Douglas Partners
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Report on
Detailed Site (Contamination) Investigation

Proposed Pool and Park Redevelopment
Kogarah War Memorial Pool, 78 Carwar Avenue,
Carss Park

Prepared for
SJB Architects c/- SJB Planning

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Executive Summary

This report presents the results of a Detailed Site (Contamination) Investigation undertaken for the proposed pool and park redevelopment at Kogarah War Memorial Pool, 78 Carwar Avenue, Carss Park. Douglas Partners Pty Ltd (DP) understands the redevelopment works is expected to include the demolition of existing structures and the redevelopment of the site into open space grassed areas connecting to existing playing fields (Carss Park Flats to the north). The works are required to support a development application.

The objective of the investigation was to provide SJB Planning Pty Ltd and Georges River Council with an understanding of the nature and extent of contamination at the site, assess the suitability of the site for the proposed land use, and if deemed necessary, make recommendations for further targeted investigations and / or remediation to render the site suitable for the proposed land use.

Based on site history, it appears that in the first half of the twentieth century the site was used for residential and possible agricultural uses and was subsequently reclaimed from Kogarah Bay using uncontrolled fill from variable sources. The site has been used for recreational purposes since *circa* 1953 until the present.

The potential sources of contamination identified are from uncontrolled and imported fill, past and current site activities, deterioration of past and current buildings and adjacent site uses (past and present).

In summary, the contamination and geotechnical investigations undertaken by DP encountered the following general sub-surface conditions across the site:

- PAVEMENT - In the car park areas only - asphaltic concrete 20-60 mm thick over 0.3 m to 0.6 m of apparently well compacted gravelly sand;
- FILL - Mostly gravelly sand, clayey sand, sandy clay and silty clay, generally loose to medium dense or stiff to very stiff with occasional bands of very loose sand or soft to firm clay. The filling also included fragments of plastic, rags, glass, metal, concrete, timber and asbestos containing material. The filling extended to depths ranging from 1.6 m to 6.0 m bgl;
- SAND - Very loose to loose sand, to depths of about 4.0 m to 6.7 m bgl;
- CLAY - Soft to firm clays, to depths of about 5 m to 6.5 m bgl;
- CLAY - Stiff to hard clays and silty clays with medium dense and dense sand bands down to the termination depths of most piezocone penetration test locations (5.2 m to 32.5 m bgl); and
- SANDSTONE BEDROCK - depths to sandstone bedrock range from 1.6 m to more than 32.5 m bgl (in the north-eastern area of the site).

Groundwater was recorded at shallow depths between 1.5 m and 2.6 m bgl. This is consistent with the site being located adjacent to Kogarah Bay.

Acid Sulfate Soils (ASS) are present at depth within the natural soils and the shallower fill profile around BH111 and TP121 from 1.2 m bgl. Moreover, whilst the screening results do not suggest any broad scale ASS impact of the shallower fill, pockets of ASS within the shallower fill, as indicated by the results from BH111 and TP121 may be encountered. Should any materials that are suspected of being potential ASS be disturbed during remedial works these would need to be subject to further ASS

testing and possibly (lime) treatment. An ASS management plan would also need to be implemented in this scenario.

With respect to soil chemical contamination identified the following exceedances are to be remediated and / or further investigated (including delineation) for any development works in the relevant area.

- Chromium in samples BH102/2.5-3.0 and TP130/2.7-2.8 due to HIL exceedances;
- Lead in sample BH1/1.5-1.9 (from CS (2019a)) due to HIL exceedance;
- Zinc in sample BH1/1.5-1.9 (from CS (2019a)) due to EIL exceedance;
- B(a)P TEQ in samples BH106/0.8-1.0 and TP124/0.8-0.9 due to HIL exceedances;
- TRH fraction F2 in sample BH111/1.7-1.8 due to ESL exceedance; and
- TRH fraction F3 in samples BH106/0.8-1.0, BH111/1.7-1.8, BH111/2.4-2.8 and TP124/0.8-0.9 due to ESL exceedances.

It is noted that sample TP124/0.8-0.9 is located in the eastern berm at around 4 m AHD and hence would be excavated as part of the works to reach a final surface level of around 3 m AHD. This would therefore address the HIL and ESL exceedances noted above at TP124 provided the excavated soils are not relocated within the site at a shallower depth.

Regarding the lead and zinc exceedances recorded in Construction Sciences Pty Ltd (CS) 2019 investigation, these are located within the tree protection zone (TPZ) and at depth. Given the results in the adjacent test pit (TP130) recorded significantly lower metal concentrations and the potential damage and limitations due to excavating within the TPZ (i.e., limited to 0.1 m to 0.15 m depth), removal of this contamination would be considered to provide an overall negative outcome for the project and hence it is recommended that this contamination is left in place and managed.

With respect to the chromium exceedance in sample TP130/2.7-2.8, given the depth at which the sample was taken, the non-volatile nature of the metal contamination and the shallow nature of groundwater at the site this would be addressed through generation of a barrier between the contamination and site users and managed under a Long Term Environmental Management Plan (LTEMP).

Moreover, as redevelopment of the car park is not proposed, the exceedances outlined above at sample locations BH102, BH106 and BH111 would not require remediation for the project given they are located outside the project area subject to the development application.

Apropos the asbestos contamination, given the detection of asbestos (at varying concentrations) in the vast majority of test pits, this indicates that asbestos impacts are likely to be widespread at the site. Whilst a process of trying to remediate areas impacted with asbestos above the site assessment criteria (SAC) could be considered, given the sporadic nature of asbestos contamination, there is a high risk that any such approach would result in greater areas requiring excavation than may be assumed based on the current data set. In addition, it is highly likely that the soils in the final landform would be impacted by asbestos, albeit at low concentrations within the SAC. Given this, the presence of ASS, the protection of tree root zones for those trees proposed to be retained and the shallow groundwater, DP would recommend a cap and contain remedial approach, thereby forming a physical barrier between the asbestos impacted soils and site users with the contamination managed under a LTEMP.

The groundwater results do not indicate significant impact on groundwater quality from the site. Potential chloride impacts in the south-eastern corner of the site are expected to reduce over time following the removal of existing structures and sub-surface infrastructure (e.g., pipes) as part of the works and when the site no longer being used as pool. It is therefore considered that the recorded levels of groundwater contamination are reflective of broader groundwater quality in the area of the site and not limited to impacts from the site. Moreover, notwithstanding the technical and feasibility constraints that the site presents given its location adjacent to Kogarah Bay, shallow groundwater, deep fill and deep rock profile, it is considered groundwater remediation of the site (which forms a subsection of the reclaimed land within Carss Park / Carss Park Flats) would provide minimal to negligible environmental benefit. Any approach to improving groundwater quality at the site and neighbouring areas should therefore be undertaken at a broader level.

Considering the proposed open space use of the site, the risk to site users from landfill gas (LFG) is not considered to be of significant concern. Further consideration is required to be given to LFG risk should enclosed spaces or services be built / installed. In addition, sub-surface penetration and excavation works should also take into consideration the presence of LFG when undertaking works.

It is recommended that:

- A remediation action plan (RAP) is developed which details the remedial works required to render the site suitable for the proposed development. The RAP is to include, *inter alia*, an Unexpected Finds Protocol procedure outlining the procedures that would be undertaken in the event that additional unexpected contamination is encountered;
- An asbestos management plan is developed prior to commencing works;
- Management of potential exposure to LFG and microbiological (faecal and total coliform) contamination during excavation works is addressed in the site's construction environmental management plan prior to commencing works; and
- A LTEMP is developed on completion of the remedial works for long term management of the site and the LTEMP subject to a notification mechanism (such as on Council's Section 10.7 Planning Certificate).

In summary, DP considers that the site can be rendered suitable for the proposed open space land use subject to development of a suitable RAP, undertaking the remediation works, subsequent validation of these works and the development and implementation of an LTEMP once remediation has been completed.

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Report on Detailed Site (Contamination) Investigation
Proposed Pool and Park Redevelopment
Kogarah War Memorial Pool, 78 Carwar Avenue, Carss Park

1. Introduction

This report presents the results of a detailed site (contamination) investigation (DSI) undertaken for the proposed pool and park redevelopment at Kogarah War Memorial Pool, 78 Carwar Avenue, Carss Park (the 'site', refer to Drawing 1, Appendix A). The investigation was commissioned by SJB Planning Pty Ltd (SJB) on behalf of SJB Architects Pty Ltd for Georges River Council (Council) and was undertaken in general accordance with Douglas Partners Pty Ltd (DP) proposal SYD200681 dated 1 July 2020.

The works are required to support a Development Application for the proposed demolition of Kogarah War Memorial Pool and subsequent redevelopment of the site, including associated remediation. The work will also support civil tender documentation and the decision-making process for Council. DP understands the redevelopment works is expected to include the demolition of existing structures and the redevelopment of the site into open space grassed areas connecting to existing playing fields (Carss Park Flats to the north).

The objective of the investigation was to provide SJB and Council with an understanding of the nature and extent of contamination at the site, assess the suitability of the site for the proposed land use, and if deemed necessary, make recommendations for further targeted investigations and/or remediation to render the site suitable for the proposed land use. Additionally, this investigation has been undertaken to assist in the development of a Remediation Action Plan (RAP).

The investigation included the drilling of 19 boreholes, the installation of five groundwater monitoring wells, the excavation of 11 test pits and laboratory testing of selected samples. The details of the field work are presented in this report, together with comments and recommendations with respect to site contamination. DP notes that a preliminary *in situ* waste classification has also been provided in this report to assist project planning.

In the preparation of this report, reference has been made to guidelines endorsed by the NSW Environment Protection Authority (EPA). The two primary guidelines being:

- National Environment Protection Council (NEPC) *National Environment Protection (Assessment of site Contamination), Measure 1999 (as amended in 2013),* (NEPC, 2013); and
- NSW EPA *Contaminated Land Guidelines: Guidelines for Consultants Reporting on Contaminated Land* (EPA, 2020).

