &/OR IMPS. &/OR DISTS.	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta	92083	Premise Match	46m	South
LUBRICATING EQUIPMENT MFRS.	Matthews, WM. H., Pty. Ltd., 60 Station St,, Paramatta.	51882	Premise Match	46m	South
PULLEY' MFRS. &/OR DISTS.	Matthews, WM. R, Pty. Ltd., 60 Station St., Parramatta.	78388	Premise Match	46m	South
ABRASIVE MERCHANTS.	Matthews, WM.14., Pty. Ltd., 60 Station St., Parramatta.	97	Premise Match	46m	South
BROADCASTING STATION EQUIPMENT MFRS.	Audio Telex Communications Pty. Ltd., 1 Little St' Parramatta.	7866	Premise Match	55m	North East

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
PUBLIC ADDRESS SYSTEMS MFRS. &/OR DISTS.	Audio Telex Communications Pty. Ltd., 1 Little St., Parramatta,.	78094	Premise Match	55m	North East
MUSIC SYSTEMS BACKGROUND.	Audio Telex Communications Pty. Ltd., 1 Little St., Parramatta.	68892	Premise Match	55m	North East
AUDIO VISUAL AIDS.	Audio Telex Communications Pty. Ltd., 1 Little St., Parramatta.	4661	Premise Match	55m	North East
ELECTRICAL SUPPLIES &/OR APPLIANCES- WHOLESALE.	Audio Telex Communications Pty. Ltd., 1 Little St., Parramatta., .	27591	Premise Match	55m	North East
TRADE UNIONS.	Liquor & Allied Indust. Employees Union of Aust., 3 Little St., Parramatta.	94824	Premise Match	55m	North East
TAXATION CONSULTANTS.	I.T.P. People, The, 58 Darcy St., Parramatta.	92293	Premise Match	145m	North West
TAXATION CONSULTANTS.	Income TAX Professionals, The, 56 Darcy St., Parramatta.	92305	Premise Match	145m	North West

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
REAL ESTATE AGENTS.	Phipps Developments Pty. Ltd. (Trading as W.A. Phipps),. Hassell St., Parramatta.	79983	Road Match	0m
FLOUR MERCHANTS &/OR MILLERS.	McCorquodale Bros Pty Ltd., Valentine Ave., Parramatta.	33987	Road Match	118m
POULTRY FOOD MFRS. &/OR DISTS.	McCorquodale Bros. Pty. Ltd., Valentine Ave., Parramatta.	75690	Road Match	118m
CLOTHING-RETAIL- LADIES &/OR GIRLS WEAR.	Du Kiss, 8 Darcy St., Parramatta.	17078	Road Match	128m
TYPESETTING SPECIALISTS.	Kaos Photo Type Setting & Art Service, Shop 4 Railway Arc., Darcy St., Parramatta.	96106	Road Match	128m
TYPESETTING SPECIALISTS.	Kaos Photo Type Setting & Art Services Shop 4 Railway Arcade, Darcy Street, Parramatta.	96092	Road Match	128m
ARTISTS-COMMERCIAL & INDUSTRIAL.	Kaos Photo Type Setting & Art Service, Shop 4 Railway Arc., Darcy St., Parramatta.	3883	Road Match	128m
PRINTERS - LITHOGRAPHIC.	Printout Pty. Ltd., 4 Railway Arc. Darcy St., Parramatta.	76838	Road Match	128m
TRAVEL AGENCIES &/OR BOOKING OFFICES.	V.I.P. Express, 506 Darcy St., Parramatta.	95750	Road Match	128m
TRAVEL AGENCIES &/OR BOOKING OFFICES.	World Travel, 39 Darcy St., Parramatta.	95780	Road Match	128m





2-6 Hassall Street, Parramatta, NSW 2150

#### **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
FASTENER MFRS. &/OR DISTS.(F0530)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	30073	Premise Match	46m	South
BELTING MFRS. &/OR IMPS. &/OR DISTS. (B2270)	Matthews, WM. H Pty. Ltd., 60 Station St., Parramatta. 2150.	6840	Premise Match	46m	South
MOTOR PAINTERS SUPPLIES.(M7320)	Matthews, WM. H, Pty. Ltd., 60 Station St Parramatta. 2150.	58019	Premise Match	46m	South
GREASE GUN &/OR GREASING EQUIPMENT MFRS. (G7150)	Matthews, WM. H, Pty. Ltd., 60 Station St, Parramatta. 2150.	37230	Premise Match	46m	South
PUMP MFRS. &/OR DISTS. (P9420)	Matthews, WM. H, Pty. Ltd., 60 Station St., Parramatta. 2150.	68043	Premise Match	46m	South
HYDRAULIC PRESS MFRS. &/OR DISTS. (H7800)	Matthews, WM. H., Pty. Ltd, 60 Station St, Parramatta. 2150.	41322	Premise Match	46m	South
ABRASIVE MERCHANTS &/OR DISTS. (A0245)	Matthews, WM. H., Pty. Ltd., 60 Station St Parramatta. 2150.	98	Premise Match	46m	South
ADHESIVES - TAPE MFRS. &/OR DISTS. (A1230)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	1261	Premise Match	46m	South
ADHESIVES MFRS. &/OR DISTS.(A1110)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	1227	Premise Match	46m	South
AIR COMPRESSOR MFRS.&/OR DISTS. (A3330)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	1824	Premise Match	46m	South
BOLT &/OR NUT MFRS.&/OR DISTS. (B4200)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	7567	Premise Match	46m	South
FIBRE GLASS MATERIALS - MATS,ROVINGS, CLOTHS MFRS. &/OR IMPS. (F1200)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	30254	Premise Match	46m	South
FILE & TWIST DRILL MFRS. &/OR IMPS. &/OR DISTS. (F1525)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	30358	Premise Match	46m	South
CHAIN BLOCK IMPS. &/OR DISTS.(C3345)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	14184	Premise Match	46m	South
COTTON WASTE MFRS. &/OR MERCHANTS, (C8510)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	18290	Premise Match	46m	South
DRILLING MACHINES - INDUSTRIALMFRS. (D7950)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	23716	Premise Match	46m	South
ELECTRIC MOTOR MFRS. &/OR DISTS. (E2370)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	25033	Premise Match	46m	South
ENGINEERS SUPPLIES. (E8370)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	29471	Premise Match	46m	South
HYDRAULIC JACK MFRS. &/OR DISTS. (H7650)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	41305	Premise Match	46m	South
GRINDING MACHINES - PRECISION MFRS. &/OR DISTS. (G7600)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	37310	Premise Match	46m	South

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
GRINDING WHEEL MFRS. &/OR DISTS. (G7700)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	37336	Premise Match	46m	South
PAINT - INDUSTRIAL PROTECTIVECOATING. (P0400)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	62450	Premise Match	46m	South
LATHE MFRS. &/OR DISTS. (L1650)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	44703	Premise Match	46m	South
LUBRICATING EQUIPMENT MFRS. (L7050)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	45630	Premise Match	46m	South
MACHINE TOOL MFRS. &/OR IMPS.&/OR DISTS. (M0100)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	45699	Premise Match	46m	South
MACHINERY MERCHANTS &/OR IMPORTERS. (M0260)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	45873	Premise Match	46m	South
MOTOR BODY BUILDERS SUPPLIES. (M508O)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	54238	Premise Match	46m	South
SAW BLADES-BAND, CIRCULAR,- MFRS. &/OR IMPS. &/OR DISTS. (S0885)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	73143	Premise Match	46m	South
PAINT-SOLVENT THINNER-MFRS.&/OR W/SALERS. (P0700)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	62523	Premise Match	46m	South
PIPE &/OR PIPE FITTINGS MFRS.&/OR DISTS. (P4846)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	64316	Premise Match	46m	South
SPRAY GUN MFRS. &/OR DISTS.(S4935)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	75794	Premise Match	46m	South
SPRAY PAINTING EQUIPMENT MFRS. &/OR DISTS. (S4965)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	75806	Premise Match	46m	South
TRANSMISSION BELTING MFRS.&/OR DISTS. (T7250)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	81657	Premise Match	46m	South
PULLEY MFRS. &/OR DISTS. (P9320)	Matthews, WM. H., Pty. Ltd., 60 Station St, Parramatta. 2150.	67962	Premise Match	46m	South
WELDING EQUIPMENT &/OR SUPPLIES MFRS. &/OR DISTS.(W3520)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	84354	Premise Match	46m	South
WOODWORKING MACHINERY MFRS. &/OR IMPS. &/OR MERCHANTS. (W7850)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	85318	Premise Match	46m	South
TAPE-ADHESIVE-MFRS. &/OR IMPS. &/OR DISTS. (T0745)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	79093	Premise Match	46m	South
TOOL IMPORTERS &/OR DISTRIBUTORS. (T5400)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	80647	Premise Match	46m	South
TOOL WHOLESALERS. (T5550)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	80724	Premise Match	46m	South
TOOL-HIGH SPEED CUTTING.(T5380)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	80608	Premise Match	46m	South
PLASTIC PIPE &/OR FITTINGS MFRS. &/OR DISTS. (P6260)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	65023	Premise Match	46m	South
PNEUMATIC TOOLS MFRS. &/OR DISTS. (P6920)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	65518	Premise Match	46m	South
SCREW MFRS. &/OR W/SALERS.(S1680)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	73829	Premise Match	46m	South
RUBBER HOSE &/OR TUBING MFRS. &/OR DISTS. (R7736)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	72567	Premise Match	46m	South
MOTOR GARAGE EQUIPMENT&/OR TOOL MFRS. &/OR DISTS. (M6820)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	55904	Premise Match	46m	South

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
PAINT, ENAMEL, VARNISH, STAIN MFRS.&/OR DISTS. (P0360)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	62397	Premise Match	46m	South
MOTOR PANEL BEATERS SUPPLIES. (M7400)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	58865	Premise Match	46m	South
INSTRUMENTS - INDUSTRIAL - MFRS. &/OR DISTS. (12900)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	42195	Premise Match	46m	South
ELECTRIC TOOLS - PORTABLE - MFRS. &/OR DISTS. (E2970)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	25294	Premise Match	46m	South
BATTERY CHARGING &/OR TESTING EQUIPMENT MFRS. &/OR DISTS. (B1640)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	4941	Premise Match	46m	South
ELECTRODES - WELDER MFRS.&/OR DISTS. (E4500)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	26052	Premise Match	46m	South
BUILDERS MACHINERY & EQUIPMENT MFRS. &/OR DISTS.(B7030)	Matthews, WM. H., Pty. Ltd., 60 Station St., Parramatta. 2150.	9613	Premise Match	46m	South
HYDRAULIC HOISTS &/OR EQUIPMENT MFRS. &/OR DISTS. (H7550)	Matthews, WM. R, Pty. Ltd., 60 Station St, Parramatta. 2150.	41282	Premise Match	46m	South
PUBLIC ADDRESS SYSTEMS MFRS.&/OR DISTS. (P9140)	Audio Telex Communications Pty. Ltd, 1 Little St., Parramatta.2150.	67690	Premise Match	55m	North East
BROADCASTING STATION EQUIPMENT MFRS. (B6520)	Audio Telex Communications Pty. Ltd., 1 Little St., Parramatta.2150	9016	Premise Match	55m	North East
ELECTRICAL SUPPLIES &/OR APPLIANCES - WHOLESALE. (E3870)	Audio Telex Communications Pty. Ltd., 1 Little St., Parramatta.2150	25896	Premise Match	55m	North East
AUDIO VISUAL AIDS. (A8475)	Audio Telex Communications Pty. Ltd., 1 Little St., Parramatta.2150.	4098	Premise Match	55m	North East
MUSIC SYSTEMS - BACKGROUND.(M8940)	Audio Telex Communications Pty. Ltd., 1 Little St., Parramatta.2150.	60128	Premise Match	55m	North East
TRADE UNIONS. (T6700)	Liquor & Allied Indust, Employees Union of Aust., 3 Little St.,Parramatta. 2150.	81448	Premise Match	55m	North East
CARPET &/OR FLOOR COVERING MFRS. &/OR IMPS. &/OR DISTS. (C1810)	Colvek Pty. Ltd , 2A Charles St., Parramatta. 2150	13261	Premise Match	127m	East
CARPET &/OR FLOOR COVERING PLANNERS &/OR LAYERS. (C1815)	Colvek Pty. Ltd, 2A Charles St., Parramatta. 2150.	13336	Premise Match	127m	East
TAXATION CONSULTANTS. (T1050)	Income Tax Professionals, The, 56 Darcy St., Parramatta, 2150.	79182	Premise Match	145m	North West

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
FLOUR MERCHANTS &/OR MILLERS. (F4200)	McCorquodale Bros. Pty. Ltd., Valentine Ave., Parramatta. 2150.	31677	Road Match	118m
POULTRY FOOD MFRS. &/OR DISTS. (P7580)	McCorquodale Bros. Pty. Ltd., Valentine Ave., Parramatta. 2150.	65736	Road Match	118m

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
DRESS SHOPS & ACCESSORIES.(D7450)	Du Kiss, 8 Darcy St., Parramatta. 2150.	22723	Road Match	128m
MUSIC TEACHERS. (M8960)	Gallaghers School of Music, 46 Darcy St., Parramatta. 2150.	60141	Road Match	128m





2-6 Hassall Street, Parramatta, NSW 2150

#### **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
ELECTRIC TOOLS- PORTABLE-MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	22271	Premise Match	46m	South
FASTENER MFRS. &/ORDISTS,	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	27178	Premise Match	46m	South
FIBRE GLASS MATERIALS - MATS, ROVINGS, CLOTHS MFRS. &/OR IMPS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	27349	Premise Match	46m	South
GRINDING MACHINES- PRECISION MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	33611	Premise Match	46m	South
INSTRUMENTS-INDUSTRIAL- MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	37524	Premise Match	46m	South
FILE & TWIST DRILL MFRS. &/OR IMPS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	27446	Premise Match	46m	South
ELECTRIC MOTOR MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	21990	Premise Match	46m	South
DRILLING MACHINES- INDUSTRIAL MFRS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	20662	Premise Match	46m	South
ELECTRODE DISTS. &/OR MFRS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	23081	Premise Match	46m	South
GRINDING WHEEL MFRS.&/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	33637	Premise Match	46m	South
SPRAY PAINTING EQUIPMENT MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	67134	Premise Match	46m	South
GREASE GUN HIGH PRESSURE MFRS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	33544	Premise Match	46m	South
ABRASIVE MERCHANTS &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	72	Premise Match	46m	South
ADHESIVES MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	1131	Premise Match	46m	South
PULLEY MFRS.&/ORDISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	60725	Premise Match	46m	South
HYDRAULIC HOISTS &/OR EQUIPMENTS MFRS. &/OR DISTS	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	36614	Premise Match	46m	South
HYDRAULIC JACK MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	36631	Premise Match	46m	South
PNEUMATIC TOOLS MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	58507	Premise Match	46m	South
LUBRICATING EQUIPMENT MFRS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	40623	Premise Match	46m	South
MACHINERY MERCHANTS &/OR IMPORTERS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	40897	Premise Match	46m	South
MOTOR BODY BUILDERS SUPPLIES.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	47778	Premise Match	46m	South
HYDRAULIC PRESS MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	36640	Premise Match	46m	South
BOLT &/OR NUT MFRS.&/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	6595	Premise Match	46m	South
BUILDERS MACHINERY & EQUIPMENT MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	8107	Premise Match	46m	South

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
CHAIN BLOCK IMPS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	12321	Premise Match	46m	South
COTTON WASTE MFRS. &/OR MERCHANTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	16564	Premise Match	46m	South
ENGINEERS-STRUCTURAL.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	26569	Premise Match	46m	South
BATTERY CHARGING &/OR . TESTING EQUIPMENT MFRS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	4484	Premise Match	46m	South
TOOL IMPS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	71208	Premise Match	46m	South
TOOL-HIGH SPEED CUTTING.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	71179	Premise Match	46m	South
TOOLW/SALERS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	71274	Premise Match	46m	South
SCFREW MFRS. &/OR W/SALERS	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	65324	Premise Match	46m	South
PUMPS MFRS. &/OR DISTS	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	60807	Premise Match	46m	South
STAPLING, TACKING &/OR WIRE STITCHING MACHINE MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	67473	Premise Match	46m	South
TAPE - ADHESIVE - MFRS. &/OR IMPS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	69639	Premise Match	46m	South
MOTOR PAINTERS SUPPLIES.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	51782	Premise Match	46m	South
PAINT SOLVENT THINNER MFRS. &/OR W/SALERS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	55586	Premise Match	46m	South
PAINT, ENAMEL, VARNISH/STAIN MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	55422	Premise Match	46m	South
RUBBER HOSE &/OR TUBING MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	64115	Premise Match	46m	South
MOTOR PANEL BEATERS X SUPPLIES.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	52489	Premise Match	46m	South
SAW MFRS. &/OR IMPS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	64702	Premise Match	46m	South
MACHINE TOOL MFRS. &/OR IMPS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	40699	Premise Match	46m	South
BELTING MFRS. IMPS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	5824	Premise Match	46m	South
ADHESIVES-TAPE MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	1158	Premise Match	46m	South
AIR COMPRESSOR MFRS.&/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	1814	Premise Match	46m	South
AIR COMPRESSOR MFRS.&/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	1813	Premise Match	46m	South
LATHE MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	39708	Premise Match	46m	South
MOTOR GARAGE EQUIPMENT & /OR TOOL MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	49190	Premise Match	46m	South
PLASTIC PIPE &/OR FITTING MFRS. &/OR DISTS	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	58010	Premise Match	46m	South
PAINT-LACQUER MFRS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	55513	Premise Match	46m	South
SPRAY GUN MFRS. &/ORDISTS	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	67128	Premise Match	46m	South
TRANSMISSION BELTING MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	72154	Premise Match	46m	South
WELDING EQUIPMENT &/OR SUPPLIES MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	74446	Premise Match	46m	South
WOODWORKING MACHINERY MFRS. &/OR IMPS. &/OR MERCHANTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	75193	Premise Match	46m	South
PIPE &/OR PIPE FITTINGS MFRS. &/OR DISTS.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	57256	Premise Match	46m	South
PAINT-INDUSTRIAL PROTECTIVE COATING.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	55476	Premise Match	46m	South
MOTOR BODY BUILDERS SUPPLIES.	Matthews ,WM. H., Pty. Ltd., 60 Station St., Parramatta.	47770	Premise Match	46m	South

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
HYDRAULIC JACK MFRS. &/OR DISTS.	Wm. H. Matthews Pty. Ltd. 60-62 Station Street Parramatta	36623	Premise Match	46m	South
ENGINEERS-STRUCTURAL.	Wm. H. Matthews Pty. Ltd. 60-62 Station Street Parramatta	26499	Premise Match	46m	South
MOTOR PAINTERS SUPPLIES.	Wm. H. Matthews Pty. Ltd. 60-62 Station Street Parramatta	51776	Premise Match	46m	South
TRADE UNIONS.	Liquor & Ailed Indust. Employees Union of Aust., 3 Little St., Parramatta.	71969	Premise Match	55m	North East
TAXATION CONSULTANTS.	Income Tax Professionals, The, 56 Darcy St., Parramatta,	69727	Premise Match	145m	North West

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
FLOUR MERCHANTS &/OR MILLERS.	McCorquodale Bros. Pty. Ltd., Valentine Ave., Parramatta.	28662	Road Match	118m
POULTRY FOOD MFRS.&/OR DISTS.	McCorquodale Bros. Pty. Ltd Valentine Ave., Parramatta.	58656	Road Match	118m
REAL ESTATE AGENTS &/OR VALUERS.	Andersen, H. D. Pty. Ltd., 4b Darcy St., Parramatta.	61337	Road Match	128m





2-6 Hassall Street, Parramatta, NSW 2150

#### **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
MERCHANTS-GENERAL	Matthews, W. H. Pty. Ltd., 60 Station St., Parramatta.	52618	Premise Match	46m	South
CARPET &/OR FLOOR COVERING PLANNERS &/OR LAYERS.	O'Shea, K. & J, Carpets, 2A Charles St., Parramatta.	13434	Premise Match	127m	East
STOCK &/OR STATION AGENTS	Great Western Real Estate & Developments Pty. Ltd., 56 Darcy St., Parramatta.	81139	Premise Match	145m	North West

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

#### **1975 Business Directory Records** Road or Area Matches

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
DENTAL LABORATORIES &/OR TECHNICIANS	Race, J. I., 11 Charles St., Parramatta.	20667	Road Match	86m
FLOUR MERCHANTS S/OR MILLERS.	Mccorquodale Bros., Valentine Ave., Parramatta.	33187	Road Match	118m
POULTRY FOOD MFRS. &/OR DISTS.	McCorquodale Bros., Valentine Ave., Parramatta.	69022	Road Match	118m





2-6 Hassall Street, Parramatta, NSW 2150

#### **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
HOTELS-LICENSED (H690)	Commercial Hotel,Cnr. Station & Hassall Sts.,Parramatta	317175	Road Intersection	36m	South West
MERCHANTS-GENERAL (M240)	Matthews,W. H. Pty. Ltd., 60 Station St., Parramatta	329537	Premise Match	46m	South
HARDWARE MERCHANTS- WHOLESALE (H260)	Matthews,Wm. H. Pty. Ltd., 60-62 Station St., Parramatta	315508	Premise Match	46m	South
ABRASIVE DISTRIBUTORS &/ORMERCHANTS (A020)	Parramatta Wholesalers, 60 Station St., Parramatta	258392	Premise Match	46m	South
CHEMISTS-PHARMACEUTICAL (C286)	Gass, WJ., 56 Darcy St., Parramatta	280418	Premise Match	145m	North West