Additional guidelines used for this report are outlined in Section 14.

2. Scope of Work

The scope of work for this investigation comprised the following:

- Review of relevant previous reports and drawings prepared for the site;
- Review of a Land Insight and Research (LI&R) Report '*Enviro-Screen, Property Details, Lot 511 DP[1] 752046, Part Lot 1 DP 125981 and Part Lot 376 DP 111749, 78 Carwar Avenue. Carss Park NSW'* dated 16 July 2020 which included:
  - A Property Setting Section that included site location, sensitive receptors, planning controls, soil landscape, Acid Sulfate Soil (ASS) risk, salinity, geology, topography, hydrogeology and groundwater borehole maps;
  - An Environmental Records Summary Section that included of a summary of contamination and potentially contaminating activities, regulatory notices and historical commercial & trade directory data;
  - Any Other Environmental Constraints Section that included federal, state and local heritage, natural hazards and coastal management and a state environmental planning policy map; and
  - Historical Aerial Imagery (Attachment B within the LI&R report).
- Review of historical title deeds;
- Review of SafeWork NSW records pertaining to hazardous chemicals stored on the premises;
- Drilling or excavation of 30 sample locations comprising:
  - Twelve boreholes (BH101 to BH112) drilled with a tracked drilling rig to depths of between 1.7 m below ground level (bgl) and 6.0 m bgl;
  - Seven boreholes (BH113 to BH119) drilled with hand tools to depths of between 0.6 m bgl and 2.0 m bgl; and
  - Excavation of eleven test pits (TP120 to TP130) by a 4WD backhoe using a 300 mm toothed bucket.
- Conversion of five wells into groundwater monitoring wells (BH106 to BH110);
- Collection of soil samples for contamination testing from all boreholes and test pits at regular intervals and where signs of contamination were observed;
- Collection of 10 L samples for asbestos sieve tests from selected boreholes and test pits;
- Screening of soil samples for volatile organic compounds (VOC) using a photoioinsation detector (PID);
- Development of the five groundwater wells;
- Collection of five groundwater samples during a falling tide following the stabilisation of recorded field parameters;
- Surface screening for methane gas using a Huberg Laser One;
- Opportunistic Landfill Gas (LFG) screening of the five installed groundwater monitoring wells with a GA5000;

[1] Deposited Plan

- Dispatch and analysis of selected soil samples, groundwater samples and material samples for analysis of a combination of the following contaminants and parameters at NATA accredited laboratories:
  - Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);
  - Total recoverable hydrocarbons (TRH);
  - Total petroleum hydrocarbons (TPH) (selected samples based on TRH results);
  - Benzene, toluene, ethylbenzene and xylenes (BTEX);
  - Polycyclic aromatic hydrocarbons (PAH);
  - Organochlorine pesticides (OCP);
  - Organophosphorus pesticides (OPP);
  - Polychlorinated biphenyls (PCB);
  - Total Phenols;
  - pH;
  - Cation exchange capacity (CEC);
  - Asbestos (40 g and 500 mL soil samples and material samples);
  - Volatile organic compounds (VOC);
  - Per- and poly-fluoroalkyl substances (PFAS);
  - Nitrogen (ammonia, nitrate, nitrite);
  - Total and faecal coliform;
  - Biological oxygen demand (BOD);
  - Chemical oxygen demand (COD);
  - Hydrogen utilising bacteria (HUB) (pseudomonas aeruginosa);
  - Chloride;
  - Anions;
  - Cations; and
  - Toxicity characteristics leachability procedure (TCLP).
- Field sampling and laboratory analysis consistent with standard environmental protocols, including a quality assurance and quality control (QA / QC) plan consisting of 10% replicate sampling, trip spikes, trip blanks, appropriate chain-of-custody procedures and in-house laboratory QA / QC testing;
- Initial screening of selected samples for ASS and analysis of selected samples for chromium reducible sulfur (Scr); and
- Preparation of this report detailing the methodology and results of the investigation with reference to EPA approved guidelines.

3. Site Information

3.1 Site Identification

The site covers an area of approximately 1.1 ha. A swimming pool, associated single storey buildings and an on grade asphalt carpark currently occupy the majority of the site. The site information is summarised in the Table 1 below and Drawing 1 (Appendix A) shows the site boundary and site layout.

Table 1: Site Information

Item	Description
Site Address	78 Carwar Avenue, Carss Park
Legal Description	• Lot 511, Deposited Plan 752056; • Part Lot 1, Deposited Plan 125981; and • Part Lot 376, Deposited Plan 111749.
Approximate Area	1.1 ha
Zoning	RE1 - Public Recreation
Current Land Use	Recreational
Local Council Area	Georges River Council

3.2 Proposed Development

The proposed development involves the demolition of the existing pool and associated structures and sub-surface infrastructure (e.g., pipes, including those constructed of Asbestos Containing Material (ACM)), and conversion of the area to open space grassed areas forming a connection with the existing park to the north of the site. This may include some planting, pathways, small areas for seating and picnic shelters.

The site will be graded towards the north-east to be around the same RL as the neighbouring park to the north, which is approximately RL 3 m AHD.

Works also include the replacement of the existing irrigation tanks with a new tank on the southern side of the site. Shallow trenching (0.6 m deep and 1 m wide) will also be undertaken to connect a 110 mm diameter PN10 PE 100 irrigation pipe and a DN40 MD conduit for electrical cabling to the existing tanks to the new tank connection.

It is understood that the existing on-grade car park is to be retained.

3.3 Site Geology, Topography and Hydrogeology

The *Sydney 1:100 000 Geological Series Sheet* indicates that the site is underlain by man-made fill used to raise the natural surface elevation over former estuarine swamps and subaqueous estuarine margins. The estuarine deposits below the man-made fill typically comprise silty to peaty quartz sand, silt and clay.

The regional mapping also indicates that the headland to the south and west of the site is underlain by Hawkesbury Sandstone, which comprises medium to coarse-grained quartz sandstone with minor shale and laminite lenses. It is expected that the estuarine deposits within the site are underlain by Hawkesbury Sandstone at depth.

Further reference to the Sydney 1:100 000 Soils Landscape Series Sheet, prepared by the former NSW Department of Land and Water Conservation, indicated that the site lies within an area of disturbed terrain. Disturbed terrain comprises landscape that has been extensively disturbed by human activity, which has extensively modified the features of the original landscape.

The topographic contours for the site indicate the area is relatively flat, around RL 3 m AHD with regional topography sloping from west to east towards Kogarah Bay (LI&R Report page 6, Appendix D).

Based on local topography, surface water is expected to flow generally east towards Kogarah Bay.

A search of the NSW Department of Primary Industries Office of Water (LI&R Report pages 7 - 9, Appendix D) showed that there were seven groundwater bores within 700 m of the site. The nearest bore is located approximately 446 m south-west of the site and the majority of the wells are registered for monitoring purposes with two for household (supply) use. The closest bore with a measured standing water level is approximately 446 m south-west with standing water recorded at 1 m bgl, with standing water levels (depths) ranging between 1 m to 17 m bgl. Work summaries for the available bores and locations are provided in the LI&R Report in Appendix D. It is noted that these wells are not located hydraulic down-gradient of the site.

Groundwater is expected to flow to the east in a similar direction to the regional topography. Moreover, due to the location of the site adjacent to Kogarah Bay, groundwater is expected to be relatively shallow and have saline characteristics.

3.4 Acid Sulfate Soils

Reference to the 1:25,000 NSW Acid Sulfate Soil Risk map for Kogarah indicates that the site lies within an area of disturbed terrain which poses an environmental risk, and which requires soil investigations in the area for ASS.

Reference to the Acid Sulfate Soil Risk Map from the Office of Environment and Heritage presented in the LI&R Report (pages 5 and 6) shows the site as a Class 2 area. Class 2 areas are likely to have ASS present below the natural ground surface. Further reference to the Atlas for Australian Acid Sulfate Soils presented in the LI&R Report (pages 4 and 5) provisionally classified the site as an area of disturbed ASS with a low probability of occurrence of ASS.

4. Site History

4.1 Historical Title Deeds

A historical Title Deeds search was used to obtain ownership and occupancy information including company names and the occupations of individuals. A summary of the title deeds and possible land uses (with reference to the aerial photographs (LI&R Report Attachment B) and historical land title deeds search) is presented in Table 2. A copy of the land titles search results is included in Appendix E with the LI&R Report in Appendix D.

The land use of the site has generally been residential (possibly agricultural) and was subsequently subject to land reclamation and then recreational to the present-day.

Table 2: Summary of Historical Title Deeds and Possible Associated Land Use

Periods	Registered Proprietors & Occupations	Possible Land Use
Lot 511 Deposited Plan 752056		
1978 to date	Council of the Municipality of Kogarah (now Georges River Council)	Recreational - Swimming Pool
Part Lot 1 Deposited Plan 125981		
1880 to 1917	Mary Carss	Residential / Agricultural
1917 to 1923	Charles Brian Pitt (Solicitor) Robert Carss Stewart (Clerk)	Residential / Agricultural
1923 to date	Council of the Municipality of Kogarah (now Georges River Council)	Land reclamation / Recreational
Part Lot 1 Deposited Plan 125981		
1923 to 1926	Sydney Sailors Home	Residential
1926 to 2019	Council of the Municipality of Kogarah	Land reclamation / Recreational
2019 to date	Georges River Council	Recreational

4.2 Historical Aerial Photographs and Historical Maps

Historical aerial photographs were obtained by LI&R from databases held by the NSW Department of Finance, Services and Innovation for the years 1943, 1951, 1953, 1956, 1961, 1965, 1970, 1972, 1975, 1978, 1979, 1983, 1986, 1990, 1994, 1998, 2004, 2005, 2007, 2009, 2011, 2014, 2017 and 2020. Along with the historical aerial photographs, a 1951 historic zoning map and a 1969-1991 street map are provided in Attachment B of the LI&R Report. A summary of features observed for the site and surrounding properties is presented in Table 3.

Table 3: Aerial Photograph Review

Year	Site Features	Surrounding Features
1943	Vacant site with the natural shoreline apparently present and running through the centre of the site from north-west to south-east. Eastern portion of the site appears to be swampy.	Sea wall appears to have been constructed bordering the east of the site and extending to the north and south. Parkland appeared to be present to the north, south and west of the site. A small residential style building is present approximately 50 metres to the south of the site. Residential type development present in the surrounding region.
1951	Infilling of the eastern section of the site appeared to have been undertaken, the western portion of the site was largely unchanged since 1951. The 1951 zoning map shows the site as being parks and recreation areas.	No significant changes to the surrounds although some increased residential developments observed in the broader areas. The 1951 zoning map shows the surrounds area as being parks, recreation and living areas.
1953	Further infilling of the eastern section of the site appeared to have been undertaken, the western portion of the site was largely unchanged since 1951.	No significant changes to the surrounds although some minor residential developments are present in all surrounding areas.
1956	The site appears to be largely unchanged since 1953.	No significant changes to the surrounds although some minor residential developments are observed to the north.
1961	The site appears to be largely unchanged since 1956.	No significant changes to the surrounds.
1965	The current site swimming pool appeared to be under construction in the central portion of the site. The associated site building also appeared to be under construction. The western portion of the site was largely unchanged since 1961.	No significant changes to the surrounds although some minor residential developments are observed to the north and north-west.
1970	The swimming pool and associated buildings appeared to have been constructed along with a small car park in the south- western corner of the site.	No significant changes to the surrounds although some minor residential developments are observed to the south-west.
1972	The site appears to be largely unchanged since 1970.	No significant changes to the surrounds.
1975	The site appears to be largely unchanged since 1972.	No significant changes to the surrounds.
1978	The site appears to be largely unchanged since 1975.	No significant changes to the surrounds although some minor residential developments are observed to the north-west.
1979	The site appears to be largely unchanged	No significant changes to the surrounds.

Year	Site Features	Surrounding Features
	since 1978.	
1983	The site appears to be largely unchanged since 1979 apart from what appears to be a berm or row of trees along the eastern site boundary.	No significant changes to the surrounds.
1986	A small white structure is present in the south-eastern section of the site, adjacent to the southern boundary.	No significant changes to the surrounds.
1990	The car park in the western portion of the site appeared to have been extended to its current size. The small white structure observed in the 1986 photograph was no longer present indicating that it may have been a temporary or mobile feature. The remainder of the site appears to be largely unchanged since 1986.	No significant changes to the surrounds.
1994	The site appears to be largely unchanged since 1990.	No significant changes to the surrounds.
1998	The site appears to be largely unchanged since 1994.	No significant changes to the surrounds.
2004	The site appears to be largely unchanged since 1998.	No significant changes to the surrounds.
2007	The site appears to be largely unchanged since 2004.	No significant changes to the surrounds.
2009	The site appears to be largely unchanged since 2007.	No significant changes to the surrounds.
2011	The site appears to be largely unchanged since 2009.	No significant changes to the surrounds.
2014	The site appears to be largely unchanged since 2011.	No significant changes to the surrounds.
2017	The site appears to be largely unchanged since 2014.	No significant changes to the surrounds.
2020	The site appears to be largely unchanged since 2017.	No significant changes to the surrounds.

4.3 Historical Commercial and Trade Directory

The historical commercial and trade directory data (LI&R Report pages 15 - 17, Appendix D) for businesses operating on site and in the surrounding area within a 200 m buffer was also reviewed for potentially contaminating activities.

The historical directory did not identify any activities operating on site.

4.4 NSW EPA Information

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

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

A search of the public database undertaken in the LI&R Report (pages 13 - 14, Appendix D) indicated that the site was not listed.

In addition, there was a number of current listed contamination sites located within the 1 km buffer. Regulation under the CLM Act was not required for all sites, other than those still under assessment or those already addressed via the planning process. These are illustrated in the LI&R Report (Map 6, Attachment A of the report) which show the closest being The Bay Nursing Home, approximately 450 m directly east of the site.

No records of other potentially contaminated sites and activities were identified in the LI&R Report.

It should be noted that the EPA record of notices for contaminated land does not provide a record of all contaminated land in NSW and that a site with EPA site management class “regulation under the CLM Act not required” indicates that the EPA has completed an assessment of the contamination and decided that regulation under the CLM Act is not required. The NSW EPA also issues environmental protection licenses under section 308 of the *Protection of the Environment Operations Act* 1997 (POEO Act). The register contains:

- Environmental protection licenses;
- Applications for new licenses and to transfer or vary existing licenses;
- Environment protection and noise control licenses;
- Convictions in prosecutions under the POEO Act;
- The result of civil proceedings;
- License review information;

- Exemptions from provisions of the POEO Act or Regulations;
- Approvals granted under Clause 9 of the POEO (Control of Burning) Regulation; and
- Approvals granted under Clause 7a of the POEO (Clean Air) Regulation.

A search of the public register undertaken in the LI&R report (pages 11 and 12) indicated that there are no current or surrendered Environment Protection Licences issued for the site or within 500 m of the site as illustrated in Map 7, Attachment A, Appendix D.

In addition, available online information from NSW EPA and Council has been searched. No information indicating that the site was subject to the repealed *Unhealthy Building Act 1990* (UBL Act) was obtained.

4.5 SafeWork NSW Search

A search of the database held by SafeWork NSW was conducted on 6 August 2020. The search found numerous licences for the site for a 2,500 L above ground storage tank, used to store sodium hypochlorite. A copy of the response from SafeWork NSW is included in Appendix F.

4.6 Section 10.7 Planning Certificates

A review of the Section 10.7 (2) & (5) Planning Certificate issued under the *Environmental Planning and Assessment Act, 1979* is provided in Appendix G.

The Certificates state that the land to which the Certificates related are: (note: only those pertinent to the status of potential contamination/contamination on site are listed)

- Zoned as RE1 Public Recreation;
- Local Planning Controls for the site include:
  - Kogarah Local Environmental Plan 2012;
- State Planning Instruments for the site include:
  - No. 19 - Bushland in Urban Areas;
  - No. 21 - Caravan Parks;
  - No. 30 - Intensive Agriculture;
  - No. 33 - Hazardous and Offensive Development;
  - No. 50 - Canal Estate Development;
  - No. 55 - Remediation of Land;
  - No. 62 - Sustainable Aquaculture;
  - No. 64 - Advertising and Signage;
  - No. 65 - Design Quality of Residential Apartment Development;
  - No. 70 - Affordable Housing (Revised Schemes);
  - State Environmental Planning Policy (SEPP) (Housing for Seniors or People with a Disability) 2004;
  - SEPP (Building Sustainability Index: BASIX) 2004;

- o SEPP (State Significant Precincts) 2005;
- o SEPP (Mining, Petroleum Production and Extraction Industries) 2007;
- o SEPP (Miscellaneous Consent Provisions) 2007;
- o SEPP (Infrastructure) 2007;
- o SEPP (Exempt and Complying Development Codes) 2008;
- o SEPP (Affordable Rental Housing) 2009;
- o SEPP (State and Regional Development) 2011;
- o SEPP (Educational Establishments and Child Care Facilities) 2017;
- o SEPP (Vegetation in Non-Rural Areas) 2017; and
- o SEPP (Coastal Management) 2018.

- Loose-fill asbestos insulation is not applicable to the site;
- The land has not been declared to be significantly contaminated land, is not subject to a management order, is not the subject of an approved voluntary management proposal, the subject of an ongoing maintenance order and a site audit statement has not been identified within the meaning of the CLM Act; and
- This land contains, or has contained, contaminants identified in one or more reports or records held by Council.

It is noted that that the Certificate did not indicate that site was subject to the repealed UBL Act.

4.7 Council Records

DP also reviewed publicly available council records provided by Council. The relevant information is summarised as follows:

- Historical site photographs showing the stages of construction of the swimming pool. It should be noted that no date information has been provided for these photographs although are assumed to be *circa* 1965;
- A letter from the NSW EPA to Council dated 9 July 2019 regarding discharge of backwash from the pool into Kogarah Bay on 2 July 2019 through a terracotta pipe. The EPA considered that the discharge of backwash water into Kogarah Bay constituted pollution under the PEOE act. The EPA required immediate action to prevent any further discharge, and the preparation of a backwash management plan by 31 July 2019;
- An email from NSW EPA to Council dated 22 July 2019 regarding leakage of an unknown quantity of chlorinated water from the pool into Kogarah Bay as a result of damage to the structural integrity of the pool over an unknown period of time. The EPA required the council undertake immediate action to prevent water leaking from the pool;
- A letter from Council to the NSW EPA dated 30 July 2019 in response to the previous correspondence from the NSW EPA. This letter indicates that Council was unable to control the leaks in the pool structure and so made the decision to drain the pool in order to prevent continued discharge of water into Kogarah Bay, which addressed both requirements from the EPA outlined in earlier correspondence; and

- A letter from Council to the NSW EPA dated 5 August 2019 regarding a swimming pool inspection report and the maintenance works required, including repair of bunding around liquid chlorine in the plant room. Council indicated that due to the closure of the pool, the bunding around the liquid chlorine remained the only item to be actioned. Council stated that the liquid chlorine would be removed and disposed of by a contractor during decommissioning works.

A copy of the council records reviewed are included in Appendix G.