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

#### 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
FLOUR MERCHANTS/MILLERS (F350)	McCorquodale Bros., Valentine Ave., Parramatta	304543	Road Match	118m
RADIO &/OR TELEVISION SALES & SERVICEMEN (R090)	Alert Radio & Music Stores Pty. Ltd., 4 Darcy St. PARRAMATTA	354153	Road Match	128m
MUSIC-SHEET &/OR RECORDDEALERS (M776)	Alert Radio & Music Stores Pty. Ltd., 4 Darcy St., Parramatta	343132	Road Match	128m
MERCERS-MEN'S & BOYS' OUTFITTERS(M232)	Clarke & Clarke Pty. Ltd., 10 D'arcy St., Parramatta (& Branches).	328795	Road Match	128m
GIFT SHOPS (G180)	Girl Guides' Gift Shop,at Railway,Darcy St., Parramatta	310811	Road Match	128m
DRESS FABRIC RETAILERS (D590)	Hanna's, 8 Darcy St., Parramatta	290884	Road Match	128m
DRESS SHOPS (D595)	Hanna's, 8 Darcy St., Parramatta	291307	Road Match	128m
STAMP DEALERS (S490)	Weymouths, 10 Darcy St., Parramatta, 2140	364203	Road Match	128m





2-6 Hassall Street, Parramatta, NSW 2150

#### **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
Hotels - Licensed	Commercial Hotel, Cnr. Station & Hassall Sts., Parramatta	101493	Road Intersection	36m	South West
ABRASIVE DISTRIBUTORS &/OR MERCHANTS	Parramatta Wholesalers, 60 Station St., Parramatta	43301	Premise Match	46m	South
Electrical Supplies/Appliances Retailers	Matthews, W. M. H. Pty. Ltd.' , 60 Station St., Parramatta	79554	Premise Match	46m	South
Engineers' Supplies	Matthews, W .M. H. Pty. Ltd., 60 Station St., Parramatta	84540	Premise Match	46m	South
Motor Accessories - W'sale	Matthews, W. M. H. Pty. Ltd., 60 Station St., Parramatta	119860	Premise Match	46m	South
Air Compressor Mfrs. &/or Dists.	Matthews, WM. H. Pty. Ltd., 60 Station St., Parramatta	45644	Premise Match	46m	South
ABRASIVE DISTRIBUTORS &/OR MERCHANTS	Matthews, WM. H. Pty. Ltd., 60 Station St., Parramatta	43297	Premise Match	46m	South
Hardware Merchants - Wholesale	Matthews, WM. H. Pty. Ltd., 60-62 Station St., Parramatta	99654	Premise Match	46m	South
Kitchenware Wholesalers	Dorri Wood Sales Pty. Ltd., 2a Charles St., Parramatta	106804	Premise Match	127m	East

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

#### **1965 Business Directory Records Road or Area Matches**

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

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
Flour Merchants/Millers	McCorquodale Bros., Valentine Ave., Parramatta	87914	Road Match	118m
Mercers - Men's & Boys' Outfitters	Clarke & Clarke Pty. Ltd., 10 D'arcy St., Parramatta (& Branches)	113155	Road Match	128m
Gift Shops	Girl Guides' Gift Shop , at Railway, Darcy St., Parramatta	94907	Road Match	128m





2-6 Hassall Street, Parramatta, NSW 2150

#### **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
HOTELS-LICENSED	Commercial Hotel, Cnr. Station & Hassall Sts., Parramatta	325249	Road Intersection	36m	South West
MOTOR ACCESSORIES—W'SALE	Matthews, WM. H., 60 Station St., Parramatta	343997	Premise Match	46m	South
ABRASIVE DISTRIBUTORS &/OR MERCHANTS	Parramatta Wholesalers, 60 Station St., Parramatta	264503	Premise Match	46m	South
HANDBAG/GLOVE SPECIALISTS	Herford, Arthur Pty. Ltd., 54 Darcy St., Parramatta	322889	Premise Match	148m	North West
TRAVEL GOODS RETAILERS	Herford, Arthur Pty. Ltd., 54 Darcy St., Parramatta	259618	Premise Match	148m	North West

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
FOOTWEAR MFRS BOOTS/SHOES	Wills, J. & W. Pty. Ltd., Hassall St., Parramatta	312942	Road Match	0m
RADIO &/OR TELEVISION SALES & SERVICEMEN	Alert Radio & Music Stores Pty. Ltd., 4 Darcy St. PARRAMATTA	364412	Road Match	128m
MUSIC—SHEET, GRAMOPHONE RECORDS—DEALERS	Alert Radio &. Music Stores Pty. Ltd., 4 Darcy St., Pmta	352836	Road Match	128m
LINOTYPERS—TRADE	Dolphin & Hanmn (A. N. Dolphin, C. S. Hannan), 126 D'Arcy St., Parramatta	332068	Road Match	128m
MILK, FRUIT JUICE BARS/CONFECTIONERS	Freeman, A., 101d Argyle St., Parramatta	339081	Road Match	128m
REAL ESTATE AGENTS/VALUERS	Gallaher, W. J., Darcy St. PARRAMATTA	244955	Road Match	128m
HOTELS-LICENSED	Hotel Parramatta, 111 Argyle St., Parramatta	325427	Road Match	128m
BUTCHERS-RETAIL	Odewahn, R., 113 Argyle St., Parramatta	280900	Road Match	128m
DELICATESSENS	Paradene Pty. Ltd., 29 Darcy St., Parramatta	295129	Road Match	128m





2-6 Hassall Street, Parramatta, NSW 2150

#### **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
HOTELS-LICENSED	Commercial Hotel, Cnr. Station and Hassall Sts., Parramatta	62989	Road Intersection	36m	South West

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
PRODUCE MERCHANTS-GRAIN & SEED-RETAIL	Rogersons Produce Supply (Blair and Downey), Hassall St., Parramatta	95687	Road Match	0m
BEAUTY SALONS &/OR LADIES' HAIRDRESSERS	Josette Beauty Salon, Taylor St., Parramatta	7329	Road Match	29m
ICE MANUFACTURERS & VENDORS	Woods, W. and Son, Smith St., Parramatta	63963	Road Match	29m
FRUITERERS & GREENGROCERS	Chen, How, 50a Station St., Parramatta	49797	Road Match	41m
FLOUR MERCHANTS &/OR MILLERS	McCorquodale Bros., Valentine Ave., Parramatta	46336	Road Match	118m
MUSICAL INSTRUMENT DEALERS	Albert Radio and Music Stores Pty. Ltd., 4 Darcy St., Parramatta	87579	Road Match	128m
MUSIC-SHEET-RETAILERS	Albert Radio and Music Stores Pty. Ltd., 4 Darcy St., Parramatta	87646	Road Match	128m
RADIO SALES &/OR SERVICEMEN	Albert Radio and Music Stores Pty. Ltd., 4 Darcy St., Parramatta	96898	Road Match	128m
REFRIGERATOR SALES &/OR SERVICE	Albert Radio and Music Stores Pty. Ltd., 4 Darcy St., Parramatta	99095	Road Match	128m
VACUUM CLEANER SALES & SERVICE	Albert Radio and Music Stores Pty. Ltd., 4 Darcy St., Parramatta	111402	Road Match	128m
WASHING MACHINE SALES & SERVICE	Albert Radio and Music Stores Pty. Ltd., 4 Darcy St., Parramatta	112344	Road Match	128m
RADIO SALES &/OR SERVICEMEN	Alert Radio and Music Stores Pty. Ltd., 4 Darcy St., Parramatta	96901	Road Match	128m
WASHING MACHINE SALES & SERVICE	Alert Radio and Music Stores Pty. Ltd., 4 Darcy St., Parramatta	112345	Road Match	128m
PIANO DEALERS	Alert Radio and Musical Stores, 4 Darcy St., Parramatta	92378	Road Match	128m
RADIO SALES &/OR SERVICEMEN	Anderson, Eric Radio Television Pty., Ltd., 8 Darcy St., Parramatta	96916	Road Match	128m
HARDWARE DEALERS &/OR IRONMONGERS	Bateman's Hardware, 2 Darcy St., Parramatta	60853	Road Match	128m
MERCERS & GENT'S OUTFITTERS	Clarice and Clarice, 10 Darcy St, Parramatta	74299	Road Match	128m

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
HARDWARE DEALERS &/OR IRONMONGERS	Crockart's Hardware, 2 Darcy St., Parramatta	60964	Road Match	128m
TOOL DEALERS-RETAIL	Crockarts Hardware, 2 Darcy St., Parramatta	109004	Road Match	128m
LINOTYPERS-TRADE	Dolphin and Hannan (A. N. Dolphin, C. S. Hannan), 126 D'Arcy St., Parramatta	68414	Road Match	128m
MERCHANTS & IMPORTERS	Owen Products (The), 4 Darcy St., Parramatta	75461	Road Match	128m
RADIO DISTRIBUTORS- WHOLESALE	Owen Products (The), 4 Darcy St., Parramatta	96749	Road Match	128m

2-6 Hassall Street, Parramatta, NSW 2150

#### 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 &/OR ENGINEERS &/OR SERVICE STATIONS.	Manning, S. G. Transport Services Pty. Ltd., 6 Charles St., Parramatta.	50425	1978	Premise Match	152m	North East
DRY CLEANERS & PRESSERS. (D8500)	Economy Dry Cleaners, 14 Darcy St., Parramatta. 2150.	23817	1982	Premise Match	286m	North West
DRY CLEANERS,PRESSERS/DYERS (D710)	Garily's, 14 Darcy St., Parramatta	292311	1970	Premise Match	286m	North West
Dry Cleaners, Pressers/Dyers	Garily's, 14 Darcy St., Parramatta	76167	1965	Premise Match	286m	North West
MOTOR GARAGES & ENGINEERS(M6S6)	Clarke, A., 1 Smith St. PARRAMATTA	337582	1970	Premise Match	295m	North West
Motor Garages & Engineers	Clarke, A., 1 Smith St. Parramatta	123165	1965	Premise Match	295m	North West
MOTOR GARAGES & ENGINEERS	Clarke, A., 1 Smith St. PARRAMATTA	346895	1961	Premise Match	295m	North West
MOTOR GARAGES &/OR ENGINEERS	Clarke, A., 1 Smith St., Parramatta	83594	1950	Premise Match	295m	North West
MOTOR SERVICE STATIONS- PETROL, Etc.	Clarke, Pat., 1 Smith St., Parramatta	85875	1950	Premise Match	295m	North West
DRY CLEANERS, PRESSERS & DYERS	Richwear Dry Cleaning Co., 80 Sydney Rd., Parramatta	35644	1950	Premise Match	319m	South West
MOTOR GARAGES & ENGINEERS(M6S6)	Hillsdon's Pty. Ltd., 87-91 Church St. PARRAMATTA	338012	1970	Premise Match	372m	South West
Motor Garages & Engineers	Hillsdon's Pty. Ltd., 87-91 Church St. Parramatta	123171	1965	Premise Match	372m	South West
MOTOR GARAGES &/OR ENGINEERS	Hillsdons Pty. Ltd., Cnr. Church St. and Great Western Highway., Parramatta	83869	1950	Road Intersection	375m	South West
MOTOR SERVICE STATIONS- PETROL, Etc.	Hillsdons Pty. Ltd., Cnr. Church St. and Great Western Highway., Parramatta	86058	1950	Road Intersection	375m	South West
MOTOR GARAGES & ENGINEERS	Hillsdon's Pty. Ltd., 87-91 Church St. Parramatta	347371	1961	Premise Match	376m	South West
Motor Garages & Engineers	Bidwell, C. O., 72 Church St. Parramatta	123161	1965	Premise Match	378m	South West
Motor Service Stations - Petrol, Oil, Etc.	All Service Garage, Smith & George Sts. Parramatta	125999	1965	Road Intersection	397m	North
MOTOR GARAGES & ENGINEERS	All Services Garage, Smith & George Sts. PARRAMATTA	346493	1961	Road Intersection	397m	North
MOTOR GARAGES & SERVICE STATIONS.	Harris Street Auto Port, 136 Harris St., Parramatta.	64850	1986	Premise Match	418m	North East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Harris Street Auto Port, 136 Harris St., Parramatta. 2150.	56944	1982	Premise Match	418m	North East
MOTOR SERVICE STATIONS - PETROL, OIL	Harris Street Auto Port, 136 Harris St., Parramatta.	61815	1975	Premise Match	418m	North East
MOTOR GARAGES & ENGINEERS(M6S6)	Lennox Motors Pty. Ltd., 100-108 George St. PARRAMATTA	338155	1970	Premise Match	425m	North
Motor Garages & Engineers	Lennox Motors Pty. Ltd., 100-108 George St. Parramatta	123176	1965	Premise Match	425m	North
DRY CLEANERS & PRESSERS.	60 Minute Cleaners, 27 Parra-Mall, George St., Parramatta.	25515	1986	Premise Match	443m	North West
DRY CLEANERS & PRESSERS. (D8500)	60 Minute Cleaners, 27 Parra Mall, George St., Parramatta. 2150.	24047	1982	Premise Match	443m	North West

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
MOTOR GARAGES & ENGINEERS	Roxy Service Station Pty Ltd 61 George St., PARRAMATTA	348072	1961	Premise Match	443m	North West
MOTOR GARAGES & ENGINEERS	Roxy Service Station Pty. Ltd., 61 George St. PARRAMATTA	348073	1961	Premise Match	443m	North West
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Roxy Service Station Pty. Ltd., 61 George St. PARRAMATTA	351045	1961	Premise Match	443m	North West
MOTOR GARAGES &/OR ENGINEERS	Roxy Garage and Parking Station, 61 George St., Parramatta	84325	1950	Premise Match	443m	North West
DRY CLEANERS, PRESSERS & DYERS	Nu-Way Dry Cleaners, 10,Station St., Harris Park	35572	1950	Premise Match	445m	South
MOTOR GARAGES & ENGINEERS	Dependable Motors Pty. Ltd., Church & Early Sts. PARRAMATTA	347046	1961	Road Intersection	452m	South West
BATTERY SERVICE STATIONS	Dependable Motors Pty. Ltd., Cnr. Church & Early Sts., Parramatta	272014	1961	Road Intersection	452m	South West
MOTOR GARAGES &/OR ENGINEERS	Dependable Motors Pty. Ltd., Church and Early Sts., Parramatta	83681	1950	Road Intersection	452m	South West
DRY CLEANERS & PRESSERS.	Lawrence Dry Cleaners, 258 Westfield Centre, Parramatta.	25374	1986	Premise Match	454m	West
DRY CLEANERS & PRESSERS. (D8500)	Lawrence Dry Cleaners, 258 Westfield Centre, Parramatta. 2150.	23911	1982	Premise Match	454m	West
MOTOR SERVICE STATIONS - PETROL, OIL	Crossroads Service Station, George St., Parramatta.	61658	1975	Road Intersection	455m	North East
MOTOR SERVICE STATIONS- PETROL,OIL,Etc. (M716)	Crossroads Service Station,George & Harris St. PARRAMATTA	340992	1970	Road Intersection	455m	North East
Motor Service Stations - Petrol, Oil, Etc.	Crossroads Service Station, George & Harris St. Parramatta	126008	1965	Road Intersection	455m	North East
Dry Cleaners, Pressers/Dyers	Swan's French Dry Cleaners, 68 George St., Parramatta	76356	1965	Premise Match	460m	North
Dry Cleaners, Pressers/Dyers	Jack's, 47 George St., Parramatta	76202	1965	Premise Match	483m	North West
DRY CLEANERS, PRESSERS / DYERS	Jack's, 47 George St., Parramatta	299145	1961	Premise Match	483m	North West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Rolls Motors Pty. Ltd., 42 Church St., Parramatta. 2150	57489	1982	Premise Match	489m	South West
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Rolls Motors Pty. Ltd., 42 Church St., Parramatta.	50765	1978	Premise Match	489m	South West
MOTOR GARAGES &/OR ENGINEERS.	Rolls Motors Pty. Ltd., 42 Church St., Parramatta.	59481	1975	Premise Match	489m	South West
MOTOR GARAGES & ENGINEERS(M6S6)	Rolls Motors Pty. Ltd., 42-46 Cherch St. PARRAMATTA	338536	1970	Premise Match	489m	South West
Motor Garages & Engineers	Rolls Motors Pty. Ltd., 42-46 Church St. Parramatta	123186	1965	Premise Match	489m	South West
MOTOR GARAGES & ENGINEERS(M6S6)	Fair Deal Car Sales (Parramatta), 65 Church St. PARRAMATTA	337782	1970	Premise Match	493m	South West

2-6 Hassall Street, Parramatta, NSW 2150

#### 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.	Theo's Service Centre. Wentworth St. Parramatta.	59631	1975	Road Match	170m
Motor Garages & Engineers	Nola Engineering, 40 Smith St. Parramatta	123178	1965	Road Match	248m
MOTOR GARAGES &/OR ENGINEERS.	Nola Engineering, 40 Smith St., Parramatta.	59341	1975	Road Match	248m
MOTOR GARAGES & ENGINEERS	Fair Deal Car Sales (Parramatta), Church St. Parramatta	347120	1 <b>96</b> 1	Road Match	297m
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Fair Deal Car Sales (Parramatta), Church St. Parramatta	350571	1961	Road Match	297m
MOTOR SERVICE STATIONS - PETROL, OIL	Burkes Motor Services Pty. Ltd., George St., Parramatta.	61461	1975	Road Match	321m
MOTOR SERVICE STATIONS - PETROL, OIL	David's Auto Centre, George St., Parramatta.	61666	1975	Road Match	321m
MOTOR GARAGES &/OR ENGINEERS.	Pederson, L. D., George St., Parramatta.	59378	1975	Road Match	321m
MOTOR SERVICE STATIONS- PETROL, Etc.	Roxy Garage and Parking Station, George St., Parramatta	86363	1950	Road Match	321m
MOTOR GARAGES & ENGINEERS	Speedy Spring Service Pty. Ltd., George St. PARRAMATTA	348178	1961	Road Match	321m
MOTOR GARAGES &/OR ENGINEERS	Speedy Spring Service Pty. Ltd., George St., Parramatta	84398	1950	Road Match	321m
MOTOR SERVICE STATIONS- PETROL, Etc.	Speedy Spring Service Pty. Ltd., George St., Parramatta	86408	1950	Road Match	321m
MOTOR GARAGES & ENGINEERS	Capitol Car Repairs, 13 Anderson St. PARRAMATTA	346810	1961	Road Match	330m
Motor Garages & Engineers	Capitol Car Repairs, 13 Anderson St. Parramtta	123164	1965	Road Match	330m
DRY CLEANERS & PRESSERS. (D8500)	Venus Dry Cleaning. 89 Argyle St., Parramatta. 2150.	24082	1982	Road Match	349m
Motor Service Stations - Petrol, Oil, Etc.	Country Motors, Great Western Highway. Parramatta	126007	1965	Road Match	381m
Motor Service Stations - Petrol, Oil, Etc.	Mays Hill Senate Station, Great Western Highway. Parramatta	126018	1965	Road Match	381m
MOTOR SERVICE STATIONS- PETROL,OIL,Etc. (M716)	Mays Hill Service Station,Great Western Highway.PARRAMATTA	341313	1970	Road Match	381m
DRY CLEANERS, PRESSERS&/OR DYERS.	Dry Cleaners, 35 Phillip St., Parramatta.	23998	1975	Road Match	454m
MOTOR SERVICE STATIONS- PETROL,OIL,Etc. (M716)	Smith's,D. Spares & Repairs,Phillip St. PARRAMATTA	341472	1970	Road Match	454m
DRY CLEANERS, PRESSERS&/OR DYERS.	Swaik Dry Cleaners, 20 Phillip St., Parramatta.	24368	1975	Road Match	454m
Motor Garages & Engineers	Luckey, J., High St. Harris Park	122765	1965	Road Match	487m
MOTOR GARAGES & ENGINEERS	Luckey, J., High St. Harris Park	347595	1961	Road Match	487m
MOTOR GARAGES &/OR ENGINEERS	Luckey, J., High St., Harris Park	84020	1950	Road Match	487m

Aerial Imagery 2016 2-6 Hassall Street, Parramatta, NSW 2150





### Aerial Imagery 2009





### Aerial Imagery 2003





Aerial Imagery 1991 2-6 Hassall Street, Parramatta, NSW 2150








Aerial Imagery 1970 2-6 Hassall Street, Parramatta, NSW 2150





















### **Topographic Map 2015**





**Historical Map 1975 - 1975** 





Historical Map 1936 - 1942





### Historical Map 1917 - 1929





# **Topographic Features**





# **Topographic Features**

2-6 Hassall Street, Parramatta, NSW 2150

# **Points of Interest**

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
673355	Community Facility	PARRAMATTA PCYC	49m	East
673546	Place Of Worship	ORTHODOX CHURCH	53m	South East
673550	Police Station	POLICE HEADQUARTERS	65m	North East
673652	Monument	1ST AUSTRALIAN ARMOURED REGIMENT LANCERS MEMORIAL	71m	North West
673624	Museum	THE LANCER BARRACKS AND LINDEN MILITARY MUSEUM	77m	North West
673589	Primary School	PARRAMATTA PUBLIC SCHOOL	146m	North
673614	Railway Station	PARRAMATTA RAILWAY STATION	154m	West
673590	High School	ARTHUR PHILLIP HIGH SCHOOL	166m	North
673379	High School	SATURDAY SCHOOL OF COMMUNITY LANGUAGES ARTHUR PHIL	166m	North
673593	Transport Interchange	PARRAMATTA BUS INTERCHANGE	217m	West
673543	Fire Station	PARRAMATTA FIRE STATION	234m	South East
673586	High School	ARTHUR PHILLIP HIGH SCHOOL	240m	North
673544	Library	PARRAMATTA CENTRAL LIBRARY	267m	North West
673560	Park	JUBILEE PARK	271m	South West
673644	Historic Site	WARDERS COTTAGES	286m	North
673629	Place Of Worship	NAN THIEN VIHARA IBBA BUDDHIST CENTRE	304m	South
673782	Urban Place	PARRAMATTA SQUARE	305m	North West
673587	Special School	ROWLAND HASSALL SCHOOL	310m	East
673645	Historic Site	PERTH HOUSE AND STABLES	316m	North
673625	Place Of Worship	LEIGH MEMORIAL UNITING CHURCH PARRAMATTA MISSION	340m	North West
673372	Local Government Chambers	PARRAMATTA CITY COUNCIL	345m	North West
673646	Historic Site	HARRISFORD	379m	North East
673630	Sports Court	PARRAMATTA SKATE PARK	381m	East
673353	Community Facility	PARRAMATTA TOWN HALL	383m	North West
673412	Post Office	PARRAMATTA WESTFIELD POST OFFICE	390m	West
673643	Historic Site	ROXY THEATRE	399m	North West
673658	Park	JAMES RUSE RESERVE	420m	East
673509	Historic Site	LENNOX HOUSE	428m	West
673783	Urban Place	CENTENARY SQUARE	442m	North West
673619	Club	GRANVILLE WARATAH SOCCER FOOTBALL CLUB	445m	East