5. Previous Reports

The following reports were reviewed for preparation of this DSI:

- Construction Sciences Pty Ltd (CS), *'Geotechnical Investigation, Carss Park Swimming Pool, Carss Park'*, CS ref: 501790024, dated 12 November 2019 (CS, 2019a);
- CS *'Summary of Site Contamination, Carss Park Swimming Pool, 76 Carwar Avenue, Carss Park, NSW 2221'*, CS ref: 50462000024, dated 15 November 2019 (CS, 2019b);
- DP, *'Hazardous Building Materials (HBM) Survey, Kogarah War Memorial Pool, 78 Carwar Avenue, Carss Park NSW',* DP ref: 99751.02.R.001.Rev0, dated 10 August 2020 (DP, 2020a); and
- DP, *'Report on Additional Geotechnical Investigation, Proposed Pool and Park Redevelopment, Kogarah War Memorial Pool, Carss Park',* DP ref: 99751.01.R.001.Rev1, dated 14 September August 2020 (DP, 2020b).

Reference should be made to the relevant report for further information. The below is provide for summary information only.

5.1 CS (2019a)- Geotechnical Investigation and CS (2019b)- Contamination Summary

CS undertook a geotechnical investigation which incorporated contamination sampling and testing. It is noted that the contamination summary (CS, 2019b) is based on information from the geotechnical investigation and hence have been summarised together.

CS (2019a) included the drilling of six boreholes (BH01 to BH06) to depths of between 3.0 m and 13.5 m bgl using solid flight augers with standard penetration tests undertaken at 1.5 m depth intervals. The boreholes indicated that the site is underlain by 2.5 m to 4.5 m of fill (sand and clay), over the natural estuarine soil profile. The natural soils were mostly described as interbedded medium dense or denser sands and stiff to hard clays. In the boreholes to the north east of the site (BH02 to BH05) a layer of very loose to loose sand and / or soft to firm clay was encountered directly beneath the fill to a depth of between 5.2 m and 6.0 m bgl. Sandstone bedrock was encountered at depths ranging between 2.5 m and 13 m bgl in four boreholes.

CS test locations are shown on Drawing 2, Appendix A.

The contamination testing was undertaken as part of the site work to inform a waste classification assessment. It also compared the results to a residential land use (health investigation level (HIL) A) scenario to inform suitability of the site based on the results from the limited boreholes. It is unclear why a residential land use scenario was adopted given DP understands residential development has not previously (or is currently) proposed for the site. It may be that the screening criteria for this scenario was selected given they are the most conservative.

In summary, CS reported the following exceedances of the adopted HIL A and ecological investigation level (EIL):

- BH1 (1.5-1.9): lead (1,270 mg/kg) exceeding the HIL (300 mg/kg) and zinc (2,250 mg/kg) exceeding the EIL (400 mg/kg);
- BH3 (0.8-0.95): B(a)P TEQ (3.3 mg/kg) exceeding the HIL (3 mg/kg) and B(a)P (2.4 mg/kg) exceeding the EIL (0.7 mg/kg);
- BH4 (3.8-3.95): zinc (590 mg/kg) exceeding the EIL (400 mg/kg);
- BH4 (2.9-3.0): detection of asbestos;
- BH5 (0.4-0.5): mercury (40 mg/kg) exceeding the HIL (40 mg/kg);
- BH5 (1.9-2.0): detection of asbestos and total coliform (23,000 org/s) exceeding the investigation criteria (1,000 org/s); and
- BH5 (2.8-2.95): total coliform (30,000 org/s) exceeding the investigation criteria (1,000 org/s).

CS (2019b) indicated that the contamination status at the site, or whether it presents risks to human health or the environment, could not be ascertained based on the data available. It recommended that that a Stage 1 and Stage 2 site investigation and delineation/remediation investigations should be conducted to confirm if remediation is required and the nature and extent of remediation that is required.

Furthermore, CS (2019a) (page 6) concluded: *….'fill materials would be classified, as a minimum, General Solid Waste (Non-putrescible (GSW_NP)), however, the presence of asbestos in BH04 and BH05 indicates some areas of fill (to be delineated) would be classified as Special Waste (asbestos) subject to further leachability tests'. Soils from BH01 and BH05 may require additional treatment due the presence of pathogens…'*

It was noted that the natural soils below the fill did not record contamination, however, these samples recorded the presence of ASS. Moreover, all alluvial soils were assessed to be potential ASS and it was noted that depending on the quantity of the soils excavated an ASS management plan may be required.

5.2 DP (2020a)- Hazmat Survey

DP (2020a) comprised a hazardous building materials survey of the main building, pump house and general grounds (pools, awnings, irrigation tanks and car park). The report identified the presence of hazardous materials on all properties within the site. These included asbestos, lead dust, lead paint, PCB, and synthetic mineral fibres (SMF).

Appropriate management and removal of these hazardous building materials was deemed required during the demolition process for site structures.

5.3 DP (2020b)- Additional Geotechnical Investigation

The additional geotechnical investigation comprised:

- Eight piezocone penetration tests (CPT201 to CPT206) taken to depths ranging from 3.4 m to 32.5 m bgl;
- Six large diameter boreholes (BH101 (G) to BH106 (G)) drilled to depths of between 0.7 m and 1.7 m bgl in the area of the originally proposed carpark to investigate the pavement subgrade. Note: these were drilled within 1 m of the contamination boreholes drilled for this DSI (BH101 (E) to BH106 (E)); and
- Six Dynamic Cone Penetrometer Tests (DCPs) taken to depths of up to 3.6 m bgl or prior refusal at test locations BH103 to BH105 in the area of the proposed carpark and three extending below the base of the existing pool at BH117 to BH119.

In summary, DP (2020b) encountered the following sub-surface conditions across the site comprising:

- PAVEMENT - In the car park areas only - asphaltic concrete 20-60 mm thick over 0.3 m to 0.6 m of apparently well compacted gravelly sand;
- FILL - Mostly gravelly sand, clayey sand, sandy clay and silty clay, generally loose to medium dense or stiff to very stiff with occasional bands of very loose sand or soft to firm clay. The filling also included plastic, rags, glass, metal, concrete and timber fragments. The filling extended to depths ranging from 1.6 m to 6.0 m bgl;
- SAND - Very loose to loose sand, to depths of about 4.0 m to 6.7 m bgl, encountered only in CPT201, CPT202 and CPT206 to CPT208;
- CLAY - Soft to firm clays, to depths of about 5 m to 6.5 m bgl, encountered only in CPT201 and CPT205 to CPT208;
- CLAY - Stiff to hard clays and silty clays with medium dense and dense sand bands down to the termination depths of all CPTs (5.2 m to 32.5 m bgl) - with the exception of CPT202, CPT203 and CPT204 which terminated within the filling; and
- SANDSTONE BEDROCK - Encountered within three of the previous boreholes (BH01, BH02 and BH06), and inferred to be the cause of refusal of BH105 and some of the CPTU - depths to sandstone bedrock range from 1.6 m to more than 32.5 m bgl.

Test locations are shown on Drawing 2, Appendix A.

Additional geotechnical information on settlement and site preparation works is also provided in DP (2020b).

6. Site Walkover

A site walkover was undertaken on 22 July 2020 by an Environmental Scientist from DP. The following features were observed and noted, with photographs included in Appendix A.

- The site was occupied by a swimming pool with associated single-storey buildings and an on-grade asphalt car park;
- The majority of the western and central parts of the site were concrete paved or hardstand and there was some cracking. The eastern, northern and southern portions of the site were predominantly vegetated. Significant cracking was observed within the swimming pool in the central portion of the site;
- No general storage of chemicals on site was observed, however, there was evidence of previous chemical storage associated with the operation of the swimming pool, including chlorine;
- Stormwater pits were visible throughout the site;
- Potential hazardous building materials such as fibre cement sheet and SMF were present (including associated with in-ground pipes); and
- A large berm on the eastern boundary of the site indicated a significant amount of earthworks had occurred on the site.

The observed surrounding land-use included the following:

- North: Public parkland and playing fields;
- East: Public walking path and Kogarah Bay;
- South: Public parkland and a small sandstone cottage; and
- West: Public parkland and community buildings.

7. Conceptual Site Model

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

7.1 Potential Sources

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

S1 - Large scale filling of site - Associated with land reclamation and potential uncontrolled waste fill and levelling including imported contaminated fill or residual demolition waste. It is possible hazardous building materials such as asbestos and lead paint may be a potential issue in the fill.

COPC include metals, TPH, BTEX, PAH, PCB, OCP, OPP, phenols, asbestos, PFAS and LFG (including methane, carbon dioxide, hydrogen sulphide and carbon monoxide).

S2 - Large scale filling of adjacent (off-site) areas - Associated with land reclamation and potential uncontrolled waste fill and levelling including imported contaminated fill or residual demolition waste. It is possible hazardous building materials such as asbestos and lead paint may be a potential issue in the fill.

COPC include metals, TPH, BTEX, PAH, PCB, OCP, OPP, phenols, asbestos, PFAS and LFG (including methane, carbon dioxide, hydrogen sulphide and carbon monoxide).

S3 - Past and current site activities - A potential source of contamination is the use of the site as a swimming pool and uncontrolled release of pool water into the environment and related storage of chemicals.

COPC include heavy metals, chlorine, microbial activity and PFAS.

S4 - Deterioration of existing buildings.

COPC include asbestos, SMF, lead (in paint and dust) and PCB.

7.2 Potential Receptors

Human Health Receptors:

R1 - Current users (members of the public);

R2 - Construction and maintenance workers;

R3 - End users (members of the public); and

R4 - Adjacent site users.

Environmental Receptors:

R5 - Terrestrial ecology (upper 2.0 m of the proposed final landform);

R6 - Groundwater; and

R7 - Surface water (Kogarah Bay).

Surface runoff in the area is collected by the local stormwater network is expected to drain into Kogarah Bay.