Map Id	Feature Type	Label	Distance	Direction
673767	Monument	FIRST LIGHT HORSE REGIMENT NSW LANCERS	447m	North West
673766	Monument	CENTENNIAL FOUNTAIN	453m	North West
673656	Sports Field	ROBIN THOMAS RESERVE	456m	East
673488	Shopping Centre	WESTFIELD PARRAMATTA	456m	West
673503	Historic Site	ST JOHNS CATHEDRAL	458m	North West
673458	Place Of Worship	ST JOHNS ANGLICAN CATHEDRAL	458m	North West
673631	Park	PLAYGROUND	464m	East
673432	Park	ST JOHNS PARK	475m	North West
673551	Post Office	HARRIS PARK POST OFFICE	490m	South
673606	Wharf	PARRAMATTA WHARF	492m	North East
673642	Historic Site	REDCOATS MESS HOUSE	496m	North West
673580	Locality	HARRIS PARK	496m	South
673548	Place Of Worship	SALVATION ARMY CHURCH	500m	North
673557	Park	QUEENS WHARF PARK	503m	North East
673553	Historic Site	EXPERIMENT FARM COTTAGE	508m	South East
673556	Park	Park	521m	East
673415	Shopping Centre	Shopping Centre	552m	West
673484	Post Office	PARRAMATTA POST BUSINESS CENTRE	558m	North West
673613	Railway Station	HARRIS PARK RAILWAY STATION	573m	South
673572	Park	DIXON PARK	574m	North East
673653	Monument	H M A S PARRAMATTA	584m	East
673542	Club	WORKERS PARRAMATTA	589m	East
673577	Sports Field	BOWLING GREENS	608m	East
673632	Park	CDB RIVER FORESHORE	624m	North
673485	Place Of Worship	PARRAMATTA MOSQUE	641m	North West
673569	Park	ROSELLA PARK	645m	South
673660	Park	HARRIS PARK PLAYGROUND	652m	South
673591	Retirement Village	THE WHIDDON GROUP HARRIS PARK	655m	South East
673570	Park	HAMBLEDON COTTAGE RESERVE	660m	East
673661	Historic Site	HAMBLEDON COTTAGE	665m	East
673407	Court House	PARRAMATTA COURT HOUSE	672m	North West
673480	Medical Centre	PARRAMATTA EARLY CHILDHOOD CENTRE	691m	North West
673616	Community Home	FAIRLEA AGED CARE AT HARRIS PARK	697m	South East
673628	Place Of Worship	OUR LADY OF LEBANON MARONITE CHURCH	703m	East
673408	Museum	BRISLINGTON MEDICAL AND NURSING MUSEUM	707m	North West
673559	Park	RANGIHOU RESERVE	708m	North East
673464	Police Station	PARRAMATTA POLICE STATION	721m	North West

Map Id	Feature Type	Label	Distance	Direction
673584	Primary School	ST OLIVER'S PRIMARY SCHOOL	724m	South
673592	Place Of Worship	ANGLICAN CHURCH	724m	South East
673585	High School	MACARTHUR GIRLS HIGH SCHOOL	726m	North East
673508	Historic Site	TRAVELLERS REST INN GROUP	728m	North West
673545	Place Of Worship	CATHOLIC CHURCH	741m	South
673664	Combined Primary-Secondary School	MARONITE COLLEGE OF THE HOLY FAMILY PARRAMATTA	749m	South East
673558	Park	Park	758m	North
673482	Court House	FEDERAL CIRCUIT COURT OF AUSTRALIA NSW	759m	North West
673578	City	PARRAMATTA	783m	North
673479	Medical Centre	PARRAMATTA COMMUNITY HEALTH CENTRE	787m	North West
673476	High School	WARAKIRRI COLLEGE	789m	North West
673444	Sports Field	BOWLING GREEN	797m	North West
673420	Cemetery	ST JOHNS CEMETERY	803m	West
673440	Sports Court	TENNIS COURTS	806m	North West
673406	Court House	PARRAMATTA CHILDRENS COURT	806m	North West
673472	Community Home	BRENTWOOD RESIDENTIAL AGED CARE FACILITY	814m	South West
673641	Historic Site	LENNOX BRIDGE	818m	North
673621	Library	LOCAL STUDIES FAMILY HISTORY LIBRARY	820m	North
673429	Park	NOLLER PARK	824m	South West
673443	Sports Field	BOWLING GREEN	827m	North West
673615	Community Home	FAIRLEA AGED CARE AT ROSEHILL	829m	South East
673562	Park	SWANN RESERVE	832m	East
673447	Sports Field	BOWLING GREEN	840m	North West
673422	Historic Site	TUDOR GATEHOUSE	841m	North West
673552	Tourist Information Centre	PARRAMATTA HERITAGE AND VISITOR INFORMATION CENTRE	843m	North
673404	Club	PARRAMATTA RSL CLUB	880m	North West
673354	Community Facility	PARRAMATTA RIVER THEATRES	903m	North
673626	Place Of Worship	ALL SAINTS ANGLICAN CHURCH	914m	North
673648	Historic Site	COMFORT LODGE	921m	South East
673649	Historic Site	CAMDEN	940m	South East
673633	Monument	PARRAMATTA WAR MEMORIAL	943m	North
673518	Park	WARAWARA RESERVE	948m	South
673663	Nursing Home	ARK HEALTH CARE PARRAMATTA	949m	North East
673598	Roadside Emergency Telephone	336A	962m	South
673499	Park	PAVILLION FLAT	968m	North West
673650	Historic Site	PUBLIC RESERVE ASSOCIATED WITH ELIZABETH FARM	978m	East
673597	Roadside Emergency Telephone	335C	978m	South

Map Id	Feature Type	Label	Distance	Direction
673600	Roadside Emergency Telephone	336B	979m	South
673657	Park	PRINCE ALFRED SQUARE	979m	North
673599	Roadside Emergency Telephone	335B	984m	South
673541	Roadside Emergency Telephone	336	993m	South
673596	Roadside Emergency Telephone	335D	994m	South
673452	High School	PARRAMATTA HIGH SCHOOL	996m	West
673446	Sports Field	Sports Field	996m	West
673568	Park	Park	998m	North East
673654	Historic Site	ELIZABETH FARMHOUSE	998m	East
673623	Museum	ELIZABETH FARM	998m	East

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

# **Topographic Features**

#### 2-6 Hassall Street, Parramatta, NSW 2150

### **Tanks (Areas)**

What are the Tank Areas located within the dataset buffer?

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

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

# Tanks (Points)

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

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

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

Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

### **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			
120113524	Primary	Undefined		305m	North West			

120113524	Primary	Undefined	305m	North West
120107893	Primary	Undefined	486m	West
120110192	Primary	Undefined	952m	South West

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

# **Topographic Features**

2-6 Hassall Street, Parramatta, NSW 2150

### **State Forest**

What State Forest exist within the dataset buffer?

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

State Forest Data Source: © Land and Property Information (2015)

Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

# **National Parks and Wildlife Service Reserves**

What NPWS Reserves exist within the dataset buffer?

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

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

**Elevation Contours (m AHD)** 





# Hydrogeology & Groundwater

2-6 Hassall Street, Parramatta, NSW 2150

# Hydrogeology

Description of aquifers on-site:

#### Description

Porous, extensive aquifers of low to moderate productivity

Description of aquifers within the dataset buffer:

#### Description

Porous, extensive aquifers of low to moderate productivity

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia) Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

### **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**





# Hydrogeology & Groundwater

2-6 Hassall Street, Parramatta, NSW 2150

### **Groundwater Boreholes**

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW024 667	10BL019 073, 10WA10 8142	Well	Private	Domestic	General Use		01/10/1966	4.50	4.60	Fresh				751m	East
213004					UNK								11.75	829m	North West
GW108 611	10BL162 941, 10WA10 8668	Bore	Private	Domestic	Domestic		20/04/2005	60.50	60.50	5300	6.20	5.500		1038m	North West
GW110 914	10BL603 583	Well	Private	Monitoring Bore	Monitoring Bore		20/01/2010	6.00	6.00		5.00			1050m	North
GW110 913	10BL603 583	Well	Private	Monitoring Bore	Monitoring Bore		20/01/2010	10.00	10.00		7.00			1063m	North
GW110 912	10BL603 583	Well	Private	Monitoring Bore	Monitoring Bore		20/01/2010	10.00	10.00		7.00			1082m	North
GW110 400	10BL160 282	Well	Private	Monitoring Bore	Monitoring Bore		06/03/1996	5.40	5.40					1112m	South
GW110 401	10BL160 282	Well	Private	Monitoring Bore	Monitoring Bore		18/05/2001	7.00	7.00					1131m	South
GW110 396	10BL160 282	Well	Private	Monitoring Bore	Monitoring Bore		26/06/1996	7.00	7.00					1149m	South
GW110 399	10BL160 282	Well	Private	Monitoring Bore	Monitoring Bore		26/06/1996	5.30	5.30					1173m	South
GW110 402	10BL160 282	Well	Private	Monitoring Bore	Monitoring Bore		18/05/2001	8.00	8.00					1213m	South
GW110 403	10BL160 282	Well	Private	Monitoring Bore	Monitoring Bore		18/05/2001	9.00	9.00					1281m	South West
GW110 397	10BL160 282	Well	Private	Monitoring Bore	Monitoring Bore		06/03/1996	5.00	5.00					1300m	South West
GW110 398	10BL160 282	Well	Private	Monitoring Bore	Monitoring Bore		26/06/1996	6.00	6.00					1310m	South
GW110 404	10BL160 282	Well	Private	Monitoring Bore	Monitoring Bore		18/05/2001	9.00	9.00					1343m	South West
GW114 677	10BL604 491	Bore	Private	Monitoring Bore	Monitoring Bore		31/03/2011	7.50	7.50					1357m	South
GW114 676	10BL604 491	Bore	Private	Monitoring Bore	Monitoring Bore		01/04/2011	7.50	7.50					1357m	South
GW114 678	10BL604 491	Bore	Private	Monitoring Bore	Monitoring Bore		31/03/2011	8.50	8.50					1363m	South
GW114 679	10BL604 491	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2011	7.50	7.50					1367m	South
GW114 675	10BL604 491	Bore	Private	Monitoring Bore	Monitoring Bore		01/04/2011	7.50	7.50					1367m	South
GW111 324	10BL601 807	Bore	Private	Monitoring Bore	Monitoring Bore		25/05/2007	8.10	8.10					1368m	South
GW114 680	10BL604 491	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2011	7.50	7.50					1374m	South
GW111 323	10BL601 807	Bore	Private	Monitoring Bore	Monitoring Bore		25/05/2007	4.10	4.10					1376m	South
GW114 681	10BL604 491	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2011	7.50	7.50					1384m	South
GW114 682	10BL604 491	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2011	8.00	8.00					1387m	South
GW114	10BL604	Bore	Private	Monitoring	Monitoring		01/01/2011	3.00	3.00					1390m	South

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW111 322	10BL601 807	Bore	Private	Monitoring Bore	Monitoring Bore		25/05/2007	3.60	3.60					1396m	South
GW107 978	10BL162 924, 10BL601 779	Bore		Monitoring Bore	Monitoring Bore		01/03/2005	6.00	6.00		3.00			1424m	South East
GW107 979	10BL162 924, 10BL601 779	Bore		Monitoring Bore	Monitoring Bore		01/03/2005	6.00	6.00		3.00			1427m	South East
GW107 983	10BL162 924, 10BL601 779	Bore		Monitoring Bore	Monitoring Bore		01/03/2005	6.00	6.00		3.00			1430m	South East
GW107 981	10BL162 924, 10BL601 779	Bore		Monitoring Bore	Monitoring Bore		01/03/2005	6.00	6.00		3.00			1432m	South East
GW107 980	10BL162 924, 10BL601 779	Bore		Monitoring Bore	Monitoring Bore		01/03/2005	6.00			3.00			1434m	South East
GW107 982	10BL162 924, 10BL601 779	Bore		Monitoring Bore	Monitoring Bore		01/03/2005	6.00	6.00		3.00			1436m	South East
GW114 535	10BL604 593	Bore	Other Govt	Monitoring Bore	Monitoring Bore		12/08/2014	7.00	7.00		4.80			1668m	West
GW114 536	10BL604 593	Bore	Other Govt	Monitoring Bore	Monitoring Bore		12/08/2014	6.50	6.50					1677m	West
GW114 534	10BL604 593	Bore	Other Govt	Monitoring Bore	Monitoring Bore		12/08/2014	6.90	6.90		5.00			1692m	West
GW109 867	10BL601 322	Well	Local Govt	Monitoring Bore	Monitoring Bore		25/07/2006	6.00	6.00					1896m	East
GW112 157	10BL160 703	Bore	Private	Monitoring Bore	Monitoring Bore		07/05/2002	6.90	6.90					1905m	East
GW112 159	10BL160 703	Bore	Private	Monitoring Bore	Monitoring Bore		11/05/2002	3.50	3.50					1907m	East
GW112 155	10BL160 703	Bore	Private	Monitoring Bore	Monitoring Bore		07/05/2002	6.00	6.00					1909m	East
GW105 354	10BL161 910	Bore		Monitoring Bore	Monitoring Bore		03/06/2002	6.00	6.00					1939m	South East
GW112 163	10BL160 703	Bore	Private	Monitoring Bore	Monitoring Bore		06/05/2002	6.50	6.50					1966m	East
GW105 353	10BL161 910	Bore		Monitoring Bore	Monitoring Bore		03/06/2002	6.00	6.00					1966m	South East
GW112 162	10BL160 703	Bore	Private	Monitoring Bore	Monitoring Bore		10/05/2002	5.50	5.50					1971m	East
GW105 352	10BL161 910	Bore		Monitoring Bore	Monitoring Bore		03/06/2002	6.00	6.00					1974m	South East

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

# Hydrogeology & Groundwater

2-6 Hassall Street, Parramatta, NSW 2150

# **Driller's Logs**

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

Groundwater No	Drillers Log	Distance	Direction
GW024667	0.00m-4.57m Sand Water Supply	751m	East
GW108611	0.00m-1.00m Fill 1.00m-3.00m Clay, brown 3.00m-5.50m Shale 5.50m-7.00m Sandstone, with Shale bedding 7.00m-22.00m Sandstone, grey 22.00m-23.30m Sandstone, grey 46.10m-46.30m Sandstone, grey 46.30m-47.50m Sandstone, fractured 46.30m-47.50m Sandstone, fractured 47.70m-56.50m Sandstone, grey 56.50m-56.60m Sandstone, grey	1038m	North West
GW110914	0.00m-0.20m FILL, SILTY SAND BROWN 0.20m-0.40m FILL, SANDY CLAY RED GREY 0.40m-1.10m FILL SANDY CLAY RED 1.10m-2.50m CLAY SANDY RED 2.50m-3.20m CLAY RED 3.20m-5.00m SILTSTONE, SHALE FRAGMENTS 5.00m-5.50m CLAY SANDY BROWN 5.50m-6.00m SANDSTONE BROWN LOW STRENGTH	1050m	North
GW110913	0.00m-0.10m CONCRETE 0.10m-0.20m CLAY SILTY RED BROWN 0.20m-1.20m CLAY SANDY RED BROWN 1.20m-2.00m CLAY SANDY BROWN 3.50m-4.50m CLAY SANDY BROWN/SHALE 4.50m-4.90m SANDSTONE BROWN LOW STRENGTH 4.90m-6.00m CLAY SANDY BROWN SHALE FRAGMENTS 6.00m-6.20m SANDSTONE WEATHERED GREY WHITE 6.20m-10.00m SANDSTONE WHITE	1063m	North
GW110912	0.00m-0.10m CONCRETE 0.10m-0.50m FILL,SILTY CLAY, GRAVEL 0.50m-1.80m CLAY SANDY GREY RED 1.80m-2.50m CLAY SANDY GREY BROWN 2.50m-3.00m CLAY SANDY GREY 3.00m-3.50m CLAY SANDY SOME SHALE FRAGMENTS 3.50m-4.30m SHALE CLAY BROWN 4.30m-5.00m SHALE LOW STRENGTH,IRONSTONE,SANDSTONE 5.00m-5.20m SHALE LOW STRENGTH DARK GREY 5.20m-6.50m SHALE LOW STRENGTH BROWN SANDSTONE BANDS 6.50m-6.80m SANDSTONE LOW STRENGTH WHITE 6.80m-10.00m SANDSTONE MEDIUM STRENGTH WHITE	1082m	North
GW110400	0.00m-0.80m FILL,CLAY,GREY,SANDY,GRAVELLY 0.80m-4.30m FILL,CLAY,LT BROWN,SOFT , PLASTIC 4.30m-5.40m CLAY, LT BROWN,PINK,SOFT SILT	1112m	South
GW110401	0.00m-0.85m FILL,LOOSE SAND/GRAVEL 0.85m-7.00m FILL,CRUSHED SANDSTONE	1131m	South
GW110396	0.00m-0.30m FILL,LOOSE,BROWN,SANDY 0.30m-6.00m CLAY, LT BROWN,SOFT,PLASTIC 6.00m-7.00m CLAY,RED BROWN,PLASTIC FILL.	1149m	South
GW110399	0.00m-1.50m FILL,CLAY BROWN PLASTIC 1.50m-2.00m CLAY,YELLOW,BRWON, HARD 2.00m-2.50m CLAY,LT BROWN ,SOFT SILTY PLASTIC 2.50m-3.40m CLAY,LT GREY,SILTY SOFT PLASTIC 3.40m-5.30m CLAY,ORANGE,GREY MOTTLE	1173m	South

Groundwater No	Drillers Log	Distance	Direction
GW110402	0.00m-0.85m FILL.LOOSE SAND,W/GRAVEL 0.85m-5.00m FILL,CRUSHED SANDSTONE 5.00m-8.00m FILL,SOFT,SANDY CLAY W/GRAVEL	1213m	South
GW110403	0.00m-0.10m TOPSOIL 0.10m-0.20m BASALT GRAVEL FILL 0.20m-0.85m FILL,SILTY SAND 0.85m-1.50m FILL,STIFF,GREY/BROWN,SANDY CLAY 1.50m-4.00m FILL,CRUSHED SANDSTONE 4.00m-6.40m SILTY CLAY,V/SOFT,GREY 6.40m-8.50m CLAY,SOFT YELLOW 8.50m-9.00m SHALE EXTREMELY WEATHERED	1281m	South West
GW110397	0.00m-1.50m FILL, CLAY,SOFT BROWN,PLASTIC 1.50m-3.50m CLAY RED,PINK,PURPLE,HARD 3.50m-4.30m CLAY LT/BROWN, HARD 4.30m-4.50m CLAY LT BROWN,SOFT,PLASTIC 4.50m-5.00m CLAY,DARK YELLOW,SILTY	1300m	South West
GW110398	0.00m-0.50m FILL, ROAD BASE 0.50m-1.50m CLAY,RED,GREY,PLASTIC,MOIST 1.50m-4.00m CLAY RED BROWN,STIFF, PLASTIC 4.00m-5.50m CLAY,ORANGE/BROWN.STIFF 5.50m-6.00m SHALE,GREY, WEATHERED	1310m	South
GW110404	0.00m-0.90m FILL,CLAYEY SAND,GRAVEL 0.90m-1.50m FILL,GRAVELLY SILTY SAND 1.50m-6.50m FILL,CRUSHED SANDSTONE 6.50m-8.50m SILTY CLAY,W/MINOR SAND 8.50m-9.00m SHALE,GREY EXTREMELY WEATHERED	1343m	South West
GW114676	0.00m-0.20m CONCRETE 0.20m-0.50m GRAVELLY SANDY CLAY 0.50m-1.40m SILTY CLAY,MINOR IRONSTONE 1.40m-2.40m SILTY CLAY,WEATHERED SHALE 2.40m-3.00m SHALE WEATHERED,MINOR SILT AND CLAY 3.00m-4.50m SHALE WEATHERED MINOR SILT AND CLAY 4.50m-6.00m SHALE WEATHERED MINOR SILT AND CLAY FIRM 6.00m-7.50m SHALE VERY WEATHERED MINOR SILT AN CLAY SOFT	1357m	South
GW114677	0.00m-0.20m CONCRETE 0.20m-0.50m SANDY GRAVEL FINE GRAINED SAND 0.50m-1.00m SILTY CLAY WITH MINOR GRAVEL, FINE GRAINED SAND 1.00m-1.20m SILTY CLAY WITH MINOR GRAVEL,RED BROWN 1.20m-2.00m SILTY CLAY,MINOR IRONSTONE,RED BROWN 2.00m-2.80m SHALE WEATHERED MINOR SILT HARD 2.80m-5.85m SHALE WEATHERED SHALE,MINOR SILT,DRY 5.85m-7.50m SHALE VERY WEATHERED,SOFT,MOIST,LOW PLASTICITY	1357m	South
GW114678	0.00m-0.20m CONCRETE 0.20m-0.40m SANDY GRAVEL,FINE GRAINED 0.40m-0.80m SILTY CLAY , MINOR IRONSTONE 0.80m-1.00m SILTY CLAY , SHALE,FIRM,MOIST 1.00m-2.00m SHALE WEATHERED,MINOR IRONSTONE 2.00m-2.70m SHALE WEATHERED,DRY, LOW PLASTICITY 2.70m-7.00m SHALE WEATHERED,MINOR SILT LOW PLASTICITY 7.00m-8.50m SHALE WEATHERED,MINOR SILT,HARD,MOIST TI WET	1363m	South
GW114675	0.00m-0.20m CLAYAY SAND WITH MINOR GRAVEL 0.20m-0.50m SAND FINE GRAINED,MOIST,DAR BROWN 0.50m-1.00m CLAYEY SANDY GRAVEL,DARK BROWN 1.00m-2.80m SILTY CLAY STIFF,MOIA,LOW PLASTICITY 2.80m-4.00m SILTY CLAY STIFF,MOIST GREY BROWN 4.00m-7.50m SHALE WEATHERED,HARD SLIGHTLY MOIST	1367m	South
GW111324	0.00m-0.30m TOPSOIL,SILTY SAND,FINE GRAIN,BROWN 0.30m-5.50m FILL.GRAVELLY CLAY,MODERATE PLASTICITY,RED BROWN 5.50m-8.10m SHALE,DARK GREY,HARD,UNIFORM,WET	1368m	South
GW111323	0.00m-0.30m TOPSOIL,SILTY SAND,FINE GRAIN 0.30m-2.50m FILL,SANDY CLAY,RED BROWN,GREY MOTTLING 2.50m-4.10m SHALE,WEATHERED,STIFF TO HARD,SOME CLAY	1376m	South
GW111322	0.00m-0.30m TOPSOIL,GRAVELLY SILTY SAND 0.30m-2.20m FILL,SILTY CLAY,MEDIUM DENSITY 2.20m-3.50m SAND,MEDIUM GRAIN,GREY,SOFT 3.50m-3.60m CLAY,LOW TO MODERATE PLASTICITY,GREY,SHALE	1396m	South
GW114535	0.00m-1.60m CLAY FILL 1.60m-2.00m CEMENTED SAND/CLAY 2.00m-3.50m SANDY CLAY 3.50m-5.00m SANDSTONE WEATHERED 5.00m-7.00m SHALE	1668m	West