7.3 Potential Pathways

P1 - Ingestion and dermal contact;

P2 - Inhalation of dust, vapours and/or LFG;

P3 - Direct contact with local ecology (upper 2.0 m of the proposed final landform);

P4 - Leaching of contaminants and vertical migration into groundwater;

P5 - Lateral migration of groundwater providing base flow to water bodies;

P6 - Surface water run-off; and

P7 - Lateral migration of LFG.

7.4 Summary of Potential Complete Pathways

A 'source - pathway - receptor' approach has been used to assess the potential risks of harm being caused to human, water or environmental receptors from contamination sources on or in the vicinity of the site, via exposure pathways. The CSM for the site is shown in Table 4 below.

Table 4: Summary of Potential Complete Pathways

Source and COPC	Transport Pathway	Receptor	Risk Management Action Recommended
S1 - Large scale filling of site COPC: metals, TPH, BTEX, PAH, PCB, OCP, OPP, phenols, asbestos, PFAS and LFG S3 - Past and current site activities COPC: heavy metals, chlorine, microbial activity and PFAS	P1 - Ingestion and dermal contact P2 - Inhalation of dust, vapours and/or LFG. P3 - Direct contact with local ecology (upper 2.0 m of the proposed final landform) P4 - Leaching of contaminants and vertical migration into groundwater P5 - Lateral migration of groundwater providing base flow to water bodies P6 - Surface water run-off P7 - Lateral migration of LFG	R1 - Current users (members of the public) R2 - Construction and maintenance workers R3 - End users (members of the public) R4 - Adjacent site users R5 - Terrestrial Ecology (upper 2.0 m of the proposed final landform) R6 - Groundwater R7 - Surface water (Kogarah Bay)	An intrusive investigation is recommended to assess possible contamination including chemical testing of the soils and groundwater. Removal and / or capping of impacted materials of concern during bulk excavation of the site. Management of impacted groundwater (if present) through an environmental management plan.
S2 - Large scale filling of adjacent (off-site) areas COPC: metals, TPH, BTEX, PAH, PCB, OCP, OPP, phenols, asbestos, PFAS and LFG	P2 - Inhalation of dust, vapours and/or LFG P5 - Lateral migration of groundwater providing base flow to water bodies P6 - Surface water run-off P7 - Lateral migration of LFG	R1 - Current users (members of the public) R2 - Construction and maintenance workers R3 - End users (members of the public) R5 - Terrestrial Ecology (upper 2.0 m of the proposed final landform) R6 - Groundwater	
S4 - Deterioration of existing buildings COPC: asbestos,	P1 - Ingestion and dermal contact P2 - Inhalation of dust	R1 - Current users (members of the public) R2 - Construction and maintenance workers	A hazardous building materials assessment is undertaken (DP (2020b)). Hazardous materials would

Source and COPC	Transport Pathway	Receptor	Risk Management Action Recommended
SMF, lead (in paint and dust) and PCB		R3 - End users (members of the public) R4 - Adjacent site users	to be removed in accordance with relevant legislation and guidelines prior to demolition, with the footprints of the buildings validated upon completion of demolition.

8. Fieldwork, Analytical Rationale and Method

8.1 Data Quality Objectives and Project Quality Procedures

The current 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 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.

An evaluation of the DQO is presented in Appendix C.

8.2 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; and

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 C.

8.3 Fieldwork

The field work was carried out under the supervision of environmental scientists from DP between 22 July 2020 and 5 August 2020, and in summary consisted of the following:

- Setting out test locations and scanning for buried services following a review of Dial-Before-You-Dig (DBYD) plans;
- Drilling of 12 boreholes using a push tube equipped drill rig to a depth of up to 6 m bgl or prior refusal / borehole collapse;
- Conversion of five of the boreholes to groundwater monitoring wells using solid flight augers. Due to the sub-surface conditions, pre-packed well screens were used to construct the monitoring wells;
- Drilling of seven boreholes using hand tools within the site buildings and the swimming pool to a depth of 2 m bgl or prior refusal / borehole collapse;
- Excavation of 11 test pits to a depth of 5 m bgl or prior refusal/pit collapse. Backfilling of test pits occurred in the reverse order and material was compacted with the backhoe bucket and blade;
- Opportunistic 10 L bulk sampling from the geotechnical 300 mm diameter augured boreholes at sample locations BH101-BH106 (DP, 2020b);
- Undertake 10 L asbestos sieve tests for every 1 m of strata (or as required based on changes in strata) from test pits and selected boreholes to assess for the presence of ACM;
- Collection of soil samples from each of the boreholes and test pits at regular intervals and where signs of contamination are observed;
- Screening of soil samples for VOC with a PID;
- Groundwater sampling from the five installed groundwater wells;
- Screening of the site surface for methane (as an indicator for LFG) and the installed wells for LFG; and
- Sampling information recorded and quality control maintained throughout the investigation.

8.4 Soil

8.4.1 Sample Locations and Rationale

Table A of the NSW EPA (1995) *Sampling Design Guidelines* recommends a minimum of 22 sampling points for a site of 1.1 ha for the detection of circular hot spots using a systematic sampling pattern, although it is noted that such guidance can have some limitations when assessing sites with deeper fill. Given this, and noting the accessibility concerns with certain parts of the site due to existing buildings and pools, the operational nature of the car park, along with specific areas of concern identified during the desktop review site walkover and the fieldwork, 30 sampling points were undertaken for this investigation. This was considered suitable for a DSI. Of the sample locations,

nineteen boreholes (BH101 to BH119) and 11 test pits (TP120 to TP130) were positioned across accessible areas of the site.

Additionally, Acid Sulfate Soils Management Advisory Committee *Acid Sulfate Soils Assessment Guidelines*, 1998 (ASSMAC, 1998) recommends a minimum of six sample locations for a 1 to 2 ha site.

In summary, sample locations were selected as follows:

- BH101 to BH107 and BH111 to BH112 to provide general coverage of the current car park and surrounds;
- BH113 to BH115 targeted the building footprint;
- BH116 to BH119 targeted the pool footprint;
- BH108 to BH110, TP120 to TP123 and TP128 toTP130 to provide general coverage of the pool area;
- TP124 to TP126 targeted the bund along the eastern boundary; and
- TP127 targeted the area of the small structure identified in the 1986 aerial photograph.

These sample locations are shown on Drawing 1, Appendix A.

8.4.2 Sampling Methodology

Soil samples were collected at regular depth intervals. Observations were made and recorded on the borehole and test pit logs for staining, odours and anthropogenic inclusions.

All sampling data was recorded on DP's borehole and test pit logs, provided in Appendix H. The general sampling procedure adopted for the collection of soil samples for chemical analysis was:

- Discrete profile samples taken from the push tube in boreholes BH101 to BH112;
- Grab sampling from the auger taken for bulk asbestos samples in BH101 (G) to BH106 (G);
- Grab sampling from the hand auger in boreholes BH113 to BH119;
- Grab sampling from excavator bucket in test pits T120 to TP130;
- Transfer samples into laboratory-prepared glass jars, completely filled to minimise the headspace within the sample jar, and capping immediately to minimise loss of volatiles;
- Collect replicate soil samples and place immediately into zip-lock plastic bags for PID screening;
- Collect replicate ASS samples at selected sample locations and place immediately into zip-lock plastic bags after minimising air content and potential for moisture loss;
- Collect 10 L bulk bag soil samples and 500 mL zip-lock bag samples for asbestos analysis;
- Label sample containers with individual and unique identification, including project number, sample location and sample depth;

- Place the glass jars with Teflon lined lid and the ASS, into a cooled, insulated and sealed container and maintained at a cool temperature using ice for transport to the laboratory. It is noted that asbestos 500 mL samples were doubled bagged and placed in sealed bulk bags or container, however, these were not required to be cooled;
- Use of chain-of-custody documentation so that sample tracking and custody could be cross-checked at any point in the transfer of samples from the field to the laboratory;
- Laboratory-prepared trip blanks and spikes were taken onto site and subject to the same jar storage and transfer as the field samples; and
- Primary samples were sent to Envirolab Services Pty Ltd and secondary samples to ALS Environmental (both are NATA accredited laboratories for the tests performed).

DP notes that blind replicate samples were collected from the same location and identical depth to the primary sample (at a minimum of one replicate (intra- or inter-) sample per ten primary samples analysed). Samples were split to prevent the loss of volatiles from the soil (i.e., not homogenised in a bowl). Blind replicate samples were labelled with a DP identification number, recorded on DP's borehole and test pit logs, so to conceal their relationship to the primary sample from the primary analytical laboratory.

8.4.3 Analytical Rationale

At least one soil sample from each test location was selected for analysis. Given the objectives of the investigation, additional testing was undertaken to inform site remediation requirements.

Selected soil samples were selected for ASS screening (pH and pHfox) to provide an indication of ASS conditions both laterally and vertically through the ASS profile. Based on those results, selected samples were also tested for Scr suite.

Samples were analysed for the primary COPC including metals, TRH, BTEX, PAH, OCP, OPP, PCB, total phenols, asbestos, chloride (as a screen for chlorine) and microbiological (total and faecal coliform). For waste classification, TCLP was subsequently conducted on selected samples with elevated concentrations of contaminants.

In addition, selected samples were also analysed for pH and CEC to inform site EILs whilst HUB was analysed to provide information on the potential for natural degradation of hydrocarbons in the environment.

The analysis of QA / QC samples for soil included the following:

- One intra-laboratory and replicate soil sample for every 20 primary samples (analysed for the same suite of chemical contaminants as the primary sample);
- One inter-laboratory replicate soil sample for every 20 primary samples (analysed for the same suite of chemical contaminants as the primary sample); and
- One trip spike and trip blank for each day of sampling and analysed for TRH and BTEX.