Groundwater No	Drillers Log	Distance	Direction
GW114536	0.00m-1.20m CLAY FILL 1.20m-1.50m CEMENTED SAND / CLAY 1.50m-3.00m CLAY 3.00m-4.30m WEATHERED SANDSTONE 4.30m-6.50m SHALE	1677m	West
GW114534	0.00m-1.80m CLAY 1.80m-3.00m CEMENTED SAND / CLAY 3.00m-6.70m SANDSTONE WEATHERED 6.70m-6.90m SHALE	1692m	West
GW109867	0.00m-4.00m GRAVELS,SANDSTONE,BLACK SAND,ORANGE,AND YELLOW SAND 4.00m-5.50m SANDY CLAY.L/BROWN,CLAY WET,VERY STIFF,CARAMEL BROWN 5.50m-6.00m GREY AND BROWN SILTY SAND	1896m	East
GW105354	0.00m-1.50m SAND RED AND BROWN/SANDSTONE 1.50m-3.30m CLAY,BROWN,Drk grey 3.30m-5.70m CLAY ,RED GREY MOTTLES 5.70m-6.00m CLAY HIGH PLAST. DARK GREY	1939m	South East
GW105353	0.00m-0.40m SAND MEDIUM GRAINED 0.40m-1.00m CLAY DARK BROWN 1.00m-1.50m CLAY DARK BROWN GREY 1.50m-2.00m SANDY CLAY 2.00m-3.40m SILTY CLAY,GREY 3.40m-5.00m CLAY,GREY, SHALEY 5.00m-6.00m SHALEY CLAY,DARK GREY	1966m	South East
GW105352	0.00m-0.50m SAND/GRAVEL 0.50m-1.00m CLAY BROWN 1.00m-2.00m CLAY DARK GREY 2.00m-3.50m CLAY,ORANGE AND RED MOTTLES 3.50m-5.50m CLAY GREY LOW PLASTICITY 5.50m-6.00m CLAY DARK GREY	1974m	South East

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

Geology 1:100,000 2-6 Hassall Street, Parramatta, NSW 2150





# Geology

2-6 Hassall Street, Parramatta, NSW 2150

# **Geological Units**

#### What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Rwa	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	1:100,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Qha	Silty to peaty quartz sand, silt, and clay. Ferruginous and humic cementation in places. Common shell layers				Quaternary		Sydney	1:100,000
Rwa	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	1:100,000
Rwa	Dark-grey to black claystone-siltstone and fine sandstone -siltstone laminate	Ashfield Shale	Wianamatta Group (undifferenti ated)		Middle Triassic		Penrith	1:100,000
water							Sydney	1:100,000

### **Geological Structures**

#### What are the Geological Structures onsite?

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

#### What are the Geological Structures within the dataset buffer?

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

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

 $\ensuremath{\mathbb C}$  State of New South Wales through the NSW Department of Industry, Resources & Energy

# **Naturally Occurring Asbestos Potential**

#### 2-6 Hassall Street, Parramatta, NSW 2150

# **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**





# Soils

2-6 Hassall Street, Parramatta, NSW 2150

# **Soil Landscapes**

#### What are the onsite Soil Landscapes?

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

### What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALbg	BIRRONG		ALLUVIAL	Penrith	1:100,000
ALbg	BIRRONG		ALLUVIAL	Sydney	1:100,000
DTxx	DISTURBED TERRAIN		DISTURBED TERRAIN	Sydney	1:100,000
ERgn	GLENORIE		EROSIONAL	Penrith	1:100,000
ERgn	GLENORIE		EROSIONAL	Sydney	1:100,000
REbt	BLACKTOWN		RESIDUAL	Penrith	1:100,000
REbt	BLACKTOWN		RESIDUAL	Sydney	1:100,000
RElh	LUCAS HEIGHTS		RESIDUAL	Sydney	1:100,000
WATER	WATER		WATER	Penrith	1:100,000
WATER	WATER		WATER	Sydney	1:100,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage

# **Atlas of Australian Soils**





# Soils

2-6 Hassall Street, Parramatta, NSW 2150

# **Atlas of Australian Soils**

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

Map Unit Code	Soil Order	Map Unit Description	Distance
Pb12	Kurosol	Gently rolling to rounded hilly country with some steep slopes and broad valleys: chief soils are hard acidic red soils (Dr2.21) with hard neutral and acidic yellow mottled soils (Dy3.42 and Dy3.41) on lower slopes and in valleys. Associated are small areas of various soils including (Gn3.54) on some ridges, (Dr3.31) on some slopes; (Dr2.23) in saddles and some mid-slope positions, and some low- lying swampy areas of (Uf6) soils and (Uc1.2) soils with peaty surfaces. Small areas of other soils such as (Db1.2) are likely throughout.	0m

Atlas of Australian Soils Data Source: CSIRO

# **Acid Sulfate Soils**





# Acid Sulfate Soils

#### 2-6 Hassall Street, Parramatta, NSW 2150

### **Environmental Planning Instrument - Acid Sulfate Soils**

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

Soil Class	Description	EPI
5	Works within 500 metres of adjacent Class 1, 2, 3, or 4 land that is below 5 metres AHD and by which the watertable is likely to be lowered below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk	Parramatta Local Environmental Plan 2011

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

Soil Class	Description	EPI	Distance	Direction
4	Works more than 2 metres below natural ground surface present an environmental risk; Works by which the watertable is likely to be lowered more than 2 metres below natural ground surface, present an environmental risk	Parramatta Local Environmental Plan 2011	68m	North
1	Any works present an environmental risk	Parramatta Local Environmental Plan 2011	491m	North East

Acid Sulfate Data Source Accessed 23/10/2018: NSW Crown Copyright - Planning and Environment Creative Commons 4.0 © Commonwealth of Australia https://creativecommons.org/licenses/by/4.0/

# Atlas of Australian Acid Sulfate Soils







# **Acid Sulfate Soils**

2-6 Hassall Street, Parramatta, NSW 2150

# **Atlas of Australian Acid Sulfate Soils**

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

Class	Description	Distance
С	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m
В	Low Probability of occurrence. 6-70% chance of occurrence.	68m
А	High Probability of occurrence. >70% chance of occurrence.	490m

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO
**Dryland Salinity** 





# **Dryland Salinity**

2-6 Hassall Street, Parramatta, NSW 2150

### **Dryland Salinity - National Assessment**

Is there Dryland Salinity - National Assessment data onsite?

#### No

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

#### No

What Dryland Salinity assessments are given?

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

Dryland Salinity Data Source : National Land and Water Resources Audit

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

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

## **Dryland Salinity Potential of Western Sydney**

#### Dryland Salinity Potential of Western Sydney within the dataset buffer?

Feature Id	Classification	Description	Distance	Direction
274	MODERATE	Area of Moderate Salinity Potential	0m	Onsite
768	WATER	Area of Water	457m	East
769	LOW	Area of Very Low Salinity Potential	883m	North

Dryland Salinity Potential of Western Sydney Data Source : NSW Office of Environment and Heritage Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

# **Mining Subsidence Districts**

2-6 Hassall Street, Parramatta, NSW 2150

## **Mining Subsidence Districts**

#### Mining Subsidence Districts within the dataset buffer:

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

Mining Subsidence District Data Source: © Land and Property Information (2016) Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

# **Environmental Zoning**

2-6 Hassall Street, Parramatta, NSW 2150

## **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 Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

## 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 Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

## **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 Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en **EPI Planning Zones** 





## **Environmental Planning Instrument**

2-6 Hassall Street, Parramatta, NSW 2150

# Land Zoning

What Environmental Planning Instrument Land Zones exist within the dataset buffer?

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
B3	Commercial Core		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	0m	Onsite
B4	Mixed Use		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	0m	North West
SP2	Infrastructure	Defence	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	0m	North West
SP2	Infrastructure	Railway Corridor	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	44m	West
B3	Commercial Core		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	89m	South West
B4	Mixed Use		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	131m	West
B4	Mixed Use		Parramatta Local Environmental Plan 2011	23/09/2016	23/09/2016	14/09/2018	Amendment No 12	177m	North East
B1	Neighbourhood Centre		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		182m	South East
B1	Neighbourhood Centre		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	206m	South
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	206m	South West
R2	Low Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		238m	South East
B5	Business Development		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	274m	South West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		325m	East
SP2	Infrastructure	Classified Road	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		328m	South East
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		346m	East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		354m	East
SP2	Infrastructure	Classified Road	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	357m	South West
SP1	Special Activities	Place of Public Worship	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	387m	North West
B5	Business Development		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	397m	South West
B4	Mixed Use		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	401m	South West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	412m	North East
B5	Business Development		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	426m	South West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	431m	North West
SP2	Infrastructure	Classified Road	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		439m	West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	442m	North West
W2	Recreational Waterways		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	450m	North
R4	High Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		454m	South West
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		457m	East

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		465m	East
W2	Recreational Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		475m	East
R4	High Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		496m	North East
RE2	Private Recreation		Parramatta Local Environmental Plan 2011	28/07/2017	28/07/2017	14/09/2018	Amendment No 20	498m	East
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		500m	East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	506m	North
IN1	General Industrial		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		510m	East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	513m	South West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		519m	North
SP1	Special Activities	Educational Establishment & Place of Worship	Parramatta Local Environmental Plan 2011	18/09/2015	18/09/2015	14/09/2018	Amendment No 11	523m	East
R4	High Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		530m	South East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		571m	South
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		577m	East
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	14/09/2018	14/09/2018	14/09/2018	Amendment No 33	586m	South West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	589m	North
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	28/07/2017	28/07/2017	14/09/2018	Amendment No 20	596m	East
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		636m	North
B5	Business Development		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		650m	South West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	658m	North
R4	High Density Residential		Parramatta Local Environmental Plan 2011	14/09/2018	14/09/2018	14/09/2018	Amendment No 33	659m	South West
B4	Mixed Use		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	667m	North
B4	Mixed Use		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		696m	South
SP1	Special Activities	Place of Public Worship	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		697m	South East
R2	Low Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		700m	North East
SP2	Infrastructure	Rail Infrastructure	Holroyd Local Environmental Plan 2013	08/12/2017	08/12/2017	22/06/2018	Amendment No 15	701m	South West
R2	Low Density Residential		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		708m	South
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		714m	North East
R4	High Density Residential		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		716m	South
B5	Business Development		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		722m	South
R2	Low Density Residential		Parramatta Local Environmental Plan 2011	14/09/2018	14/09/2018	14/09/2018	Amendment No 33	725m	South West
B5	Business Development		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		731m	South
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		738m	East
R2	Low Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		748m	East

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
SP2	Infrastructure	Cemetery	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	748m	West
R4	High Density Residential		Parramatta Local Environmental Plan 2011	11/04/2014	11/04/2014	14/09/2018	Amendment No 7	764m	North East
SP2	Infrastructure	Classified Road	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		769m	West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		770m	East
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		778m	North East
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	14/09/2018	14/09/2018	14/09/2018	Amendment No 33	780m	South West
RE2	Private Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	782m	North West
B1	Neighbourhood Centre		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		786m	South West
B5	Business Development		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		790m	South
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		791m	South West
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		796m	South West
R4	High Density Residential		Parramatta Local Environmental Plan 2011	03/08/2012	03/08/2012	14/09/2018	Amendment No 1	798m	North East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	800m	North West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	802m	North West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		802m	South West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	805m	North West
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	821m	North West
R4	High Density Residential		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		825m	South West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	832m	North West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	28/07/2017	28/07/2017	14/09/2018	Amendment No 20	833m	South West
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		833m	East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		836m	South West
R2	Low Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		838m	East
R2	Low Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		839m	East
SP2	Infrastructure	Railway Corridor	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		846m	South
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		854m	South East
B4	Mixed Use		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		855m	North East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	868m	North West
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		872m	East
IN1	General Industrial		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		873m	East
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	28/07/2017	28/07/2017	14/09/2018	Amendment No 20	873m	South West
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	900m	North
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		905m	South
R2	Low Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		914m	South East

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		931m	North East
B4	Mixed Use		Parramatta Local Environmental Plan 2011	03/05/2013	03/05/2013	14/09/2018	Amendment No 3	933m	East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	933m	West
IN1	General Industrial		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		940m	East
SP2	Infrastructure	Classified Road	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		940m	North East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	03/05/2013	03/05/2013	14/09/2018	Amendment No 3	950m	East
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	959m	North West
SP2	Infrastructure	Classified Road	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	968m	North
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		971m	North
R4	High Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		971m	North
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		980m	North
RE1	Public Recreation		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		980m	North East
B5	Business Development		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		983m	South
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		987m	East
W1	Natural Waterways		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		988m	South
RE1	Public Recreation		Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	22/06/2018		990m	South West
B4	Mixed Use		Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	996m	North
R2	Low Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		998m	North East
R3	Medium Density Residential		Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	14/09/2018		998m	South

Environmental Planning Instrument Data Source: NSW Crown Copyright - Planning & Environment Creative Commons 4.0 © Commonwealth of Australia https://creativecommons.org/licenses/by/4.0/

### **Environmental Planning Instrument**

2-6 Hassall Street, Parramatta, NSW 2150

### **Minimum Lot Size**

What are the onsite Environmental Planning Instrument Minimum 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 Buildings**

What are the onsite Environmental Planning Instrument Maximum Height of Buildings?

Symbol	Maximum Height of Building	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
92	72.00 m	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	99.8

### Floor Space Ratio

What are the onsite Environmental Planning Instrument Floor Space Ratios?

Symbol	Floor Space Ratio	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
36	6.00	LEP	18/12/2015	18/12/2015	14/09/2018	Amendment No 10	100

### Land Application

What are the onsite Environmental Planning Instrument Land Applications?

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

### Land Reservation Acquisition

What are the onsite Environmental Planning Instrument Land Reservation Acquisitions?

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

Environmental Planning Instrument Data Source: NSW Crown Copyright - Planning & Environment Creative Commons 4.0 © Commonwealth of Australia https://creativecommons.org/licenses/by/4.0/

### **Heritage Items**





# Heritage

2-6 Hassall Street, Parramatta, NSW 2150

## **State Heritage Register - Curtilages**

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

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
5051413	Parramatta Railway Station	Great Western Railway, Parramatta	Parramatta	02/04/1999	00696	1746	106m	West
5061065	1st/15th Royal NSW Lancers Memorial Museum Collection	Linden House 2 Smith Street Parramatta	Parramatta	14/05/2010	01824	2924	108m	North West
5051401	Perth House and Stables	85 George Street Parramatta	Parramatta	02/04/1999	00155	346	254m	North
5045138	Warders Cottages	1 and 3 Barrack Lane Parramatta	Parramatta	02/04/1999	00709	1760	273m	North
5051406	Roxy Theatre	65-69 George Street Parramatta	Parramatta	02/04/1999	00711	1762	357m	North West
5061073	Ancient Aboriginal and Early Colonial Landscape	Robin Thomas Reserve , Harris Park	Parramatta	08/07/2011	01863	2463	357m	East
5051407	Harrisford	182 George Street Parramatta	Parramatta	02/04/1999	00248	588	364m	North East
5060990	St. John's Anglican Cathedral	195 Church Street Parramatta	Parramatta	05/03/2010	01805	2305	387m	North West
5051403	Experiment Farm Cottage	9 Ruse Street Harris Park	Parramatta	02/04/1999	00768	1837	411m	East
5051415	Lennox House	39 Campbell Street Parramatta	Parramatta	02/04/1999	00751	1814	413m	West
5051409	Shop and office	88-92 George Street Parramatta	Parramatta	02/04/1999	00278	694	414m	North
5051399	Redcoats Mess House	Horwood Place, Parramatta	Parramatta	02/04/1999	00218	525	479m	North West
5054727	HMAS Parramatta shipwreck and memorials	Historic Shipwreck: Cascade Gully Memorials Parramatta and Sydney Parramatta	Multiple LGAs	15/12/2006	01676	2188	575m	East
5052762	Hambledon Cottage, Grounds and Archaeology	Hassall Street	Parramatta	21/09/2012	01888	2547	616m	East
5051397	Parramatta District Hospital - Brislington and Landscape	10 George Street Parramatta	Parramatta	02/04/1999	00059	253	683m	North West
5051404	Travellers Rest Inn Group	12,14,16 O'Connell Street Parramatta	Parramatta	02/04/1999	00748	1810	716m	North West
5012363	Parramatta District Hospital - Archaeology	Marsden Street Parramatta	Parramatta	02/04/1999	00828	2689	730m	North West
5051395	St. John's Anglican Cemetery	1 O'Connell Street Parramatta	Parramatta	02/04/1999	00049	419	748m	West
5051414	Lennox Bridge	349-351 (adj) Church Street Parramatta	Parramatta	02/04/1999	00750	1813	779m	North

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
5051462	Parramatta Park and Old Government House	O'Connell Street, Parramatta	Parramatta	02/04/1999	00596	1547	795m	North West
5045136	Public Reserve associated with Elizabeth Farm	Arthur Street, Rosehill	Parramatta	02/04/1999	00285	674	869m	East
5045107	Kings School Group (former)	3 Marist Place Parramatta	Parramatta	02/04/1999	00771	1843	882m	North West
5051802	Marsden Rehabilitation Centre Group	Marsden Street, Parramatta	Parramatta	02/04/1999	00826	1843	882m	North West
5053902	Prince Alfred Square and potential archaeological site	353 Church Street, Parramatta	Parramatta	28/08/2017	01997	3136	884m	North
5051402	Broughton House	43a Thomas Street Parramatta	Parramatta	01/10/1999	01302	3098	888m	North East
5051410	Comfort Lodge	62 Prospect Street Harris Park	Parramatta	02/04/1999	00283	686	893m	South East
5051408	Camden	60 Prospect Street Rose Hill	Parramatta	02/04/1999	00250	609	914m	South East
5051394	Elizabeth Farm	70 Alice Street Rosehill	Parramatta	02/04/1999	00001	674	947m	East
5045425	Murphys House	1 Marist Place Parramatta	Parramatta	02/04/1999	00238	555	1000m	North

Heritage Data Source: NSW Crown Copyright - Office of Environment & Heritage Creative Commons 4.0 © Commonwealth of Australia https://creativecommons.org/licenses/by/4.0/

# **Environmental Planning Instrument - Heritage**

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

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
101824	1st/15th Royal NSW Lancer Museum collection	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	0m	North West
1707	Commercial Hotel	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	0m	West
1751	Lancer Barracks group	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	0m	North West
100696	Parramatta Railway Station	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	44m	West
1720	Arthur Phillip High School (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	123m	North West
1717	Convict barracks wall	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	174m	North
1750	Attached houses	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	180m	East
1708	Semi-detached cottages	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	183m	East
1748	Attached houses	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	190m	South West

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
FID3443 2	Harris Park West Conservation Area	Conservation Area - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	197m	South East
1246	Two timber cottages	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	223m	South East
1749	Single-storey shop	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	223m	South East
1248	Terrace houses	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	231m	South East
1245	Single storey residences	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	245m	South
1310	Single storey residences	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	248m	South East
100155	Perth House, Moreton Bay fig tree (and potential archaeological site)	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	254m	North
1649	Shop (former fire station)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	254m	West
1247	Group of timber houses (Nos. 5 - 13)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	257m	South
1292	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	264m	South
1718	Cottages (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	273m	North
1252	Group of cottages (Nos. 25 - 51)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	275m	South East
1309	Group of dwellings (Nos. 84, 88-92, 94 & 102)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	279m	South East
1647	Residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	286m	North
1291	Attached houses	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	304m	South
1253	Group of cottages (Nos. 36-38 & 42- 52)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	311m	South East
1290	Terrace house	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	318m	South
1308	Single storey residences	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	318m	South East
1719	Leigh Memorial Uniting Church	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	326m	North West
1289	Attached houses	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	338m	South
1650	Parramatta Town Hall (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	340m	North West
1283	Group of cottages (Nos. 100 - 110)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	342m	South East
A00768	Experiment Farm environs & archaeological site (part)	Item - General	State	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	345m	East

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
100768	Experiment Farm environs & archaeological site (part)	Item - General	State	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	345m	East
1648	Road structures	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	347m	South West
1716	Kia Ora (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	351m	North West
100711	Roxy Cinema	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	357m	North West
A2	Robin Thomas Reserve	Item - Archaeological	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	358m	East
FID3470 9	Experiment Farm Conservation Area	Conservation Area - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	358m	South East
1306	Group of cottages (Nos. 62-80)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	358m	South
1307	Group of cottages (Nos. 73 - 79)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	358m	South East
100248	Harrisford (and potential archaeological site)	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	365m	North East
1288	Attached houses	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	371m	South
1249	Group of cottages (Nos. 3-5 & 9-21)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	376m	South East
1251	Group of cottages (Nos. 24 - 32)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	383m	South East
101805	St John'??s Anglican Cathedral	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	387m	North West
1282	Group of cottages (Nos. 90 - 98)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	387m	South East
1653	House	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	387m	North West
1652	House	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	405m	North West
1305	House	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	408m	South East
100751	Lennox House (and adjoining brick wall on footpath)	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	413m	West
100278	Shop and office (and potential archaeological site)	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	414m	North
1727	Single-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	414m	South
1281	Group of cottages (Nos. 82 - 88)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	420m	South East
1651	Milestone	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	421m	North West
1257	Cottages (Nos. 6 &10)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	431m	South East