No rinsate sample was collected as no re-usable sampling equipment came into contact with the samples.

8.5 Groundwater

8.5.1 Sample Locations and Rationale

The groundwater monitoring well network at the site involved five wells, with two wells (BH106 and BH107) located in the western, up-gradient, side of the site, and the other three wells (BH108 to BH110) adjacent to the eastern boundary, down-gradient side of the site. The rationale behind the well placement was to evaluate the quality of groundwater entering the site (i.e., up-gradient) providing information on the local groundwater quality, as well as assessing if contamination present on the site was impacting the groundwater quality leaving the site.

Well installation details are provided on the boreholes logs. In summary, pre-packed well screens were installed from the base of each well to depths of between 1.5 m (BH106) and 3.0 m bgl (BH109). Solid PVC class 18 screen was then used to extend the well to surface. The gravel pack was extended a minimum 0.5 m above the slotted well screen with a minimum 0.5 m thick bentonite plug installed above this and the well finished with grout. A gatic cover was installed over the well at all locations level with the surface.

8.5.2 Sampling Methodology

Following installation of groundwater wells, the five wells were developed on 27 July 2020 by purging a minimum of three well volumes. The purpose of well development was to remove, as far as practicable, fluid and sediment introduced via drilling and to facilitate connection of the well to the local groundwater regime.

Groundwater sampling for the current investigation was undertaken on 29 July 2020 during a falling tide. An interface probe was first used to measure the standing water level (SWL) of the monitoring wells and also to detect light non-aqueous phase liquids (LNAPL), if present.

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

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

The sample handling and management comprised the following:

- Sample bottles were labelled with individual and unique identification including project number, Well ID and date of sampling;
- The bottles were placed in an insulated cooler and maintained at a cool temperature using ice until transported to the analytical laboratory;
- Chain-of-custody documentation was maintained at all times and countersigned by the receiving laboratory on transfer of samples; and

- Primary and replicate samples were sent to a NATA accredited laboratory, Envirolab Services Pty Ltd for analysis.

Details of the groundwater sampling are also provided on the groundwater field sheets provided in Appendix H.

8.5.3 Analytical Rationale

The analytical scheme was designed to obtain an indication of the potential presence of the identified COPC identified in the CSM (and through previous investigations), being TRH, BTEX, PAH, OCP, OPP, PCB, total phenols, chloride (as a screen for chlorine), PFAS, nitrogen (ammonia, nitrate and nitrite) and microbiological (total and faecal coliform).

The analysis of QA / QC for groundwater included the following:

- One intra-laboratory replicate groundwater sample (analysed for metals, TRH, BTEX and PAH); and
- One trip spike and trip blank and analysed for TRH and BTEX.

No rinsate sample was collected as no re-usable sampling equipment came into contact with the samples.

8.6 Landfill Gas

LFG screening was conducted by an environmental scientist from DP on 5 August 2020. The screening was undertaken to assess the potential for gases given the depth of fill observed during the fieldwork. This screening comprised two components, namely:

- A surface scan for methane (used as an indicator for LFG) using a Huberg Laser One portable methane detector with detection limit of 1 ppm. The surface scan comprised transects at 5 m spacing in accessible areas with reading taken within 50 mm of the site surface; and
- Screening of the wells using a calibrated GA5000. The sampling procedure was as follows:
  - A quick connect adaptor was attached to the monitoring well cap;
  - LFG (methane, carbon dioxide, hydrogen sulphide and carbon monoxide) concentrations were measured using the GA5000 for a minimum five minute period and until readings stabilised;
  - Landfill gas flow rates were measured using the GA5000 for a minimum five minute period and until readings stabilised; and
  - The groundwater level in each well was measured using an interface meter post monitoring.

It is noted that the main focus of screening was to check for the potential presence of LFG, accordingly LFG concentration readings were taken first. Additionally, screening was undertaken coinciding with the low tide with a view to maximising, where possible, the head space in the well (i.e., well screen above the water level).

Field sheets and calibration records are provided in Appendix H.

9. Site Assessment Criteria

The Site Assessment Criteria (SAC) applied in the current investigation is informed by the preliminary CSM and the exposure scenarios based on the proposed development. Analytical results are assessed (as a Tier 1 assessment) against the SAC comprising investigation levels, screening levels and management limits of Schedule B1 of NEPC (2013). The NEPC guidelines are endorsed by NSW EPA under the CLM Act 1997.

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

9.1 Soil

9.1.1 Health Investigation and Screening Levels

The 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.

HIL 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. Site-specific conditions may determine the depth to which HIL 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 in NEPC (2013) for different land uses, soil types and depths to contamination.
The generic HIL and HSL are considered to be appropriate for the Tier 1 assessment of contamination at the site, in the target media. HIL C and HSL C have been adopted for this investigation.

As soil types encountered were variable, the most conservative HSL for the different soil types (sand) has 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 HIL and HSL for the COPC are shown in Table 5.

Table 5: HIL and HSL for Soil Contaminants

Contaminant	HIL C and HSL C - Direct Contact (mg/kg)	HSL C for vapour intrusion (mg/kg)
Metals and Inorganics		
Arsenic	300	-
Cadmium	90	-
Chromium (VI)	300	-
Copper	17 000	-
Lead	600	-
Mercury (inorganic)	80	-
Nickel	1200	-
Zinc	30 000	-
Phenols		
(Pentachlorophenol as initial screen)	120	-
TRH		
C_6 - C_{10} (less BTEX)	5,100 (HSL)	NL
>C_{10}-C_{16} (less Naphthalene)	-	NL
BTEX		
Benzene	120 (HSL)	NL
Toluene	18,000 (HSL)	NL
Ethylbenzene	5,300 (HSL)	NL
Xylenes	15,000 (HSL)	NL
PAH		
Benzo(a)pyrene TEQ	3	-
Naphthalene	1,900 (HSL)	-
Total PAHs	300	-
OCP		
DDT+DDE+DDD	400	-
Aldrin & Dieldrin	10	-
Chlordane	70	-
Endosulfan	340	-
Endrin	20	-
Heptachlor	10	-
HCB	10	-
Methoxychlor	400	-
OPP		
Chlorpyrifos	250	-
PCB		
Total PCBs	1	-

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. Note that for all the nominated analytes the HSL is NL for a recreational / open space land use scenario.

9.1.2 Ecological Investigation Levels and Screening Levels

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

The EIL is calculated using the following formula:

EIL = ABC + ACL.

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

EIL (and ACLs where appropriate) have been derived in NEPC (2013) for only a short list of contaminants comprising arsenic, copper, chromium (III), DDT, naphthalene, nickel, lead and zinc. EIL, shown on Table 6, have been determined using the *Ecological Investigation Level Calculation Spreadsheet*, developed by the CSIRIO for NEPC. The following site specific data and assumptions have been used to determine the EILs:

- A protection level of 80% for the building and hardstand footprints and urban residential areas and public open space haven been adopted;
- Site contamination is aged (i.e.,>2 years old);
- The site is in NSW and is located in an area of low traffic volume; and
- The EILs will apply to the top 2 m of the soil profile (for the proposed development).

Table 6: Ecological Investigation Levels (EIL)

Analyte		EIL C (mg/kg)	Comments
Metals	Arsenic	100	Adopted averaged pH of 8.25 and CEC of 11 cmolc/kg; approximate clay content 10% (refer to borehole logs, Appendix H), low traffic area (NSW).
	Copper	210	
	Nickel	190	
	Total Chromium	410	
	Lead	1100	
	Zinc	520	
PAH	Naphthalene	170	
OCP	DDT	180	

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

ESL have been derived in NEPC (2013) for total petroleum hydrocarbon (TPH) fractions as well as BTEX and benzo(a)pyrene. The adopted ESL, from Table 1B (6), Schedule B1 of NEPC (2013) are shown in Table 7. The more conservative ESL for coarse and fine textures soils have been adopted given the variable soil types encountered.

Table 7: Ecological Screening Levels (ESL)

Analyte		ESL C	Comments
TRH	C6 – C10 (less BTEX)	180*	All ESLs are low reliability apart from those marked with * which are moderate reliability
	>C10-C16	120*	
	>C16-C34	300	
	>C34-C40	2800	
BTEX	Benzene	50	
	Toluene	85	
	Ethylbenzene	70	
	Total Xylenes	105	
PAH	Benzo(a)pyrene	0.7	

9.1.3 Management Limits - 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 8. The following site specific data and assumptions have been used to determine the Management Limits:

- The Management Limits will apply to any depth within the soil profile;
- The Management Limits for residential, parkland and public open space 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 8: Management Limits

Analyte		Management Limit (mg/kg)
TRH	$C_6 – C_{10}$	700
	$>C_{10}-C_{16}$	1,000
	$>C_{16}-C_{34}$	2,500
	$>C_{34}-C_{40}$	10,000

9.1.4 Asbestos in Soil

Bonded 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.

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

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

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

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

HSL for asbestos in soil, which are based on likely exposure levels for different scenarios, have been adopted in NEPC (2013) from the Western Australian Department of Health (WA DoH) publication *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia 2009* (WA DoH 2009).

On the basis of the proposed land use, and in accordance with Table 9, Schedule B1, NEPC (2013) the following asbestos HSL have been adopted:

Table 9: Health Screening Levels for Asbestos Contamination in Soil (% w/w)

Form of Asbestos	HSL C - Recreational
Bonded ACM	0.02%
FA and AF	0.001%
All Forms of Asbestos	No visible asbestos for surface soil

Where only asbestos ID analysis was undertaken (40 g sample for absence/presence), the adopted SAC was the detection of asbestos in the sample at the laboratory reporting limit (LRL) of 0.1 g/kg.

9.1.5 Microbiological activity in soil

Elevated concentrations of microbes including E. coli and total coliforms were identified by CS and have therefore been included in this assessment. Faecal coliforms and total coliforms have been selected as a screen of microbial impacts for this investigation with the LRL adopted as an initial screening level.