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
1304	Group of cottages (Nos. 59-65)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	433m	South East
1697	Jeshyron	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	433m	South
1728	Single-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	437m	South
1703	Shops (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	438m	North West
1735	Wetlands	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	440m	North East
1284	Group of cottages (Nos. 42 - 48)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	440m	South
1250	Group of cottages (Nos. 4-6 & 12-20)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	441m	South East
1725	Single-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	441m	South
1696	Llonells	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	443m	South
1654	House	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	451m	North West
1656	House	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	451m	North West
1280	Group of cottages (Nos. 64-72 & 76- 78)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	455m	South East
1705	Dr Pringle'??s Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	466m	North West
1489	Queen's Wharf Reserve and stone wall and potential archaeological site	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	467m	East
1731	Single-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	471m	South
1730	Single-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	472m	South
1729	Single-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	473m	South
1279	Cottages	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	476m	South East
1726	Attached house and office	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	477m	South
1704	Civic Arcade (former theatre) (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	477m	North West
1724	Attached house and office	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	478m	South
1713	St John'??s Parish Hall	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	478m	North West
1256	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	478m	South East

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
100218	Redcoats'?? Mess House (and potential archaeological site)	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	479m	North West
1723	Residence'??Mona	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	482m	South
1487	Gasworks Bridge	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	485m	North East
1278	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	490m	South East
1740	Office (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	492m	North
1722	Single-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	493m	South
1544	Newlands gates, trees and archaeological site	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	496m	North East
A3	Newlands gates, trees and archaeological site	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	496m	North East
11	Wetlands	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	497m	East
1483	Tara (also known as Ellengowan)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	498m	East
1300	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	499m	South East
1721	House/ Industrial	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	499m	South
1655	House	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	501m	North West
1739	Barnaby'??s Restaurant (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	506m	North
1733	Charles Street Weir	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	516m	North East
1285	Group of cottages (Nos. 65 & 69-79)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	520m	South East
1657	Telstra House (former post office) (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	525m	North West
1299	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	526m	South East
1714	Two-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	534m	West
1658	HMV (former Commonwealth Bank) (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	536m	North West
101676	HMAS Parramatta shipwreck and memorials	Item - General	State	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	540m	East

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
1738	St George'??s Terrace (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	543m	North
1258	Group of cottages (Nos. 22, 24 & 28)	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	544m	South East
1712	Single-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	547m	South
1277	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	550m	South East
1659	Former courthouse wall and sandstone cellblock (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	554m	North West
1665	Westpac Bank	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	558m	North West
1303	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	559m	South
1711	Single-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	564m	South
1715	Semi-detached cottages	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	567m	South West
1297	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	569m	South East
FID3412 9	South Parramatta Conservation Area	Conservation Area - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	569m	South West
1737	Willow Grove (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	574m	North
A11	Archaeological site	Item - Archaeological	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	578m	North West
1298	Nerdy	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	584m	South East
1512	Semi-detached cottages	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	586m	South West
1296	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	589m	South East
1267	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	591m	South East
1672	Sandstone and brick wall	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	593m	North West
1660	Parramatta House (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	601m	North West
1268	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	604m	South East
1702	Woolpack Hotel (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	612m	North West
1511	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	614m	South West

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
1700	Former Rural Bank	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	615m	North West
1661	Shop	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	616m	North West
1504	Hambledon Cottage and all trees	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	616m	East
1270	Esperanto	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	619m	South East
1662	Shop	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	620m	North West
1677	Shop (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	621m	North West
1663	Shop (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	625m	North West
1699	Court house tower	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	626m	North West
1569	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	633m	South East
1272	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	633m	South East
1269	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	635m	South East
1664	Shops and offices	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	637m	North West
1510	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	643m	South West
1266	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	644m	South
1271	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	645m	South East
1265	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	646m	South
1666	Shop (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	648m	North West
1264	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	649m	South
1273	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	650m	South East
1667	Shop (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	650m	North West
1668	Shop (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	654m	North West
1683	Former David Jones department store	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	656m	North
1533	Stone wall	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	656m	North East

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
1669	Shops (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	658m	North West
1745	Single-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	658m	South
1678	Former ANZ Bank (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	660m	North West
1701	Marsdens Building (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	660m	North West
1532	Timber cottages	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	660m	East
1709	Two-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	664m	South
1295	Elderslie	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	666m	South East
1710	Attached houses	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	667m	South
1670	Shop, office (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	670m	North West
1302	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	670m	South
1493	Veterinary Surgery	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	674m	West
100059	Parramatta hospital archaeological site	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	683m	North West
1259	Convent of Mercy	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	684m	South
1484	Trees in median strip	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	685m	East
1485	Bulimba	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	685m	East
1301	St Oliver's Catholic Church, School and Presbytery	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	686m	South
1744	Two-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	689m	South
1509	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	692m	South West
1671	Shop	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	695m	North West
1275	Single storey residence and electricity substation	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	696m	South East
1274	St Paul's Anglican Church	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	697m	South East
1673	Shop	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	698m	North West
1674	Shop	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	702m	North West

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
1675	Shop	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	705m	North West
1676	Shop	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	709m	North West
1490	Residential flats and houses	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	712m	East
100748	Travellers'?? Rest Inn Group (and potential archaeological site)	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	716m	North West
C1	Tottenham Street Conservation Area	Conservation Area - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	720m	South
122	Federation period cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	720m	South
1486	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	724m	East
1534	Palms	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	724m	North East
1523	Residential flats and houses	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	725m	East
1276	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	727m	South East
1520	Single storey residences	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	728m	South West
1262	Two-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	735m	South East
1736	Former St Andrew'??s Uniting Church, hall (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	737m	North West
1679	Shop	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	738m	North West
121	Federation period cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	741m	South
100049	St John'??s Anglican Cemetery	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	748m	West
1680	Shop	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	750m	North West
120	Federation period cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	751m	South
1681	Shop	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	753m	North West
1568	Two-storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	755m	South East
1263	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	759m	South East
1467	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	759m	South West
A7	Archaeological and terrestrial	Item - Archaeological	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	761m	North West

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
184	Federation period cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	761m	South
1682	Shop	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	768m	North West
119	Federation period cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	772m	South
1522	Wavertree	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	774m	North East
A8	Archaeological and terrestrial	Item - Archaeological	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	777m	North West
100596	Parramatta Park and old government house	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	778m	North West
1508	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	779m	South West
1513	Pair of cottages	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	779m	South West
1519	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	780m	South West
A9	Archaeological and terrestrial	Item - Archaeological	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	781m	North West
A10	Archaeological and terrestrial	Item - Archaeological	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	784m	North West
118	'Gladstone', Federation period cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	792m	South
100750	Lennox Bridge	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	796m	North
19	Late Victorian cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	808m	South
117	Federation period cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	812m	South
1732	Parramatta Dam archaeological site weir	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	819m	North West
1552	All Saints Hall	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	821m	North
1469	All Saints Parochial Schools	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	821m	North
116	Federation period attached cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	822m	South
115	Federation period attached cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	828m	South
1506	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	833m	South West
18	Late Victorian cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	838m	South
114	Federation period cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	842m	South
17	Federation period cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	848m	South

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
1551	All Saints Church	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	849m	North
1567	Brick house	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	858m	South East
FID3431 4	Elizabeth Farm Conservation Area	Conservation Area - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	858m	East
16	Late Victorian cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	862m	South West
1505	Timber cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	865m	South West
100826	Marsden Rehabilitation Centre and potential archaeological site	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	866m	North West
15	Late Victorian cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	867m	South West
100285	Public reserve associated with Elizabeth Farm	Item - General	State	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	869m	East
1254	Boundary stone	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	881m	East
1652	House	Item - General	Local	Parramatta Local Environmental Plan 2011	11/04/2014	11/04/2014	09/02/2018	883m	South East
101302	Broughton House	Item - General	State	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	888m	North East
100283	Two-storey residence - Comfort Lodge	Item - General	State	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	893m	South East
1518	Conjoined residences	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	896m	South West
1686	Alfred Square (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	900m	North
1462	Debsmor	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	901m	South West
100250	Two-storey residence - Camden	Item - General	State	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	914m	South East
1459	Single storey cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	920m	North East
1255	Boundary stone	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	921m	South East
1517	Single storey residences	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	922m	South West
1470	Single storey residence and potential archaeological site	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	926m	North
1687	St Peter'??s Uniting Church and studio theatre (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	926m	North
1746	Rose and Crown Hotel (and potential archaeological site)	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	928m	North

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
1524	Oak Street cottage group	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	939m	East
1690	Anthony Malouf and Co	Item - General	Local	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	942m	North
110	Federation period cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	942m	South
1463	Elaine	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	943m	South West
100001	Elizabeth Farm House	Item - General	State	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	947m	East
1516	Former bakery	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	952m	South West
1294	St Mons	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	954m	South East
14	Victorian cottage	Item - General	Local	Holroyd Local Environmental Plan 2013	05/04/2013	05/08/2013	09/10/2015	955m	South West
1565	Eleanor Street Group	Item - General	Local	Parramatta Local Environmental Plan 2011	09/02/2018	09/02/2018	09/02/2018	955m	South East
1515	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	966m	South West
100238	St Patrick'??s Cathedral, presbytery and precinct (and potential archaeological site)	Item - General	State	Parramatta Local Environmental Plan 2011	18/12/2015	18/12/2015	09/02/2018	973m	North West
A4	Elizabeth Farm archaeological site	Item - Archaeological	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	978m	South East
1538	Dorella	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	990m	South West
1293	Iona	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	992m	South East
1261	Single storey residence	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	999m	South East
1537	Cottage	Item - General	Local	Parramatta Local Environmental Plan 2011	07/10/2011	07/10/2011	09/02/2018	1000m	South West

Heritage Data Source: NSW Crown Copyright - Planning & Environment Creative Commons 4.0 © Commonwealth of Australia https://creativecommons.org/licenses/by/4.0/

# **Natural Hazards**

2-6 Hassall Street, Parramatta, NSW 2150

## **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		

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

## **Ecological Constraints - Native Vegetation & RAMSAR Wetlands**





# **Ecological Constraints**

2-6 Hassall Street, Parramatta, NSW 2150

## **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	118m	North East
Weed_Ex	Weed_Ex: Weeds and Exotics			00: Not assessed	00: Not assessed	0: Not assessed	Exotic Species >90%cover	367m	North East
S_SW01	S_SW01: Estuarine Mangrove Forest			00: Not assessed	00: Not assessed	0: Not assessed	Mangroves	444m	North East
S_SW02	S_SW02: Estuarine Saltmarsh	Coastal Saltmarsh	Subtropical and Temperate Coastal Saltmarsh (possible)	00: Not assessed	00: Not assessed	0: Not assessed	S.repens/S.quinq ueflora/S.virginic usJ.krausii	461m	North East
S_FoW06	S_FoW06: Cumberland Riverflat Forest	River Flat Eucalypt Forest		20: Weeds and exotics	20: Previously cleared 1943	3: High	E.tereticornis/E.a mplifolia/A.floribu nda	794m	North West
Plant_n	Plant_n: Plantation (native and/or exotic)			00: Not assessed	00: Not assessed	0: Not assessed	Native or Exotic Plantations	838m	North West
S_FoW07	S_FoW07: Cumberland Swamp Oak Riparian Forest	River Flat Eucalypt Forest		15: Grassy natives and exotics	20: Previously cleared 1943	3: High	C.glaucaEucalypt s	875m	North West

Native Vegetation of the Sydney Metropolitan Area : NSW Office of Environment and Heritage Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

## **RAMSAR Wetlands**

#### What RAMSAR Wetland areas exist within the dataset buffer?

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

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

### **Ecological Constraints - Groundwater Dependent Ecosystems Atlas**





# **Ecological Constraints**

### 2-6 Hassall Street, Parramatta, NSW 2150

### **Groundwater Dependent Ecosystems Atlas**

Туре	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	Low potential GDE - from national assessment	Undulating to low hilly country, mainly on shale.	Vegetation	Consolidated sedimentary	865m
Terrestrial	Moderate potential GDE - from national assessment	Undulating to low hilly country, mainly on shale.	Vegetation		908m

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology

Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

## Ecological Constraints - Inflow Dependent Ecosystems Likelihood





# **Ecological Constraints**

2-6 Hassall Street, Parramatta, NSW 2150

### Inflow Dependent Ecosystems Likelihood

Туре	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	6	Undulating to low hilly country, mainly on shale.	Vegetation	Consolidated sedimentary	865m

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

# **Ecological Constraints**

2-6 Hassall Street, Parramatta, NSW 2150

### **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	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Amphibia	Pseudophryne australis	Red-crowned Toadlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardea ibis	Cattle Egret	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Arenaria interpres	Ruddy Turnstone	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Botaurus poiciloptilus	Australasian Bittern	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Calidris acuminata	Sharp-tailed Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris canutus	Red Knot	Not Listed	Not Sensitive	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ferruginea	Curlew Sandpiper	Endangered	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris mauri	Western Sandpiper	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Calidris melanotos	Pectoral Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Calidris ruficollis	Red-necked Stint	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris tenuirostris	Great Knot	Vulnerable	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Endangered Population, Vulnerable	Category 3	Not Listed	
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptorhynchus Iathami	Glossy Black- Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Charadrius leschenaultii	Greater Sand- plover	Vulnerable	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Chlidonias leucopterus	White-winged Black Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Circus assimilis	Spotted Harrier	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Epthianura albifrons	White-fronted Chat	Endangered Population, Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Gelochelidon nilotica	Gull-billed Tern	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	CAMBA
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	Merops ornatus	Rainbow Bee- eater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Motacilla flava	Yellow Wagtail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Numenius madagascariensi s	Eastern Curlew	Not Listed	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Numenius phaeopus	Whimbrel	Not Listed	Not Sensitive	Not Listed	Rokamba;camba; Jamba
Animalia	Aves	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica rodinogaster	Pink Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Philomachus pugnax	Ruff	Not Listed	Not Sensitive	Not Listed	Rokamba;camba; Jamba
Animalia	Aves	Plegadis falcinellus	Glossy Ibis	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Pluvialis fulva	Pacific Golden Plover	Not Listed	Not Sensitive	Not Listed	Rokamba;camba; Jamba
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	Ptilinopus superbus	Superb Fruit- Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Rostratula australis	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Sterna hirundo	Common Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sternula albifrons	Little Tern	Endangered	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Tringa brevipes	Grey-tailed Tattler	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa glareola	Wood Sandpiper	Not Listed	Not Sensitive	Not Listed	Rokamba;camba; Jamba

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Tringa nebularia	Common Greenshank	Not Listed	Not Sensitive	Not Listed	Rokamba;camba; Jamba
Animalia	Aves	Tringa stagnatilis	Marsh Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tyto Iongimembris	Eastern Grass Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Xenus cinereus	Terek Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Gastropoda	Meridolum corneovirens	Cumberland Plain Land Snail	Endangered	Not Sensitive	Not Listed	
Animalia	Gastropoda	Pommerhelix duralensis	Dural Woodland Snail	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy- possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Mormopterus norfolkensis	Eastern Freetail- bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad- nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia bynoeana	Bynoe's Wattle	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia clunies- rossiae	Kanangra Wattle	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia pubescens	Downy Wattle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Argyrotegium nitidulum	Shining Cudweed	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Darwinia biflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Dillwynia tenuifolia		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Epacris purpurascens subsp. purpurascens		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Epacris purpurascens var. purpurascens		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Grammitis stenophylla	Narrow-leaf Finger Fern	Endangered	Category 3	Not Listed	
Plantae	Flora	Grevillea beadleana	Beadle's Grevillea	Endangered	Category 3	Endangered	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Hibbertia superans		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Isotoma fluviatilis subsp. fluviatilis		Not Listed	Not Sensitive	Extinct	
Plantae	Flora	Leptospermum deanei		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia integrifolia	Macadamia Nut	Not Listed	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Marsdenia viridiflora subsp. viridiflora	Native Pear	Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Persoonia nutans	Nodding Geebung	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pimelea curviflora subsp. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Pimelea spicata	Spiked Rice- flower	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pomaderris prunifolia	Plum-leaf Pomaderris	Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Pterostylis gibbosa	Illawarra Greenhood	Endangered	Category 2	Endangered	
Plantae	Flora	Pterostylis saxicola	Sydney Plains Greenhood	Endangered	Category 2	Endangered	
Plantae	Flora	Pultenaea parviflora		Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Pultenaea pedunculata	Matted Bush-pea	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Senecio behrianus		Presumed Extinct	Not Sensitive	Endangered	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetratheca glandulosa		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Triplarina imbricata	Creek Triplarina	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Wahlenbergia multicaulis	Tadgell's Bluebell	Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Wilsonia backhousei	Narrow-leafed Wilsonia	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Zannichellia palustris		Endangered	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

NSW BioNet:  $\ensuremath{\mathbb{C}}$  State of NSW and Office of Environment and Heritage Data obtained 02/11/2018

#### **USE OF REPORT - APPLICABLE TERMS**

The following terms apply to any person (End User) who is given the Report by the person who purchased the Report from Lotsearch Pty Ltd (ABN: 89 600 168 018) (Lotsearch) or who otherwise has access to the Report (Terms). The contract terms that apply between Lotsearch and the purchaser of the Report are specified in the order form pursuant to which the Report was ordered and the terms set out below are of no effect as between Lotsearch and the purchaser of the purchaser of the Report.

- 1. End User acknowledges and agrees that:
  - (a) the Report is compiled from or using content (**Third Party Content**) which is comprised of:
    - (i) content provided to Lotsearch by third party content suppliers with whom Lotsearch has contractual arrangements or content which is freely available or methodologies licensed to Lotsearch by third parties with whom Lotsearch has contractual arrangements (**Third Party Content Suppliers**); and
      - (ii) content which is derived from content described in paragraph (i);
  - (b) Neither Lotsearch nor Third Party Content Suppliers takes any responsibility for or give any warranty in relation to the accuracy or completeness of any Third Party Content included in the Report including any contaminated land assessment or other assessment included as part of a Report;
  - (c) the Third Party Content Suppliers do not constitute an exhaustive set of all repositories or sources of information available in relation to the property which is the subject of the Report (**Property**) and accordingly neither Lotsearch nor Third Party Content Suppliers gives any warranty in relation to the accuracy or completeness of the Third Party Content incorporated into the report including any contaminated land assessment or other assessment included as part of a Report;
  - (d) Reports are generated at a point in time (as specified by the date/time stamp appearing on the Report) and accordingly the Report is based on the information available at that point in time and Lotsearch is not obliged to undertake any additional reporting to take into consideration any information that may become available between the point in time specified by the date/time stamp and the date on which the Report was provided by Lotsearch to the purchaser of the Report;
  - (e) Reports must be used or reproduced in their entirety and End User must not reproduce or make available to other persons only parts of the Report;
  - (f) Lotsearch has not undertaken any physical inspection of the property;
  - (g) neither Lotsearch nor Third Party Content Suppliers warrants that all land uses or features whether past or current are identified in the Report;
  - (h) the Report does not include any information relating to the actual state or condition of the Property;
  - (i) the Report should not be used or taken to indicate or exclude actual fitness or unfitness of Land or Property for any particular purpose
  - (j) the Report should not be relied upon for determining saleability or value or making any other decisions in relation to the Property and in particular should not be taken to be a rating or assessment of the desirability or market value of the property or its features; and
  - (k) the End User should undertake its own inspections of the Land or Property to satisfy itself that there are no defects or failures
- 2. The End User may not make the Report or any copies or extracts of the report or any part of it available to any other person. If End User wishes to provide the Report to any other person or make extracts or copies of the Report, it must contact the purchaser of the Report before doing so to ensure the proposed use is consistent with the contract terms between Lotsearch and the purchaser.
- 3. Neither Lotsearch (nor any of its officers, employees or agents) nor any of its Third Party Content Suppliers will have any liability to End User or any person to whom End User provides the Report and End User must not represent that Lotsearch or any of its Third Party Content Suppliers accepts liability to any such person or make any other representation to any such person on behalf of Lotsearch or any Third Party Content Supplier.
- 4. The End User hereby to the maximum extent permitted by law:
  - (a) acknowledges that the Lotsearch (nor any of its officers, employees or agents), nor any of its Third Party Content Supplier have any liability to it under or in connection with the
Report or these Terms;

- (b) waives any right it may have to claim against Third Party Content Supplier in connection with the Report, or the negotiation of, entry into, performance of, or termination of these Terms; and
- (c) releases each Third Party Content Supplier from any claim it may have otherwise had in connection with the Report, or the negotiation of, entry into, performance of, or termination of these Terms.
- 5. The End User acknowledges that any Third Party Supplier shall be entitled to plead the benefits conferred on it under clause 4, despite not being a party to these terms.
- 6. End User must not remove any copyright notices, trade marks, digital rights management information, other embedded information, disclaimers or limitations from the Report or authorise any person to do so.
- 7. End User acknowledges and agrees that Lotsearch and Third Party Content Suppliers retain ownership of all copyright, patent, design right (registered or unregistered), trade marks (registered or unregistered), database right or other data right, moral right or know how or any other intellectual property right in any Report or any other item, information or data included in or provided as part of a Report.
- 8. To the extent permitted by law and subject to paragraph 9, all implied terms, representations and warranties whether statutory or otherwise relating to the subject matter of these Terms other than as expressly set out in these Terms are excluded.
- 9. Subject to paragraph 6, Lotsearch excludes liability to End User for loss or damage of any kind, however caused, due to Lotsearch's negligence, breach of contract, breach of any law, in equity, under indemnities or otherwise, arising out of all acts, omissions and events whenever occurring.
- 10. Lotsearch acknowledges that if, under applicable State, Territory or Commonwealth law, End User is a consumer certain rights may be conferred on End User which cannot be excluded, restricted or modified. If so, and if that law applies to Lotsearch, then, Lotsearch's liability is limited to the greater of an amount equal to the cost of resupplying the Report and the maximum extent permitted under applicable laws.
- 11. Subject to paragraph 9, neither Lotsearch nor the End User is liable to the other for:
  - (a) any indirect, incidental, consequential, special or exemplary damages arising out of or in relation to the Report or these Terms; or
  - (b) any loss of profit, loss of revenue, loss of interest, loss of data, loss of goodwill or loss of business opportunities, business interruption arising directly or indirectly out of or in relation to the Report or these Terms,

irrespective of how that liability arises including in contract or tort, liability under indemnity or for any other common law, equitable or statutory cause of action or otherwise.