HUB (pseudomonas aeruginosa) were analysed to provide information on the potential for natural degradation of hydrocarbons in the environment. Given this, an assessment criterion has not been applied for this analyte.

9.2 Groundwater

The Groundwater Investigation Levels (GIL) used for interpretation of the groundwater results are based on the risks posed by contaminated groundwater, at or down-gradient of the site, as follows:

- Workers during demolition;
- Future site users, workers conducting excavations, construction or maintenance works within the site or nearby the site; and
- Risk to aquatic ecosystems - based on general site topography and interpolated groundwater flow direction, groundwater that flows beneath the site is anticipated to discharge to Kogarah Bay.

The 'marine water' guidelines have therefore been applied for the protection of aquatic ecosystems, consistent with the marine discharge point, of Kogarah Bay.

9.2.1 Groundwater Investigation and Screening Levels

The groundwater investigation and screening levels, in order of adoption priority, are based on the following:

- ANZG, '*Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2018'* (ANZG 2018);
- National Environment Protection Council, '*National Environment Protection Measure 1999, as amended'* (NEPC (2013));
- NHMRC, NRMMC. (2016). *Australian Drinking Water Guidelines 6 2011, Version 3.2.* Canberra: National Health and Medical Research Council, National Resource Management Ministerial Council; and
- Heads of EPAs Australia and New Zealand, *'PFAS National Management Plan Version 2.0- January 2020'* (HEPA, 2020).

The screening criteria assumes a slightly / moderately disturbed mater water system, at a general protection level of protection of 95%, noting that Kogarah Bay would be considered a moderately disturbed water system.

The adopted screening criterion for each analyte is shown in the summary results table, Table B6, in Appendix B.

9.3 Landfill Gas

Reference has primarily been made to the NSW EPA *'Assessment and Management Hazardous Ground Gases, Contaminated Land Guidelines'*, 2019, Amended 2020 (EPA, 2019). It is noted that the guidelines primarily focus on buildings and structures which are not proposed for the site and hence has been used as general guidance only. The guidance indicates gas screening value (GSV) of <0.07 l/hr and <0.7 l/hr for very low and low risk sites, respectively.

Reference was also made to NSW EPA *'Environmental Guidelines Solid Waste Landfills, Second Edition'* 2016 (EPA, 2016) with respect to surface emissions. The guidelines have a screening value of 500 ppm for surface emissions.

10. Results

10.1 Sub-surface Conditions

The sub-surface conditions were generally split into four separate areas:

- The car park on the western side of the site;
- The building footprint;

- The swimming pool footprint; and
- The landscaped areas surrounding the pool in the eastern portion of the site.

Cross-sections are provided in Drawings 3 and 4, Appendix A which show the general sub-surface profile encountered as part of this investigation, CS (2019a) and DP (2020b). The borehole and test pit logs for this assessment are included in Appendix H and recorded the following general sub-surface profile:

Car Park

Asphaltic Concrete: Asphaltic concrete to depths of between 0.07 m bgl and 0.22 m bgl.

Fill: Road base consisting of silty gravel fill with igneous gravels and trace clay to depths of between 0.2 m and 0.4 m bgl; overlying

Gravelly sand with igneous and sandstone gravels, trace silt and clay, rootlets, organic matter, brick and ironstone fragments to depths of between 0.3 m and 1.7 m bgl; overlying

Silty Sand / Gravelly Sand with igneous and sandstone gravels, trace clay, rootlets and organic matter and anthropogenic material including shell, timber, plastic, metal, glass, wood ash and rubber fragments to depths of between 2.7 m and 5.1 m bgl.

Sandy Clay: Medium plasticity, grey, light brown and orange mottled with trace silt and organic matter (borehole BH107 only) to a depth of 5.1 m bgl (borehole termination).

Building Footprint

Concrete Slab and Void: Concrete slab to a depth of 0.2 m bgl. Void beneath the concrete slab to depths of between 0.7 m and 1.4 m bgl.

Fill: Yellow and light brown sand with trace clay, organic matter and rootlets to depths of between 1.1 m and 1.7 m bgl (borehole termination).

Swimming Pool Footprint

Concrete Slab: Concrete slab to a depth of 0.2 m bgl.

Fill: Sand with trace igneous gravel, clay, silt and shell fragments to depths of between 0.6 m and 1.7 m bgl; overlying

Clayey sand with trace igneous gravel, rootlets and shell fragments observed in BH116 and BH118 to depths of 2.0 m bgl (borehole termination).

Landscaped Area

Topsoil: Brown and yellow silty sand with rootlets and organic matter to depths between 0.2 m and 0.7 m bgl.

Fill: Variable, heterogeneous fill across the site that included:

Silty Sand with igneous gravels, rootlets and organic matter, trace brick, metal and tile fragments to depths of between 0.8 m and 2.8 m bgl;

Clayey sand with trace silt, igneous gravels, sandstone cobbles, brick, plastic, tile, timber, glass and metal fragments to depths of between 1.2 m and 4.0 m bgl;

Brown and grey medium sand and sandy clay fill with some sandstone gravel to depths of between 1.7 m bgl in BH5; and

Sandy silt, with clay and igneous gravels, metal, wood, plastic, glass, brick, shell, rubber, tyres, tile and fibre cement sheet to depths of between 2.7 m and 5.0 m blg.

Sandy Clay: Medium plasticity, grey, light brown and orange mottled with trace silt and organic matter to a depth of up to 6.0 m bgl (borehole termination).

It is noted that given the limitations with drilling in the building and swimming pool footprints, fill is expected to extend to greater depths than that summarised above, consistent with observations in the adjacent car park and landscape areas.

Observations of potential contamination (anthropogenic inclusions) within the boreholes and test pits included timber, ash, concrete and brick rubble, glass, ceramic tile, PVC, rubber fragments, scrap metal, igneous gravel variably within all boreholes except BH105. Potential asbestos containing material (PACM) as fibre cement sheet was also observed in numerous test locations with the presence of asbestos confirmed by the laboratory. Moreover, the presence of this type of building/demolition rubble can be indicative of the presence of asbestos throughout the fill.

Staining, hydrocarbon odours and sulphurous odours were observed within some boreholes generally below suggesting the presence of contamination within the fill or groundwater observed in the investigation. These odours were observed at depth below 1.4 m bgl.

The PID results were generally low, with a maximum result of 13 ppm recorded in sample TP121/2.9-3.0.

10.2 Groundwater Levels and Field Parameters

Groundwater levels were measured in the monitoring wells BH106 to BH110 at the time of the sampling event, 29 July 2020, on the falling to low tide. The field measurements (including stabilised field parameters) are summarised in Table 10 below (refer to field sheets presented in Appendix H).

Table 10: Groundwater Details and Water Levels

Well	Water Level (m bgl)	Water Level (m AHD)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Redox (mV)
BH106	2.26	1.34	21.1	0.02	1291	6.68	-100.6
BH107	1.54	1.76	19.1	0.05	1458	6.75	-182.3
BH108	2.01	1.59	17.6	0.08	794	7.32	-136.8
BH109	2.47	1.33	19.7	0.01	1100	7.22	138.1
BH110	2.61	1.19	19.6	0.01	4345	7.22	-153.1

Note: Groundwater levels may be impacted by tidal influences from Kogarah Bay.

Whilst the groundwater levels were similar, overall, the results suggest groundwater flow to the east in the direction of Kogarah Bay.

All water in the wells was found to be pale yellow to clear. A slight hydrocarbon and slight sulphur odour was observed in all groundwater monitoring wells.

The dissolved oxygen ranged between 0.02 ppm to 0.08 ppm indicating anaerobic water. Conductivity ranged between 794 µS/cm to 4345 µS/cm indicating marginal to saline water. The pH was neutral and redox indicated reducing conditions.

10.3 Analytical Laboratory Results

The results of laboratory analysis are summarised and compared to the SAC adopted in the following tables in Appendix B:

- Table B1: Summary of Soil Laboratory Results - Metals, TRH, TPH, BTEX, PAH;
- Table B2: Summary of Soil Laboratory Results- Phenol, OCP, OPP, PCB, Microbiological, Chlroide;
- Table B3: Summary of Asbestos Results;
- Table B4: Summary of Acid Sulfate Soil Results;
- Table B5: Summary of Preliminary Waste Classification Results; and
- Table B6: Summary of Results of Groundwater Results.

The soil and groundwater laboratory certificates together with the chain of custody and sample receipt information are provided in Appendix I. The QA / QC results for both soil and groundwater are discussed in Appendix C.

10.4 Landfill Gas Screening

LFG screening was conducted by an environmental scientist from DP on 5 August 2020. Field sheets from the monitoring are provided in Appendix H.

Surface scanning recorded all concentrations for methane below 5 ppm. This is consistent with background levels.

The maximum recorded LFG concentrations and flow rate range at each location are summarised below in Table 11.

Table 11: Landfill Gas Screening - Maximum Measurements

Location / ID	Methane (% v/v)	Carbon Dioxide (% v/v)	Hydrogen Sulfide (ppm)	Carbon Monoxide (ppm)	Flowrate Range (L/hr)
BH106	15.3	15.9	0	5	0 to 0.1
BH107	0.6	3.2	0	1	-17.3 to -0.1
BH108	0.2	0.3	0	0	-22.2 to -0.6
BH109	6.0	1.1	0	0	-26.0 to -4.0
BH110	7.5	14.2	0	0	0 to 0.1

The monitoring was undertaken on a day of steady atmospheric pressure which was recorded at 1012 Mb.

It is noted that the results may be influenced by changes in atmospheric conditions and tidal influence on the sub-surface profile that could cause a pumping effect in under favourable conditions.