12. These Terms are subject to New South Wales law.



Locked Bag 2906, Lisarow NSW 2252 Customer Experience 13 10 50 ABN 81 913 830 179 | www.safework.nsw.gov.au

Our Ref: D18/146696

8.

16 July 2018

Mr David Walker DOUGLAS PARTNERS PTY LTD PO Box 472 WEST RYDE NSW 1685

DI8 216772. 5/11/18

Dear Mr Walker

### RE SITE: 2-4 Hassall Street, PARRAMATTA NSW 2150

I refer to your site search request received by SafeWork NSW on 5 July 2018 requesting information on Storage of Hazardous Chemicals for the above site.

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

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

Yours sincerely

Customer Service Officer Customer Experience - Operations SafeWork NSW

# DANGEROUS GOODS SITE SEARCH CHECKLIST

5/6 mail.

/	INFRA #:	
	WORKFLOW #:	314611
	Company Name:	Doualas Partners PIL
	Site Address:	2-4 Hassall St
		Parramatta
	TRIM Document No.	DIS 216772
	TRIM File No.	2018/015074-02 \$10018-
L		FOLLOW-UP NOTES
0	TRIM - NR	

	5.47
Application Form	
Form completed and signed	
Payment details received	
Letter of authorisation	
Map (only need to supply if authorisation isn't attached)	
Multiple sites (list attached)	

C

Finance		
Payment already receipted		
Sent to finance	Date:	
Returned from finance	Date:	

# Correspondence Acknowledgment Letter Sent Created by Paul Newton, Dangerous Goods Licensing Officer Approved by Karla Reid, Dangerous Goods Haz Activities, Plant Registration Licensing Team Leader Approved and included in process starting May 2009



# Western Sydney University & Charter Hall

## Asbestos and Hazardous Materials Pre-Demolition Survey

2B-6 Hassall St Parramatta NSW 2150

28 June 2018



When you think with a global mind problems get smaller This page has been left intentionally blank

# Asbestos and Hazardous Materials Pre-Demolition Survey

Prepared for Western Sydney University & Charter Hall

Prepared by Coffey Services Australia Pty Ltd Level 19, Tower B, 799 Pacific Highway Chatswood NSW 2067 Australia t: +61 2 9406 1000 f: +61 2 9406 1002 ABN: 55 139 460 521

# **Quality information**

### **Revision history**

Revision	Description	Date	Originator	Reviewer	Approver
R01	Final	20/06/2018	Raghuram Muguli	Aaron Holmes	Aaron Holmes
R02	Final	21/06/2018	Raghuram Muguli	Aaron Holmes	Aaron Holmes
R03	Final – Client Name Changed	28/06/2018	Raghuram Muguli	Aaron Holmes	Aaron Holmes

### Distribution

Report Status	No. of copies	Format	Distributed to	Date
R01 Final	1	PDF	Charter Hall	21/06/2018
R02 Final	1	PDF	Charter Hall	21/06/2018
R03 Final	1	PDF	Western Sydney University & Charter Hall	29/06/2018

28 June 2018

754-SYDEN219212

# Limitations

Coffey has conducted work concerning the environmental status of the property which is the subject of this report, and has prepared this report on the basis of that assessment.

The work was conducted, and the report has been prepared, in response to specific instructions from the client to whom this report is addressed, within the time and budgetary requirements of the client, and in reliance on certain data and information made available to Coffey. The analyses, evaluations, opinions and conclusions presented in this report are based on those instructions, requirements, data or information, and they could change if such instructions etc. are in fact inaccurate or incomplete.

Investigations have been based on inspections conducted in accordance with relevant guidelines and standards, and normal industry practice, having regard to the client's instruction, and interpretations of conditions are based on the data from those inspections and, where relevant and conducted, testing. To the best of our knowledge, they represent a reasonable interpretation of the condition of the site as able to be inspected.

This report has been provided by Coffey for the sole use of the client and only for the purpose for which it was prepared. Any representation contained in the report is made only for the client.

No inspection can be guaranteed to locate all asbestos in a specific location. The assessment cannot be regarded as absolute, without extensive invasion of structures. Future demolition and or renovation to site structures may expose situations, which were concealed or otherwise impractical to access during this assessment.

The survey brief is to identify every reasonably accessible ACM. Reasonably accessible does not extend to searching for concealed ACM beneath concrete encased structural beams or beneath concrete floors, behind another ACM, or any other locations which, to access, would cause structural damage that could potentially destabilise the structure or the building. Given the way in which ACM was used in the construction of buildings, some may only be detected during the course of subsequent demolition.

Hazardous Materials surveys are restricted to areas that are reasonably accessible during the survey, with respect to the following:

- without contravention of relevant statutory requirements or codes of practice;
- without placing the surveyor at undue risk;
- without dismantlement or damage to installed fixtures and fittings, plant, electrical equipment, machinery; and
- without dismantlement, demolition or damage to finishes and structure.

Any areas within the remit of the survey but not described within the body of the report or in the Asbestos Material Assessments should be regarded by the client as un-surveyed, and potentially containing amphibole asbestos. A competent person should assess such areas before any work affecting them is carried out.

It must be assumed that materials visually assessed as presumed asbestos contain amphibole asbestos, unless sampled and analysed to prove otherwise. All areas where access was not possible must also be presumed to contain asbestos until proven otherwise.

Coffey assessors take samples at any situations known, or suspected, to contain Asbestos. Where the analysis determines that No Asbestos is Detected (NAD) the samples are listed in the report to provide information for potential future assessments.

Representative sampling is defined as one like sample per consistent material type, situation or item. In these instances only one test sample will be collected for analytical confirmation and the results expressed as consistent and typical of the building. It is advisable to presume that materials similar to those positively identified as asbestos also contain asbestos until proved otherwise. It should not be presumed that materials similar in appearance to those tested and found not to contain asbestos also do not contain asbestos.

Due to the very low concentration of asbestos fibres and the non-homogenous matrix of vinyl floor tiles, false negative results may be obtained. Therefore the accuracy of all results cannot be guaranteed.

Notably, with some Asbestos-containing bulk material it can be very difficult to detect the presence of asbestos using the polarised light microscopy analytical method, even after ashing or disintegration of samples. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or attributed to the fact that, very fine fibres have been distributed individually throughout the materials.

The analysis of many asbestos products used as a component of insulation materials, may be compromised in instances where the material has been heat affected, as heat may alter the morphology of the fibrous material.

Internal building materials should be assumed to contain asbestos and lead-based paint, and any fluorescent lights inside the buildings should be assumed to contain PCB capacitors until otherwise assessed.

It is also noted that sub-surface conditions can change with time, and the report is based on data that was gathered at the time of the report. Coffey will not update the report and has not taken into account events occurring after the time its assessment was conducted.

The following limitations and restrictions to specific materials, installations and locations are commonly found during surveys of this nature, even if safe access can be provided through consultation with the client this inspection and report may not include the following areas:

- Risers / Ceiling, Floor or Wall Cavities, and Voids may be completely blocked or bricked in. Occasionally may only be detected if shown on building construction plans or during demolition
- Columns / Structural Elements these will not be penetrated if doing so will damage the stability of the building.
- Roofs / External Areas these will not be checked if safe access cannot be achieved.
- Confined Spaces these will not be checked if safe access cannot be achieved.
- Restricted Access areas subject to restricted access will not be checked unless special
  arrangements have been made through the client within the remit of the survey.
- Lifts / Shafts these will not be checked for safety reasons unless a lift engineer accompanies the surveyor.
- Live Plant or Electrical Installations live electrical installations including fuse boxes, electrical control cabinets, distribution panels etc. are not routinely checked for safety reasons. Electrical equipment will only be examined if it is locked off and an isolation certificate has been issued. Under exceptional circumstances, when arranged by the client, examination of non-isolated equipment may take place under the supervision of an electrician.
- Boilers may contain asbestos internally, which is not visible or accessible until the unit is dismantled. Note: Where a bulk sample is obtained from a non-dismantled boiler it should not be regarded as definitive of all materials contained within the boiler's structure.
- Live Refrigerators / Cold Rooms / Mechanical Equipment / Heater Units / Kilns may contain asbestos internally, which is not visible or accessible until the unit is isolated and dismantled

• Safes - the walls of some safes cannot be penetrated even where access arrangements have been made.

The Client must not rely on an inspection or report as indicating that a site or a building is "asbestos free". All that the report can be relied upon to show is that no asbestos was found (or that only such asbestos was found as was reported to be found) in the course of the inspection. The findings of the report must be considered together with the specific scope and limitations of the type of inspection undertaken.

# **Table of contents**

Lim	itations	S		ii			
1.	Introc	oduction1					
	1.1.	Backgr	ound	1			
	1.2.	Site De	escription	1			
	1.3.	Scope		2			
2.	Meth	odology		2			
3.	Asse	ssment F	Findings	3			
	3.1.	Hazard	lous Building Materials	3			
		3.1.1.	Asbestos-Containing Materials	3			
		3.1.2.	Synthetic Mineral Fibres	4			
		3.1.3.	Lead-Containing Dust	4			
		3.1.4.	Lead-Based Paints	4			
		3.1.5.	Polychlorinated Biphenyls	4			
		3.1.6.	Ozone Depleting Substances	4			
	3.2.	Areas o	of No Access	4			
4.	Reco	mmenda	ations	5			
	4.1.	Asbest	os Containing Materials	5			
	4.2.	Synthe	tic Mineral Fibre Materials	6			
	4.3.	PCB-C	Containing Capacitors	6			
	4.4.	Training	g	6			
5.	Risk /	Assessm	nent	8			
	5.1.	Actions	s for Asbestos Materials	12			
6.	Biblio	ography15					

### Appendices

Appendix A - Photographs	

- Appendix B Asbestos and Hazardous Materials Register
- Appendix C Laboratory Analysis Certificate
- Appendix D Asbestos Legislative Requirements

# **Executive summary**

Coffey Services Australia Pty Ltd (Coffey) conducted an intrusive asbestos and hazardous materials investigation into the presence and likely risks of exposure to hazardous materials at 2B-6 Hassall St Parramatta NSW 2150(the site). The objectives of this assessment were to:

- Identify and assess the health risk posed by hazardous building materials which may be encountered during the fire control systems upgrade works.
- The hazardous materials survey involved the investigation and identification of Hazardous Materials inclusive of Asbestos-containing Materials (ACM). Other hazardous materials included Lead-Based Paint systems (LBP), Lead-Containing Dust (LCD), Ozone Depleting Substances (ODS), Polychlorinated Biphenyls in light capacitors (PCB) and Synthetic Mineral Fibre (SMF) in accessible areas.

This was defined within the scope of works determined with the client prior to commencement of the survey.

From the site survey and laboratory analysis results (where applicable), a register of hazardous materials has been produced, in accordance with the requirements of the relevant Codes of Practice and Guidance Notes.

This contract was completed by Coffey on the basis of a defined program of work and terms and conditions agreed with the Client. We confirm that in preparing this report we have exercised all reasonable skill and care bearing in mind the project objectives, the agreed scope of works and prevailing site conditions. The client should be made aware of the limitations of a survey being conducted in a destructive manner and is referred to in the above limitations.

The asbestos information in this report is supplied on the understanding that the area surveyed is scheduled for major demolition works, and that identified Asbestos and other Hazardous Materials will be removed prior to, or as part of these works. Asbestos or other Hazardous Materials remaining in situ will need to be detailed in the site specific Hazardous Materials Register and Asbestos Management Plan as required by the Work Health and Safety Regulation, 2011.

### Asbestos-Containing Materials (ACM)

The following Asbestos-Containing Materials were identified or suspected to be present at the time of survey:

### **2B Hassall St Parramatta**

- Interior: Ground level & level 1; above all windows, infill panels Asbestos containing fibre cement sheeting;
- Interior: Ground level; rear of building, main switch room, electrical switchboard Asbestos containing bituminous backing board;
- External: Car park & building perimeter, ceiling & eaves lining Asbestos containing fibre cement sheeting;
- Exterior: Ground level, car park area, ceiling void, remnants on nails on metal frames Asbestos containing fibre cement debris; and
- Interior: Throughout, fascia lining Asbestos containing fibre cement sheeting.

### 4 Hassall St Parramatta

• Exterior: throughout the vacant lot; fragments & debris – Asbestos containing fibre cement fragments.

It is highly likely that asbestos containing fibre cement debris & fragments are present throughout the vacant lot on surface and within the subsurface. It is recommended that a detailed soil assessment is conducted prior to any excavation works within the site.

### 6 Hassall St Parramatta

- Exterior: Throughout building perimeter, eaves lining Suspected asbestos containing fibre cement eaves lining; and
- Interior: All apartments/units throughout the building, kitchen, floor coverings Asbestos containing vinyl floor tiles (all colours).

### Synthetic Mineral Fibres (SMF)

The following Synthetic Mineral Fibres (SMF) were identified or suspected to be present at the time of survey:

### **2B Hassall St Parramatta**

- Interior: Throughout, ceiling Suspected SMF containing compressed ceiling tiles;
- Interior: Level 1; Throughout ceiling void, roof Suspected SMF containing sarking insulation; and
- Interior: Throughout ceiling void, air-conditioning ductwork Suspected SMF containing internal insulation material.

### 6 Hassall St Parramatta

 Interior: All apartments/units, below kitchen sink, hot water heaters – Suspected SMF containing internal insulation.

### Lead-Based Dust (LPD)

No Lead-Based Dust was identified or suspected to be present at the time of survey.

### Lead-Containing Paint (LCP)

No Lead-Containing Paint was identified or suspected to be present at the time of survey throughout the site (2B-6 Hassall St Parramatta).

### **Polychlorinated Biphenyls (PCBs)**

The following PCB containing materials were identified or suspected to be present at the time of survey:

### 6 Hassall St Parramatta

• Interior: All apartments/units; living room, single tube fluorescent light fitting – Suspected PCB containing capacitors.

### **Ozone Depleting Substances (ODS)**

No Ozone Depleting Substances (ODS) were identified or suspected to be present at the time of survey.

# 1. Introduction

Coffey Services Australia Pty Ltd (Coffey) was engaged by Western Sydney University & Charter Hall (the client) to conduct a pre-demolition Asbestos and Hazardous Materials survey of the property located at 2B-6 Hassall St Parramatta NSW 2150.

Raghuram Muguli of Coffey carried out the pre-demolition survey on the 4<sup>th</sup> of June 2018. Other information was obtained from vendor manuals, standards, guidelines, regulations and other material available in the public domain.

The assessment was conducted on the basis of the condition of the materials at the time of inspection and the future anticipated activities at the site.

No inspection can be guaranteed to locate all asbestos and hazardous materials in a specific location and therefore this assessment cannot be regarded as absolute. Planned and future demolition to site structures may expose situations which were concealed or otherwise impractical to access during this assessment.

# 1.1. Background

Coffey understands that the client is requesting this pre-demolition survey to produce an asbestos and hazardous materials register for the site in accordance with *Work Health and Safety Regulations*, 2017 and the Code of Practice *How to Manage and Control Asbestos in the Workplace* (2016).

# 1.2. Site Description

The pre-demolition survey is of a property located at 2B-6 Hassall St Parramatta NSW 2150. The structure of the building is comprised of brick walls & concrete flooring.

Table 1: Site Information				
Site:	2B-6 Hassall St Parramatta NSW 2150			
Age (Circa):	Unknown	External walls:	Brick	
Approximate area:	2B Hassall St $-$ 1000 m <sup>2</sup> 4 Hassall St $-$ 500m <sup>2</sup> 6 Hassall St $-$ >600m <sup>2</sup>	Internal walls:	Brickwork, fibre cement linings (ceiling void) & plaster board	
Levels:	2B Hassall St – 2 levels 4 Hassall St – Vacant lot 6 Hassall St – 3 levels	Ceiling:	Ceiling tiles, concrete & plaster board	
Roof type:	Metal	Floor and coverings:	Concrete, carpet, vinyl & vinyl floor tiles	

# 1.3. Scope

The scope of work required Coffey to:

- Conduct a pre-demolition Asbestos and Hazardous Materials (HazMat) survey of the site, to locate:
  - Asbestos-containing materials (ACM);
  - Synthetic mineral fibre (SMF) materials;
  - Lead-based paint systems (LBP);
  - Lead-containing dust (LCD);
  - Polychlorinated biphenyls (PCB) containing capacitors in electrical fittings; and
  - Ozone depleting substances (ODS).
- Collect representative samples of suspect ACM and/or lead paint material (where accessible) and submit samples for laboratory analysis. ODS, PCB and SMF were identified on a visual basis only;
- Document the details of materials identified including photographs of any samples taken;
- Record, collate and report the findings; and
- Deliver one electronic report to the client.

# 2. Methodology

Hazardous Materials surveys are undertaken considering a risk management approach, in accordance with best practice, relevant statutory regulations and relevant Codes of Practice. A risk assessment was conducted based on a number of factors associated with hazardous materials identified during the survey and prioritised through Risk and Action Classifications.

The assessment involved the onsite investigation for the presence of Asbestos-containing Materials (ACM), synthetic mineral fibres (SMF), Lead based paint systems (LBP), Polychlorinated Biphenyls (PCB) and Ozone depleting substances (ODS – (CFC, HCFC, HFC). Information was collected from the site owners/occupiers/tenants on relevant issues pertaining to the site. Based on the available data and the status at the time of inspection, where items were identified, visual and/or analytical characterisation (where required) was performed and reported in the Asbestos and Hazardous Materials Register (refer **Appendix B**).

The assessment was conducted on the basis of the condition, type and location of the materials at the time of inspection. The scope of this investigation did not allow intrusive sampling techniques to be undertaken in all locations, and consequently the register may have limitations as a reference document for the purposes of renovation or demolition.

Only 'typical' suspected material occurrences are inspected and sampled. Sampling is undertaken on a representative basis, for example, the inspection of one fire door of the same type within the same area is undertaken (i.e. not every 'matching' fire door is examined), unless specifically instructed. Sample collection was performed in a non-destructive and non-invasive manner by competent persons. Presumptions, based on knowledge and experience, that inaccessible areas contain asbestos materials may also be made and stated within the register.

Samples collected are representative of the material sampled, individually identified, transported, analysed and reported in accordance with relevant Statutory Regulations, Codes of Practice and Coffey Environments Work Instructions. Laboratories undertaking analysis are appropriately NATA certified for the analysis conducted.

The presence of asbestos in bulk samples is determined by Polarised Light Microscopy (PLM) with dispersion staining techniques. Where asbestos was found to exist, a risk assessment was conducted on each item and a priority rating applied. This was conducted in accordance with the protocols described in **Section 5.1: Actions for Asbestos Materials.** 

The register is made up of relevant information gathered on site plus Coffey's Environments' assessment of risk and assignment of action ratings. Reference to photographs, where available, is made in the register along with sample identification and analysis results, where applicable. Sample analysis results from previous assessments may be utilised and referenced in this register.

# 3. Assessment Findings

The findings of this assessment are presented in tabulated format in **Appendix B: Asbestos and Hazardous Building Materials Register** of this assessment report. Hazardous building materials that have been photographed are depicted in the rear of this assessment report.

The following significant key findings are noted:

# 3.1. Hazardous Building Materials

### 3.1.1. Asbestos-Containing Materials

The following Asbestos-Containing Materials were identified or suspected to be present at the time of survey:

### 2B Hassall St Parramatta

- Interior: Ground level & level 1; above all windows, infill panels Asbestos containing fibre cement sheeting;
- Interior: Ground level; rear of building, main switch room, electrical switchboard Asbestos containing bituminous backing board;
- External: Car park & building perimeter, ceiling & eaves lining Asbestos containing fibre cement sheeting;
- Exterior: Ground level, car park area, ceiling void, remnants on nails on metal frames Asbestos containing fibre cement debris; and
- Interior: Throughout, fascia lining Asbestos containing fibre cement sheeting.

### 4 Hassall St Parramatta

• Exterior: throughout the vacant lot; fragments & debris – Asbestos containing fibre cement fragments.

It is highly likely that asbestos containing fibre cement debris & fragments are present throughout the vacant lot on surface and within the subsurface. It is recommended that a detailed soil assessment is conducted prior to any excavation works within the site.

### 6 Hassall St Parramatta

 Exterior: Throughout building perimeter, eaves lining – Suspected asbestos containing fibre cement eaves lining; and • Interior: All apartments/units throughout the building, kitchen, floor coverings – Asbestos containing vinyl floor tiles (all colours).

## 3.1.2. Synthetic Mineral Fibres

The following Synthetic Mineral Fibres (SMF) were identified or suspected to be present at the time of survey:

### **2B Hassall St Parramatta**

- Interior: Throughout, ceiling Suspected SMF containing compressed ceiling tiles;
- Interior: Level 1; Throughout ceiling void, roof Suspected SMF containing sarking insulation; and
- Interior: Throughout ceiling void, air-conditioning ductwork Suspected SMF containing internal insulation material.

### 6 Hassall St Parramatta

 Interior: All apartments/units, below kitchen sink, hot water heaters – Suspected SMF containing internal insulation.

### 3.1.3. Lead-Containing Dust

No Lead-containing dust was identified or suspected to be present at the time of survey.

### 3.1.4. Lead-Based Paints

No Lead-Containing Paint was identified or suspected to be present at the time of survey throughout the site (2B-6 Hassall St Parramatta).

# 3.1.5. Polychlorinated Biphenyls

The following PCB containing materials were identified or suspected to be present at the time of survey:

### 6 Hassall St Parramatta

Interior: All apartments/units; living room, single tube fluorescent light fitting – Suspected PCB containing capacitors.

### 3.1.6. Ozone Depleting Substances

No Ozone Depleting Substances (ODS) were identified or suspected to be present at the time of survey throughout the site (2B-6 Hassall St Parramatta).

# 3.2. Areas of No Access

Where Areas of No Access have been identified it should be presumed that hazardous materials are present in these areas until further investigation can confirm or refute the presence.

No inspection can be guaranteed to locate all asbestos and hazardous materials in a specific location. The assessment cannot be regarded as absolute, without extensive invasion of structures. Future demolition and or renovation to site structures may expose situations, which were concealed or otherwise impractical to access during this assessment.

Building service and building core areas were accessible at the time of the survey, excluding the limited access areas listed below.

### AREAS OF NO ACCESS

The following areas were not accessible or had limited access at the time of survey:

- Wall cavities;
- Formwork to the concrete slab;
- Sub floor spaces:
- Residential block Access was available to Unit 3 only.

# 4. Recommendations

The recommendations, conclusions or stability of hazardous materials contained in this report shall not abrogate a person of their responsibility to work in accordance with Statutory Requirements, Codes of Practice, Guidelines, Safety Data Sheets, Work Instructions or reasonable work practices.

# 4.1. Asbestos Containing Materials

The asbestos information contained within this report is insufficient to meet the requirement for risk assessment for a management plan. Any Asbestos or other Hazardous Materials remaining in situ at the conclusion of the project will need to be detailed in the site specific Hazardous Materials Register and Asbestos Management Plan as required by the NSW Work Health and Safety Regulation 2017.

Based on the findings of this hazardous materials survey, the recommendations regarding ACM are:

- ACM that has been identified in this survey must be removed prior to the commencement of general demolition works.
- When asbestos removal works are to be undertaken, the person that commissions the works must ensure that this is undertaken by an appropriately licensed asbestos contractor. The asbestos removal works must be conducted under controlled asbestos removal working conditions.
- When non-friable asbestos removal works are to be conducted within or adjacent to a highly sensitive area or public location, Coffey recommends that a hygienist who is independent of the asbestos contractor should be engaged to undertake airborne asbestos fibre monitoring along the boundary of the works and within the work area on completion of the works.
- The fibre cement debris within the ceiling void should be removed (HEPA-vacuumed) and the area subject to an environmental clean if the ceiling void is to be refurbished, accessed or the ceiling demolished as part of any scheduled works in the future.
- If friable asbestos is identified during future works and is to be removed, a licensed asbestos assessor who is independent of the asbestos contractor <u>must</u> be engaged to:
  - Inspect the asbestos removal work area prior to commencement of the works;
  - Undertake asbestos fibre air monitoring before and during friable removal works in the surrounding areas and clearance asbestos fibre air monitoring at the conclusion of the asbestos removal work; and
  - Complete a visual inspection of the asbestos removal area and the area immediately surrounding it and ensure these are free from visible asbestos contamination.
- The licensed asbestos assessor must provide a Clearance Certificate that documents the visual clearance inspection and the satisfactory completion of the asbestos removal works. The Clearance Certificate should state that all visible asbestos dust and debris resulting from the asbestos removal process has been removed from the removal area(s) and from areas adjacent to the removal work area(s).

During future demolition works, if any materials that are not referenced in this report and are suspected of containing asbestos are encountered, then works must cease and an asbestos hygienist should be notified to determine whether the material contains asbestos.

# 4.2. Synthetic Mineral Fibre Materials

Un-bonded or bonded SMF that has severely deteriorated has the potential of becoming airborne. Health effects that may occur with exposure to certain SMF materials include; irritation of the skin, eyes and upper respiratory tract. As such removal and replacement would be the preferred option if such materials were found in accessible areas or air conditioning systems.

The selection of the most appropriate control measure should be determined from risk assessments and detailed knowledge of the workplace and activities. The following general principles may be applied:

- If the SMF is un-bonded or deteriorated, in a poor/unstable condition and accessible with risk to health from exposure, immediate access restrictions should be applied and removal is required as soon as practicable;
- If the SMF is un-bonded or deteriorated, in a poor/unstable condition but in inaccessible areas (i.e. Ceiling space), removal is preferred. However, if removal is not immediately practicable, short-term control measures (i.e. restrict access, or provide personal protective equipment to personnel required to access the area etc.) may be employed until removal can be facilitated;
- If the SMF is bonded and in a poor/unstable condition; minimising disturbance and removal or encapsulation may be appropriate controls; and
- Prior to any demolition, partial demolition, renovation or refurbishment, synthetic mineral fibre
  materials likely to be disturbed by those works should be removed in accordance with the NOHSC
  Code of Practice for the Safe Use of Synthetic Mineral Fibres [NOHSC:2006 (1990)].

Further assessment of risk through airborne fibre monitoring can assist with decisions on the most appropriate, and urgency of, control measures.

# 4.3. PCB–Containing Capacitors

Electrical fittings that contain or suspected to contain PCB oil-containing capacitors should be removed as hazardous/regulated waste under controlled working conditions prior to the demolition or refurbishment works in accordance with the Polychlorinated Biphenyls Management Plan, Revised Edition April 2003.

# 4.4. Training

N.B. Information, instruction and training must be provided to workers, contractors and others who may come into contact with hazardous materials in a workplace, either directly or indirectly.

Depending on the circumstances this hazardous materials awareness training may include:

- The purpose of the training;
- The health risks of hazardous materials;
- The types, uses and likely occurrence of hazardous materials on site, in plant and/or equipment in the workplace;
- The trainees' roles and responsibilities under the workplace's hazardous materials management;
- Where the workplace's register of hazardous materials is located and how it can be accessed;
- The timetable for removal of hazardous materials from the workplace;

- The processes and procedures to be followed to prevent exposure, including exposure from any accidental release of hazardous materials into the workplace;
- Where applicable, the correct use of maintenance and control measures, protective equipment and work methods to minimise the risks from hazardous materials, limit the exposure of workers and limit the spread of hazardous materials outside any work area;
- The National Exposure Standard (NES) and control levels for hazardous materials; and
- The purpose of any air monitoring or health surveillance that may occur.

Should any further suspect Asbestos and/or Hazardous Materials become evident during future disturbance/ refurbishment works which have not been addressed in this report, Coffey should be contacted immediately so that a WHS consultant can confirm the status of the suspect material/s.

# Coffey is able to assist with all aspects of Risk Management for removal of asbestos and other hazardous materials resulting from these findings.

# 5. Risk Assessment

From the findings of the hazardous materials survey, an individual risk assessment is conducted on each ACM. The following figure outlines the general likelihood of fibre release potential (Source: the NSW Code of Practice: *How to Manage and Control Asbestos in the Workplace* (2016).

### Higher likelihood of airborne fibres

Asbestos-contaminated dust (including dust left in place

after past asbestos removal)

Sprayed (limpet) coatings/loose fill

Lagging and packings (that are not enclosed)

Asbestos insulating board

Rope and gaskets

Millboard and paper

Asbestos cement

Floor tiles, mastic and roof felt

Decorative paints and plasters

Lower likelihood of airborne fibres

Coffey adopts the following risk assessment algorithm in order to assess the risks associated with individual asbestos-containing materials identified.

### ASBESTOS REGISTER SECTION

### Friable

Variable Score		Description
Friability	Y	Asbestos cement debris, or material which when dry may become crumbled, pulverised or reduced to powder by hand pressure.
	N	Bonded i.e. non-friable material

### **Materials Assessment**

Variables	Scores	Examples of Score Descriptions
	0	No asbestos
	1	Chrysotile only
Asbestos Type	2	Amphibole asbestos (excluding crocidolite)
	3	Crocidolite
	0	No asbestos detected
	1	Bonded asbestos in good condition
Product Type	2	Friable asbestos in good condition or cement in poor condition
	3	Friable asbestos in poor condition
	0	No visible damage
	1	Minor scratches or mark, broken edges
Extent of Damage	2	Significant breakage, many small areas of damage to friable material
	3	High damage, visible debris
	0	Bonded Asbestos including encapsulated asbestos cement
	1	Enclosed laggings, sprays and boards or bare cement
Surface Treatment	2	Bare board or encapsulated lagging/spray or cement debris
	3	Unsealed lagging/spray

### **Location Assessment**

Variables	Scores	Examples of Score Descriptions	
	0	Rare disturbance, e.g. little used store room	
	1	Low disturbance, e.g. Office type activity	
Occupant Activity	2	Periodic disturbance, e.g. industrial or vehicular activity which may contact ACMs	
	3	High levels of disturbance e.g. fire door with AIB sheet in constant use	
	0	Usually inaccessible or unlikely to be disturbed	
Likelihood of	1	Minimal likelihood for disturbance	
Disturbance	2	Likely disturbance	
	3	Frequent disturbance	
	0	Infrequent	
Human Exposure	1	Monthly	
Potential	2	Weekly	
	3	Daily	
	0	Minor disturbance (e.g. possibility of contact when gaining access)	
	1	Low Disturbance (e.g. changing light bulbs in AIB ceiling).	
Maintenance Activity	2	Medium disturbance (e.g. lifting one or two ceiling tiles to access a valve)	
	3	High level of disturbance (e.g. moving a number of AIB ceiling tiles to replace a valve or for re-cabling)	

### **Risk Score**

The asbestos-containing material risk score is a quantitative assessment determined by the sum of the scores based on the Materials and Location Assessments; i.e. Risk score = Material Score + Location Score (out of as possible 24).

Should no asbestos be detected then the register will indicate a risk score of 0.

Variable Score		Examples of Score Descriptions
	0 - 6	Very Low Risk - Action Score A4
	7 - 9	Low Risk – Action Score A3
Risk Score	13 - 18	Medium Risk – Action Score A2
	19 - 24	High Risk – Action Score A1

### OTHER HAZARDOUS MATERIALS REGISTER SECTION

Coffey adopt the following material and location assessment algorithms in order to assess the risks associated with individual **hazardous materials other than asbestos** located;

### Friable

Variable	Score	Description
	Y	Unsealed SMF
Friable	N	Sealed SMF
	NA	Applicable to ODS, PCB, Lead in paint

### **Material Assessment**

Variable	Score	Examples of Score Descriptions							
	G	Good condition							
Extent of Damage	Av	Average condition							
	Р	Poor condition							
	Y	Sealed							
Surface Treatment	Р	Part sealed							
	N	Not sealed							

### **Location Assessment**

Variable	Score	Examples of Score Descriptions								
	н	High traffic area								
Occupant Activity	М	Medium traffic area								
	L	Low traffic area								

### **Risk Score**

The hazardous materials other than asbestos risk score is a qualitative assessment determined by the combination of Material and Location Assessments. Depending on the material one or all of these criteria may be used in assessing the recommended Action.

Variable	Score	Examples of Score Descriptions
	L	Low exposure risk
Risk Score	М	Medium exposure risk
	Н	High exposure risk

# 5.1. Actions for Asbestos Materials

Following the assessment for asbestos-containing materials an action score is assigned. For asbestos-containing materials this will be assigned according to the risk score associated with the material.

### **Action Ratings**

		Restrict access and remove
A1	Action 1	As a guide, the material conforms to one, or more, of the following: Friable or poorly bonded to substrate, located in accessible areas Severely water damaged, or unstable Further damage or deterioration likely Friable asbestos material located in air conditioning ducting Asbestos debris and stored asbestos in reasonably accessible areas Post removal of A1 item, update Asbestos Materials Register and Asbestos Management Plan
	Action 2	Enclose, encapsulate or seal and Label – Re-inspect according to Asbestos Management Plan
A2		As a guide, the material conforms to one, or more, of the following: Damaged material In reasonably accessible area Friable material or poorly bonded to substrate, with bonding achievable Possibility of disturbance through contact Possibility of deterioration caused by weathering Post encapsulation of A2 item, update Asbestos Materials Register and Asbestos Management Plan
	Action 3	Remove during refurbishment or maintenance and Label – Re-inspect according to Asbestos Management Plan
А3		As a guide, the material conforms to one, or more, of the following: Asbestos debris or stored material in rarely accessed areas Further disturbance or damage unlikely other than during maintenance or service Readily visible for further assessment Asbestos CAF Gaskets Asbestos friction materials and brake linings
		No remedial action, Label – Re-inspect according to Asbestos Management Plan
Α4	Action 4	As a guide, the material conforms to one, or more, of the following: Firmly bonded to substrate and readily visible for inspection Inaccessible and fully contained Stable and damage unlikely

### Acronyms

ACM	Asbestos-containing material
NOHSC	National Occupational Health and Safety Commission
AMP	Asbestos Management Plan
V.O.	Visual Observation
NATA	National Association of Testing Authorities, Australia
PLM	Polarised Light Microscopy
SEM	Scanning Electron Microscopy
EDAX	Energy Dispersive X-ray Analysis
СН	Chrysotile Asbestos
CR	Crocidolite Asbestos
AM	Amosite Asbestos
NAD	No Asbestos Detected

### Definitions

Accredited Laboratory – means a testing laboratory accredited by NATA (National Association of Testing Authorities, Australia).

Air Monitoring – means atmospheric sampling for airborne contaminants including asbestos and SMF fibres or lead dust to assist in assessing human exposure and the effectiveness of control measures. This includes exposure monitoring, clearance monitoring (asbestos) and control monitoring.

Appropriately Qualified Person – means the person possesses the qualifications and experience necessary to find hazardous materials in a building.

Approved Respirator - A respirator which complies with AS/NZS 1716 - Respiratory Protective Devices.

Approved Cleaner - Vacuum cleaning equipment that passes all extracted air through a High Efficiency Particulates Air (HEPA) filter before the air is discharged into the atmosphere and conforms to the relevant requirements of the AS 3544 - Industrial Vacuum Cleaners for Particulates.

Asbestos – fibrous form of those mineral silicates that belong to the serpentine or amphibole groups of rock-forming minerals, including actinolite, amosite (brown asbestos), anthophyllite, chrysotile (white asbestos), crocidolite (blue asbestos) and tremolite.

Asbestos-containing Material (ACM) – means any material, object, product or debris containing asbestos.

Asbestos Removalist – means a person whose business or undertaking includes asbestos removal work or a self-employed person whose work includes asbestos removal work.

Asbestos Removal Control Plan – A site specific document to be prepared by the removal contractor based on the information in the National Code of Practice How to Safely Remove Asbestos (Safe Work Australia 2016).

Asbestos Work - means work undertaken in connection with a construction work process in which exposure to asbestos may occur and includes any work process involving the use, application, removal, mixing or other handling of asbestos or asbestos-containing material.

Asbestos Removal Work – means work undertaken to remove friable or bonded asbestos-containing material.

Asbestos Work Area – means the immediate area in which work on ACM is taking place. The boundaries off the work area must be determined by a risk assessment.

Bonded asbestos material - means any material (other than friable asbestos material) that contains asbestos.

Bonded asbestos removal work - means work in which bonded asbestos material is removed, repaired or disturbed.

Clearance Inspection – means a mandatory visual inspection carried out by a competent person to verify that an asbestos work area has been rendered free of visible asbestos contamination and is safe to be returned to normal use after work involving the disturbance of ACM has taken place. A clearance inspection must include a visual inspection, and may also include clearance air monitoring and/or settled dust sampling.

Clearance Monitoring – means air monitoring using static or positional samples to measure the level of airborne asbestos fibres in an area following work on ACM. An area is cleared when the level of airborne asbestos fibres is measured as being below eth clearance standard of 0.01 fibres/ml.

Construction Work - include all work performed in or in connection with the installation, erection, repair, cleaning, painting, renewal, renovation, dismantling, maintenance, ornamentation or demolition of buildings, ships, structures, pipes, plant, machinery, parts, artefacts, appliances, or tools or parts thereof.

Control Actions - In the process of implementing hazardous building materials management, it is fundamental that any identified situations have control actions determined to prevent personnel from being placed at risk.

Control Monitoring – means air monitoring using static or positional to measure the level of airborne asbestos fibres in an area during work on ACM or airborne lead dust in an area of lead paint removal. Control monitoring is designed to assist in assessing the effectiveness of control measures. Its results are not representative of actual occupational exposures and should not be used for that purpose.

Exposure Standard (TWA) - represent the National Occupational Health and Safety Commission (NOHSC) maximum exposure level by inhalation of airborne concentration of atmospheric lead over an eight-hour day, for a five-day working week, over an entire working life and expressed as 8-hour TWA (Time weighed average). The TWA do not represent 'no-effect' levels which guarantee protection to every worker.

Friable Asbestos-containing Material – means asbestos-containing material that, when dry, is or may become crumbled, pulverised or reduced to powder by hand pressure.

Hazard – means any matter, thing, process, or practice that may cause death, injury, illness or disease.

HEPA - High Efficiency Particulate Air. A filtering system capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micron in diameter or larger.

Membrane Filter Method - is the technique outlined in the NOHSC Guidance Note on the Membrane Filter Method for Estimating Method Airborne Asbestos Fibres 2nd Edition [NOHSC:3003 (2005)].

National Association of Testing Authorities, Australia (NATA) – the organisation that approves the method of sampling for airborne asbestos fibres, bulk sample analysis of asbestos-containing materials and hazardous materials inspections.

NOHSC - National Occupational Health and Safety Commission.

PPE/RPE - Personal / Respiratory Protective Equipment.

PM – Project Manager of the asbestos removal job. If a Principal Contractor has been appointed the Project Manager of the Principal Contractor, if no PM appointed then the owner is the Project Manager.

Person in charge of area - The person in charge of the building or area affected by the asbestos removal.

Restricted Area - A location requiring an Access/Work Permit because unprotected activity to undertake the intended purpose may expose a person to hazardous respirable (airborne) asbestos fibre. For example: Drilling a switch board containing asbestos; entry to a ceiling space containing asbestos or lead dust; entry to a riser shaft containing asbestos; access onto a fragile asbestos cement roof; a cupboard containing asbestos pipe lagging.

Risk – means the likelihood of a hazard causing harm to a person.

Safe Work Australia - An independent statutory agency responsible to improve occupational health and safety and workers' compensation arrangements across Australia.

# 6. Bibliography

Association of Fluorocarbon Consumers and Manufacturers, the Australian Refrigeration and Air Conditioning Code of Good Practice - 1992

Australia and New Zealand Environment and Conservation Council (ANZECC), Polychlorinated Biphenyls Management Plan - 1999

Australia and New Zealand Environment and Conservation Council (ANZECC), Identification of PCB – Containing Capacitors - 1997

Australian Commonwealth Government Ozone Protection Act - 1989

Australian Standard (AS4361.2), Guide to Lead Paint Management - 1998

Department of Occupational Health, Safety and Welfare, Safe Handling of PCB in Fluorescent Light Capacitors - 1993

Department of Industrial Resources (DoIR) Guidance for Upstream Petroleum on the National Ban on Asbestos of 31 December 2003.

National Occupational Health and Safety Commission (NOHSC), Approved Criteria for Classifying Hazardous Substances, 1008 - 2002

National Occupational Health and Safety Commission Code of Practice for the Management and Control of Asbestos in the Workplace; [NOHSC: 2018 (2005)].

National Occupational Health and Safety Commission (NOHSC), Control of Inorganic Lead at Work: National Standard, 109 - 1994

National Occupational Health and Safety Commission (NOHSC), List of Designated Hazardous Substances, 10005 - 1999

National Institute for Occupational Safety and Health [NIOSH (U.S.A.)], Manual of Analytical Methods, Elements by ICP, Method 7300, 4th Edition, Issue 2 - 1994

National Occupational Health and Safety Commission (NOHSC), National Code of Practice for the Control and Safe Use of Inorganic Lead at Work, 2015 - 1994

National Occupational Health and Safety Commission (NOHSC), National Standard and National Code of Practice for Synthetic Mineral Fibre - May 1990

Occupational Health and Safety (Maritime Industry) Act 1993

The National Model regulations for the Control of Workplace Hazardous Substances; [NOHSC: 1005 (1994)]

Seafarers Safety, Rehabilitation and Compensation Authority's "Guidance on the Prohibition on the use of Asbestos in Australian Maritime Industry Workplaces (Version 3 March 2004).

Department of Industrial Resources (DoIR) Guidance for Upstream Petroleum on the National Ban on Asbestos of 31 December 2003.

National Occupational Health and Safety Commission (NOHSC), Approved Criteria for Classifying Hazardous Substances, 1008 - 2002

Code of Practice: How to Manage and Control Asbestos in the Workplace, (2016)

Code of Practice: How to Safely Remove Asbestos, (2016)

National Occupational Health and Safety Commission (NOHSC), National Standard and National Code of Practice for Synthetic Mineral Fibre - May 1990

Occupational Health and Safety (Maritime Industry) Act 1993

The National Model regulations for the Control of Workplace Hazardous Substances; [NOHSC: 1005 (1994)]

Seafarers Safety, Rehabilitation and Compensation Authority's "Guidance on the Prohibition on the use of Asbestos in Australian Maritime Industry Workplaces (Version 3 March 2004).

Work Health and Safety Act 2011 and Regulations 2017 (Commonwealth, NSW, ACT, NT & QLD).

Occupational Health and Safety Act 2004 and Regulations 2003, 2007 (VIC),

Occupational Health and Safety and Welfare Act 1986 and Regulations 2010 (SA)

Workplace Health and Safety Act 1995 and Regulations 1998 (TAS)

Occupational Health and Safety Act 1984 and Regulations 1996 (WA)

The National Occupational Health & Safety Commission -NOHSC 1003-2005: Australian Exposure Standards for Atmospheric Contaminants in the Workplace.

Amendment to the Customs (Prohibited Imports) Regulations 1956 - Regulation 4C – Importation of Asbestos – Australian Customs Notice No. 2009/30. – August 2009.

AS 1319-1994 Safety signs for the occupational environment.

Code of Practice: Demolition Work 2016.

Appendix A - Photographs







Photo 2 Interior: 2B Hassall St, Ground Level; above all windows (ceiling void) – Asbestos containing infill panels



Photo 3 Interior: 2B Hassall St, Level 1; above all windows (ceiling void) – Asbestos containing infill panels



Photo 4 Exterior: 2B Hassall St, Ground level, rear of building, main switch room, electrical backing board – Asbestos containing bituminous backing board



Photo 5 External: 2B Hassall St, Carpark ceiling & eaves lining – Asbestos containing fibre cement sheet



Photo 6 External: 2B Hassall St, Carpark ceiling, ceiling void, FC remnants on nails in metal frames – Asbestos containing fibre cement





Exterior:4 Hassall St, Vacant lot,

containing fibre cement fragments

debris & fragments – Asbestos

Photo 8

Photo 7 Exterior: 2B Hassall St, Throughout, fascia lining – Asbestos containing fibre cement sheeting

- Photo 9 Exterior: 4 Hassall St, Vacant lot, debris & fragments – Asbestos containing fibre cement fragments.
- Photo 10 Interior: 6 Hassall St, base building stairwell, sprayed insulation on ceiling – Non- asbestos containing insulation



Photo 11 Interior: 6 Hassall St, all units, kitchen, floor tiles – Asbestos containing vinyl floor tiles (all colors)



Photo 12 Interior: 6 Hassall St, throughout building perimeter, eaves lining – Asbestos containing fibre cement eaves lining



Photo 13 Interior: 2B Hassall St, Stairwell to level 1, walls, blue paint – No lead detected.



Photo 14 Interior: 2B Hassall St, throughout, ceiling tiles – Suspected SMF containing compressed ceiling tiles.



Photo 15 Interior: 2B Hassall St, throughout, air conditioning ductwork – Suspected SMF containing insulation.



Photo 16 Interior: 2 ceiling vo Suspecte insulation

Interior: 2B Hassall St, level 1 ceiling void, sarking insulation – Suspected SMF containing insulation.



Photo 17 Exterior: 2B Hassall St, throughout, walls, grey paint – No lead detected



Photo 18 Exterior: columns

Exterior: 6 Hassall St, throughout, columns, cream paint – No lead detected

Appendix B – Asbestos and Hazardous Materials Register This page is left intentionally blank

Client: Western Sydney University & Charter Hall Site Name: 2B-6 Hassall St					Site Address: 2B-6 Hassall Street, Paramatta, NSW							NSW		Job No: SYDEN219212								
Site Address	Area / Level	Room & Location	Feature	Item Description	Hazard Type	Sample No.	Sample Status	Friable	Asbestos Type	Product Type	Extent of Damage	Surface Treatment	Occupant Activity	Likelihood of Disturbance	Exposure Potential	Maintenance Activity	Risk Score	Action	Recommendations & Comments	Quantity	Reinspect Date	Photo No.
2B Hassall St	G	Ground level, above all windows (within ceiling space)	Infill panels	Fibre cement sheeting	Asbestos	A4083	Chrysotile Asbestos Detected	Ν	1	1	0	1	0	1	1	1	6	A4	Maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non-friable) licensed asbestos removal contractor.	>50m2	Jun-23	2
2B Hassall St	L1	Level 1, above all windows (within ceiling space)	Infill panels	Fibre cement sheeting	Asbestos	A4084	Chrysotile Asbestos Detected	Ν	1	1	0	1	0	1	1	1	6	A4	Maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non-friable) licensed asbestos removal contractor.	>50m2	Jun-23	3
2B Hassall St	G	Ground level, rear of building, main switchroom	Electrical backing board	Bituminous backing board	Asbestos	A4085	Chrysotile Asbestos Detected	Ν	1	1	0	0	1	1	1	1	6	A4	Maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non-friable) licensed asbestos removal contractor.	<2m2	Jun-23	4
2B Hassall St	External	Car park ceiling and eaves lining	Ceiling	Fibre cement sheeting	Asbestos	A4086	Chrysotile Asbestos Detected	Ν	1	1	0	0	1	1	1	1	6	A4	Maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non-friable) licensed asbestos removal contractor.	>100m2	Jun-23	5
2B Hassall St	External	Ceiling void above car park ceiling - FC remnants on nails in metal frames	Debris	Fibre cement sheet	Asbestos	A4087	Chrysotile Asbestos Detected	Ν	1	2	2	1	0	2	1	2	11	A3	Maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non-friable) licensed asbestos removal contractor.	Throughout car park ceiling void	Jun-23	6
2B Hassall St	External	Throughout	Fascia	Fibre cement sheeting	Asbestos	A4088	Chrysotile Asbestos Detected	Ν	1	1	0	0	1	1	1	1	6	A4	Maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non-friable) licensed asbestos removal contractor.	>50m2	Jun-23	7
4 Hassall St	External	Vacant lot - Debris/fragments	Debris	Fibre cement sheet	Asbestos	A4089	Chrysotile, Amosite & Crocidolite Asbestos Detected	Ν	3	2	1	1	0	1	1	2	11	A3	Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non- friable) licensed asbestos removal contractor.	Throughout	Jun-23	8
4 Hassall St	External	Vacant lot - Debris/fragments	Debris	Fibre cement sheet	Asbestos	A4090	Chrysotile Asbestos Detected	N	1	1	1	1	0	1	1	2	8	A3	Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non- friable) licensed asbestos removal contractor.	Throughout	Jun-23	9
6 Hassall St	Internal	Base building stairwell, ceiling insulation	Sprayed insulation	Sprayed vermiculite	Asbestos	A4189	No Asbestos Detected	NA	0	0	0	0	0	0	0	0	0	-	-	-	-	10
6 Hassall St	Internal	Apartment 3, kitchen	Floor coverings - white	Vinyl floor tiles	Asbestos	A2277	Chrysotile Asbestos Detected	Z	1	1	1	0	1	1	0	0	5	A4	Label as containing asbestos and maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non-friable) licensed asbestos removal contractor.	5 m²	Jun-23	11
6 Hassall St	Internal	Apartment 3, kitchen	Floor coverings - grey	Vinyl floor tiles	Asbestos	A2278	Chrysotile Asbestos Detected	Ν	1	1	1	0	1	1	0	0	5	A4	Label as containing asbestos and maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non-friable) licensed asbestos removal contractor.	5 m²	Jun-23	11
6 Hassall St	Internal	Apartment 3, kitchen	Floor coverings - red	Vinyl floor tiles	Asbestos	Same as: A2277 A2278	Chrysotile Asbestos Detected	Ν	1	1	1	0	1	1	0	0	5	A4	Maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non-friable) licensed asbestos removal contractor.	5 m²	Jun-23	11
6 Hassall St	Internal	All apartments, kitchen	Floor coverings - white	Vinyl floor tiles	Asbestos	Ref A2277	Suspected Asbestos	Z	1	1	1	0	1	1	0	0	5	A4	Maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non-friable) licensed asbestos removal contractor.	All apartments	Jun-23	11
6 Hassall St	Internal	All apartments, kitchen	Floor coverings - grey	Vinyl floor tiles	Asbestos	Ref A2278	Suspected Asbestos	N	1	1	1	0	1	1	0	0	5	A4	Maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non-friable) licensed asbestos removal contractor.	All apartments	Jun-23	11
6 Hassall St	Internal	All apartments, kitchen	Floor coverings - red	Vinyl floor tiles	Asbestos	Same as: A2277 A2278	Suspected Asbestos	N	1	1	1	0	1	1	0	0	5	A4	Maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non-friable) licensed asbestos removal contractor.	All apartments	Jun-23	11
Site Address	Area / Level	Room & Location	Feature	Item Description	Hazard Type	Sample No.	Sample Status	Friable	Asbestos Type	Product Type	Extent of Damage	Surface Treatment	Occupant Activity	Likelihood of Disturbance	Exposure Potential	Maintenance Activity	Risk Score	Action	Recommendations & Comments	Quantity	Reinspect Date	Photo No.
---------------	--------------	-------------------------------------	--------------------------------------------	--------------------------------	----------------------	-----------------------	-------------------------------	---------	------------------	--------------	---------------------	----------------------	----------------------	------------------------------	-----------------------	-------------------------	------------	--------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------	-------------------	--------------
6 Hassall St	Internal	Apartment 3, bathroom	Ceiling	Fibre cement sheeting	Asbestos	A2279	No Asbestos Detected	-	0	0	0	0	0	0	0	0	0	-	-	-	-	-
6 Hassall St	Internal	Apartment 3, throughout	Ceiling	Textured coatings	Asbestos	A2280	No Asbestos Detected	-	0	0	0	0	0	0	0	0	0	-	-	-	-	-
6 Hassall St	Internal	Apartment 3, front door	Door	Fire door core	Asbestos	A2281	No Asbestos Detected	-	0	0	0	0	0	0	0	0	0	-	-	-	-	-
6 Hassall St	External	Throughout perimeter	Eaves	Fibre cement sheeting	Asbestos	Visual Observation	Suspected Asbestos	N	2	1	0	0	0	0	1	2	6	A4	Confirm status and maintain in current condition if to remain in-situ. Remove under controlled non-friable asbestos removal conditions prior to refurbishment or demolition works by a Class B (non- friable) licensed asbestos removal contractor.	>30m2	Jun-23	12
2B Hassall St	Internal	Stairwell to level 1	Walls	Blue (dark) - Top coat	Lead Paint - Chip	L3232	Lead Not Detected	-	0	0	0	0	0	0	0	0	0	-	RESULT <0.1% lead content, not lead-containing paint as described in AS 4361.2:1998 Guide to lead paint management.	-	-	13
2B Hassall St	Internal	Throughout	Ceiling tiles	Compressed ceiling tiles	SMF	Visual Observation	Suspected SMF	-	0	0	Good	Sealed	Low	0	0	0	Low	-	Maintain in current condition if to remain in-situ. Remove under controlled SMF conditions as per the Code of Practice for the Safe Use of Synthetic Mineral Fibres [NOHSC: 2006 (1990)].	>100m2	-	14
2B Hassall St	Internal	Throughout	Air conditioning ductwork	Insulation material	SMF	Visual Observation	Suspected SMF	-	0	0	Good	Sealed	Low	0	0	0	Low	-	Maintain in current condition if to remain in-situ. Remove under controlled SMF conditions as per the Code of Practice for the Safe Use of Synthetic Mineral Fibres [NOHSC: 2006 (1990)].	>50m2	-	15
2B Hassall St	Internal	Level 1 ceiling void	Insulation	Sarking insulation	SMF	Visual Observation	Suspected SMF	-	0	0	Good	Sealed	Low	0	0	0	Low	-	Maintain in current condition if to remain in-situ. Remove under controlled SMF conditions as per the Code of Practice for the Safe Use of Synthetic Mineral Fibres [NOHSC: 2006 (1990)].	>100m2	-	16
2B Hassall St	External	Throughout	Walls	Grey - Top coat	Lead Paint - Chip	L3233	Lead Not Detected	-	0	0	-	-	-	0	0	0	-	-	RESULT <0.1% lead content, not lead-containing paint as described in AS 4361.2:1998 Guide to lead paint management.	-	-	17
6 Hassall St	External	Throughout	Column	Cream - Top coat	Lead Paint - Chip	L3234	Lead Not Detected		0	0	-		-	0	0	0	-	-	RESULT <0.1% lead content, not lead-containing paint as described in AS 4361.2:1998 Guide to lead paint management.	-	-	18
6 Hassall St	Internal	Apartment 3, kitchen, below sink	Hot water heater	Insulation material - internal	SMF	Visual Observation	Suspected SMF	-	0	0	Good	Sealed	Low	0	0	0	Low	-	Maintain in current condition if to remain in-situ. Remove under controlled SMF conditions as per the Code of Practice for the Safe Use of Synthetic Mineral Fibres [NOHSC: 2006 (1990)].	1 unit	-	-
6 Hassall St	Internal	Apartment 3, living room	Fluorescent light fitting - single tube	Capacitor	PCBs	Visual Observation	PCB Capacitor Suspected	-	0	0	Good	Sealed	Low	0	0	0	Low	-	PCB-containing capacitors are suspected due to age & appearance of electrical fittings. Remove and dispose of in accordance with the Polychlorinated Biphenyls Management Plan, Revised Edition April 2003.	1 unit	-	-
6 Hassall St	Internal	Apartment 3, throughout	Walls	Pink (light) - Top coat	Lead Paint - Chip	A4600	Lead Not Detected	-	0	0	0	0	0	0	0	0	0	-	RESULT <0.1% lead content, not lead-containing paint as described in AS 4361.2:1998 Guide to lead paint management.	-	-	-

Appendix C – Laboratory Analysis Certificate

This page is left intentionally blank



# **CERTIFICATE OF ANALYSIS 193952**

Client Details	
Client	Coffey Environment
Attention	Accounts Email, Raghuram Muguli
Address	Level 19, Tower B, Citadel Tower, 799 Pacific Hwy, Chatswood, NSW, 2067

Sample Details	
Your Reference	<u>SYDEN219212</u>
Number of Samples	4 Paint, 14 Material
Date samples received	14/06/2018
Date completed instructions received	14/06/2018

## **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	18/06/2018						
Date of Issue	18/06/2018						
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 *							

### Asbestos Approved By

Analysed by Asbestos Approved Identifier: Lucy Zhu Authorised by Asbestos Approved Signatory: Lucy Zhu <u>Results Approved By</u> Ken Nguyen, Senior Chemist Lucy Zhu, Asbsestos Analyst Authorised By

Jacinta Hurst, Laboratory Manager



Asbestos ID - materials						
Our Reference		193952-4	193952-5	193952-6	193952-7	193952-8
Your Reference	UNITS	A4083	A4084	A4085	A4086	A4087
Type of sample		Material	Material	Material	Material	Material
Date analysed	-	15/06/2018	15/06/2018	15/06/2018	15/06/2018	15/06/2018
Mass / Dimension of Sample	-	100x80x5mm	00x80x5mm 40x10x5mm		15x15x10mm	10x5x3mm
Sample Description	-	Grey layered fibre cement material	Grey fibre cement material	Black compressed bituminous material	Grey layered fibre cement material	Grey fibre cement material
Asbestos ID in materials -		Chrysotile asbestos detected	Chrysotile asbestos detected	Chrysotile asbestos detected	Chrysotile asbestos detected	Chrysotile asbestos detected
		Organic fibres detected	Amosite asbestos detected		Organic fibres detected	Organic fibres detected

Asbestos ID - materials						
Our Reference		193952-9	193952-10	193952-11	193952-12	193952-13
Your Reference	UNITS	A4088	A4089	A4090	A4189	A2281
Type of sample		Material	Material	Material	Material	Material
Date analysed	-	15/06/2018	15/06/2018	15/06/2018	15/06/2018	15/06/2018
Mass / Dimension of Sample	-	40x15x5mm	30x30x5mm	70x65x5mm	30x5x3mm	25x5x3mm
Sample Description	-	Grey fibre cement material	Grey fibre cement material	White fibre cement material	White mica vermiculite	White mica vermiculite
Asbestos ID in materials	-	Chrysotile asbestos detected Organic fibres detected	Chrysotile asbestos detected Amosite asbestos detected Crocidolite asbestos detected	Chrysotile asbestos detected	No asbestos detected Organic fibres detected	No asbestos detected Organic fibres detected

Our Reference		193952-14	193952-15	193952-16	193952-17
Your Reference	UNITS	A2277	A2278	A2279	A2280
Type of sample		Material	Material	Material	Material
Date analysed	-	15/06/2018	15/06/2018	15/06/2018	15/06/2018
Mass / Dimension of Sample	-	90x20x5mm	25x20x5mm	5x5x2mm	10x10x3mm
Sample Description	-	Grey vinyl tile	Brown vinyl tile	Beige paint-like coating material	Beige mica vermiculite
Asbestos ID in materials	-	Chrysotile asbestos detected	Chrysotile asbestos detected	No asbestos detected	No asbestos detected
		Organic fibres detected	Organic fibres detected	Organic fibres detected	Organic fibres detected

Lead in Paint					
Our Reference		193952-1	193952-2	193952-3	193952-18
Your Reference	UNITS	L3232	L3233	L3234	A4600
Type of sample		Paint	Paint	Paint	Paint
Date prepared	-	15/06/2018	15/06/2018	15/06/2018	15/06/2018
Date analysed	-	18/06/2018	18/06/2018	18/06/2018	18/06/2018
Lead in paint	%w/w	<0.005	0.005	0.01	0.005

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.
Metals-004	Digestion of Paint chips/scrapings/liquids for Metals determination by ICP-AES/MS and or CV/AAS.

QUALIT	Duplicate				Spike Recovery %					
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			15/06/2018	[NT]		[NT]	[NT]	15/06/2018	[NT]
Date analysed	-			18/06/2018	[NT]		[NT]	[NT]	18/06/2018	[NT]
Lead in paint	%w/w	0.005	Metals-004	<0.005	[NT]	[NT]	[NT]	[NT]	103	[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 Contro	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	Nater Guidelines recommend that Thermotolerant Coliform Eaecal Enterococci. & E Coli levels are less than								

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.

Appendix D – Asbestos Legislative Requirements This page is left intentionally blank

### LEGISLATIVE REQUIREMENTS — ASBESTOS

This document has been produced for information only and is under regular review due to frequent changes in legislation and guidance. It contains information relating to the column headings only and not, for instance, in relation to asbestos removal. It is the duty of employers, premise owners and controllers of premises etc. to ensure they are familiar with the latest applicable state legislation and guidance.

#### Introduction:

New (Harmonised) work health and safety laws commenced in the Commonwealth, New South Wales, Queensland, the Australian Capital Territory and the Northern Territory on 1 January 209 and in Tasmania and South Australia on 1 January 2013.

For links to these legislation and the most current information on the progress of legislative change for the other states, please access Safe Work Australia at:

http://www.safeworkaustralia.gov.au/Legislation/Pages/ModelWHSLegislation.aspx

#### **Transitional Arrangements**

Safe Work Australia has developed transitional principles that set out how arrangements under existing work health and safety legislation are intended to transition to the new harmonised system. There are transitional principles statements for both the WHS Act and Regulations. These are available from the Safe Work Australia site:

http://www.safeworkaustralia.gov.au/Legislation/transitional-arrangements/Pages/transitional-arrangements.aspx

Further, each state and territory work health and safety authority has also developed resources to assist their jurisdiction with the transition. If you have any questions regarding transitional arrangements in your jurisdiction please <u>contact your regulator</u>.

### **Further Useful Resources**

Safe Work Australia publishes a range of guidance material to provide information on the model work health and safety laws and to assist compliance. This information can be accessed from:

http://www.safeworkaustralia.gov.au/Legislation/guidance-material/Pages/guidance-material.aspx

For More Information Contact:

Coffey Environments – Work Health and Safety Section:

Phone: 02 8083 1600 Email: WHS\_Support@Coffey.com Web: www.coffey.com

### LEGISLATIVE REQUIREMENTS — ASBESTOS

This document has been produced for information only and is under regular review due to frequent changes in legislation and guidance. It contains information relating to the column headings only and not, for instance, in relation to asbestos removal. It is the duty of employers, premise owners and controllers of premises etc. to ensure they are familiar with the latest applicable state legislation and guidance.

STATE Primary Asbestos Legislation	Asbestos Survey Requirements	Asbestos Resurvey Requirements	Reporting Requirements	Management and Labelling/Signage Requirements	Other Requirements
COMMONWEALTH NEW SOUTH WALES QUEENSLAND NORTHERN TERRITORY TASMANIA SOUTH AUSTRALIA Work Health and Safety Act 2017 (Cth, NSW, QLD, TAS, SA) Work Health and Safety (Regulations 2017 (Cth, NSW, QLD, TAS, SA) Work Health and Safety (National Uniform Legislation) Act and Regulations 2017 (NT) Supported by: Code of Practice - How to Manage and Control Asbestos in the Workplace (2016) Code of Practice - How to Safely Remove Asbestos (2016)	<ul> <li>A person conducting a business or undertaking (PCBU) must, for work place buildings/ structures that are constructed prior to December 31, 2003;</li> <li>survey to identify and locate any Asbestos-containing Materials (ACM; and,</li> <li>Compile and keep at the workplace a site specific Asbestos Register.</li> <li>If ACM is identified at the work place, an Asbestos Management Plan (AMP) is to be compiled for the management of the identified ACM.</li> <li>The Asbestos Register and the Asbestos Management Plan must be made available at the work place for workers, people intending to conduct business at the work place and to Health and Safety representatives.</li> </ul>	Re-inspections of identified ACM are determined on a case-by- case basis depending on the risk situation and should be informed by and conducted in accordance with the site specific Asbestos Management Plan.	<ul> <li>The site specific Asbestos Register needs to include the date, type, location, condition and ACM identified during the survey.</li> <li>The Asbestos Register must be maintained and also updated if:</li> <li>the AMP is under review,</li> <li>further ACM is identified and/or,</li> <li>ACM is removed, disturbed or encapsulated.</li> <li>The site specific AMP must include management actions and justifications, incident and emergency response plans and record details of works carried out that involves ACM at the work place.</li> <li>The AMP must be maintained and updated:</li> <li>when the Asbestos Register is under review,</li> <li>if asbestos is removed, disturbed or encapsulated,</li> <li>if the AMP is no longer adequate for managing the ACM,</li> <li>if a Health and Safety Officer requests a review and/or at least</li> <li>Once every 5 years.</li> </ul>	Generally, health monitoring is not required excepting for workers involved in asbestos removal works. Training is required for persons involved in asbestos removal work or carrying out asbestos related works. All identified ACM in a workplace has to be labelled to indicate clearly asbestos presence and location of the asbestos item. Before refurbishment or demolition: • ensure Asbestos Register is current • undertake necessary inspections A licenced asbestos removalist is required unless: • ACM < 10m2 and non-friable and then by a competent person	<ul> <li>WHS Regulation 419 requires A person conducting a business or undertaking (PCBU) must not carry out, or direct or allow a worker to carry out, work involving asbestos; excepting as is applicable:</li> <li>managing risk;</li> <li>sampling, identification and analysis;</li> <li>maintenance</li> <li>removal/disposal</li> <li>other exemptions per s.419 (3)</li> </ul>