11. Discussion of Results

11.1 Site History

Based on site history, it appears that in the first half of the twentieth century the site was used for residential and possible agricultural uses and was subsequently reclaimed from Kogarah Bay using uncontrolled fill from variable sources (potentially including domestic waste). The site has been used for recreational purposes since *circa* 1953 until the present.

The neighbouring area has been predominantly recreational in nature from at least 1943 until the present, with land reclamation activities also undertaken to the north of the site. This involved in-filling of the former mangrove / estuarine areas that lined Kogarah Bay.

The potential sources of historical contamination identified are from uncontrolled and imported fill, past and current site activities, deterioration of past and current buildings, and adjacent site uses (past and present).

11.2 Soil

11.2.1 Site Suitability

The results for the soil contamination (site suitability) analysis are presented in Tables B1, B2 and B3, Appendix B.

From the soil samples tested, all reported concentrations of chemical contaminants were below the adopted SAC with the exception of chromium, copper, lead, TRH fraction F2 (C_{10}-C_{16} less naphthalene), TRH fraction F3 (C_{16}-C_{34} less naphthalene), B(a)P, BaP TEQ, faecal coliform and total coliform. It is noted that detectable concentrations within the SAC were recorded for selected heavy metals, TRH, BTEX, PAH and OCP.

Exceedances of the HIL and other health related screening levels in the upper 3 m of the soil profile were:

- Chromium in samples BH102/2.5-3.0 (910 mg/kg) and TP130/2.7-2.8 (990 mg/kg) exceeding the HIL of 300 mg/kg;
- Lead in sample BH106/2.5-3.0 (710 mg/kg) exceeding the HIL of 600 mg/kg. Based on statistical analysis which determined the 95% upper confidence level (UCL) for lead at the site was 131 mg/kg, this exceedance was not considered to be significant;
- B(a)P TEQ in samples BH104/2.6-3.1 (4.1 mg/kg), BH106/0.8-1.0 (16 mg/kg), BH117/0.2-0.4 (4.4 mg/kg) and TP 124/0.8-0.9 (16 mg/kg) exceeding the HIL of 3 mg/kg. Based on statistical analysis which determined the 95% UCL for B(a)P TEQ at the site (excluding the BH106 and TP124 hotspots) was 0.9 mg/kg, the minor exceedances at BH104 and BH117 are not considered to be significant;
- Faecal coliform in samples TP121/1.9-2.0 (200 MPN/100g), TP122/2.9-3.0 (200 MPN/100g), TP130/0.6-0.7 (500 MPN/100g) and TP130/2.7-2.8 (3300 MPN/100g) exceeding the LRL screening value of 200 MPN/100g; and
- Total coliform in TP120/2.5-2.60 (400 MPN/100g), TP121/0.6-0.7 (900 MPN/100g), TP121/1.9-2.0 (500 MPN/100g) and TP121/2.9-3.0 (700 MPN/100g), TP122/2.9-3.0 (>180000 MPN/100g), TP123/0.6-0.7 (1200 MPN/100g), TP123/2.4-2.5 (900 MPN/100g), and TP130/2.7-2.8 (13000 MPN/100g) exceeding the LRL screening value of 200 MPN/100g.

With respect to the chromium and B(a)P TEQ exceedances above, given the non-volatile to semi-volatile nature of these contaminants and the proposed site use (i.e., open space), the main risk to human health posed by these exceedances is considered to be via direct contact. Moreover, it is noted sample TP124/0.8-0.9 is located in the eastern berm at around 4 m AHD, and hence would be excavated as part of the works to reach the final surface level of around 3 m AHD.

Regarding the detection of faecal and total coliforms, these were primarily detected above the LRL at sample locations adjacent to the buildings and the small pool (at the northern end of the site). It is noted that the higher concentrations were generally near or below the depth of groundwater. This is consistent with the source being from the site's recent pool operations (e.g., bathroom facilities and the small pool used by children).

Exceedances of the EIL/ESL in the upper 2 m of the soil profile were:

- Copper in samples TP128/0.9-1.0 (270 mg/kg) and TP129/0.4-0.5 (250 mg/kg) exceeding the SAC of 210 mg/kg. Based on statistical analysis which determined the 95% UCL for copper at the site was 48 mg/kg, these exceedances were not considered to be significant;
- TRH fraction F2 in sample BH111/1.7-1.8 (340 mg/kg) exceeded the ESL of 120 mg/kg;
- TRH fraction F3 in samples BH106/0.8-1.0 (860 mg/kg), BH111/1.7-1.8, BH111/2.4-2.8 (1200 mg/kg), TP124/0.8-0.9 (1700 mg/kg), TP129/1.9-2.0 (360 mg/kg), TP130/0.0-0.1 (340 mg/kg), exceeding the ESL of 300 mg/kg. Based on statistical analysis which determined the 95% UCL for TRH fraction F3 at the site was 194 mg/kg, the minor exceedances at TP129 and TP130 were not considered to be significant; and
- B(a)P in samples BH101/0.3-0.5 (1.1 mg/kg),BH106/0.8-1.0 (10 mg/kg), BH107/1.8-2.0 (1.9 mg/kg), BH117/0.2-0.4 (3.2 mg/kg), BH118/0.2-0.3 (1.4 mg/kg), TP124/0.8-0.9 (16 mg/kg), TP129/1.9-2.0 (0.87 mg/kg) and TP130/0.0-0.1 (1.3 mg/kg) exceeding the ESL of 0.7 mg/kg.

With respect to the B(a)P exceeding the NEPC (2013) low reliability ESL, it is noted that when these results are considered against the CRC CARE (2017) derived ecological guidelines (urban residential and public open space) which provide a high reliability for 85% protection level of species of 33 mg/kg (95% confidence limits of 21-135 mg/kg), there are no detected exceedances for B(a)P, even when considering the lower 95% confidence limit of 21 mg/kg. Given this, the B(a)P ESL exceedances were not considered to be of significant concern.

Chloride was recorded above the LRL in five of the 30 samples analysed with concentrations between 20-70 mg/kg. Detections were considered to be generally low and focused around the existing buildings (i.e., locations BH113, BH114, BH115, BH121, BH128).

HUB was detected above the LRL of 10 cfu/g in two of 19 samples (TP120/0.1-0.2 (70 cfu/g) and TP128/0.9-1.0 (70 cfu/g)) indicating generally low concentrations of HUB and reduced potential for natural attenuation of hydrocarbons through microbiological degradation.

Silica gel clean-up was undertaken on six selected samples where initial TRH results recorded elevated concentrations. Analysis was undertaken to gain an understanding of the TPH component of the reported TRH. The results generally indicated relatively low TPH concentrations compared to the initial TRH results. This would suggest, as can be common in estuarine/mangrove/marine environments, that a significant portion of the detected hydrocarbon concentrations (as reported in the TRH result) may be attributable to natural/non-petroleum based sources.

Of the 11 test pits where bulk 10 L samples were collected, and sieve testing undertaken for bonded ACM, all recorded the presence of ACM (at varying quantities and concentrations) except for TP122. Moreover, TP121 and TP123-130 recorded the presence of ACM in at least one sample from the upper 2 m. It is noted that the eight bulk samples collected between 0.5 m and 1.6 m bgl in BH101 (G) to BH106 (G) did not detect ACM.

Selected fragments of fibre cement material collected from TP121/0.6-0.7 (chrysotile), TP125/0.2-0.3 (chrysotile), TP127/0.3-0.4 (chrysotile), TP128/0.9-1.0 (chrysotile, amosite, crocidolite) and TP129/0.4-0.5 (chrysotile) were sent for laboratory analysis and all confirmed the presence of asbestos. In addition, FA/AF analysis recorded detections below the SAC in samples BH104 (G)/0.1-0.8 (0.0055g/ <0.001% w/w), TP120/2.0-2.1 (0.0001 g/ <0.001% w/w) and TP124/4.5-4.6 (0.0021g/ <0.001% w/w).

Furthermore, it is noted that elevated concentrations for metals, TRH, PAH and asbestos within soils at depth have also been recorded. Whilst these contaminants would not be considered to pose a direct risk to site users and terrestrial ecological receptors and hence do not require remediation in this regard, their mobility via groundwater would need to be considered (discussed further in Section 11.3). In this regard, whilst many of the sample locations were terminated in fill due to collapse, refusal or practical maximum depth of excavation, and hence the full vertical extent of the fill has not yet been delineated across the whole site, this is not considered to be of significant concern given the groundwater investigation works also undertaken as part of this investigation.

11.2.2 Acid Sulfate Soils Results

The action criteria for ASS were sourced from ASSMAC (1998). The Action Criteria for disturbance of greater than 1000 tonnes for fine texture soils are outlined in Table 12 below.

Table 12: ASSMAC Action Criteria

Screening Criteria		Threshold[3]
Laboratory Results pH	**pHfox**	<3.5[2]
	Change	>1[2]
Acid Trail (mol H+/tonne) Action Criteria	**TPA/TAA**	18
Chromium Reducible Sulphur	**Scr**	0.03

Notes:

TPA Total Potential Acidity
TSA Total Sulfidic Acidity (TPA-TAA)
pHf non-oxidised pH
pHfox oxidised pH
[1] Indicative value only for Actual Acid Sulfate Soil
[2] Indicative value only for Potential Acid Sulfate Soil
[3] ASSMAC Action Criteria for disturbance of greater than 1000 tonnes.

The results for the pH screening and Scr suite testing are presented in Table B4, Appendix B.

The laboratory screening results suggest that ASS could be present at the site and were used to select samples for quantitative laboratory analysis (Scr Suite), consistent with the conclusions of CS (2019a). The Scr testing was subsequently undertaken on fifteen selected samples.

The laboratory results indicate that ASS is present at depth within the natural soils and the shallower fill profile around BH111 and TP121 from 1.2 m bgl. Moreover, whilst the screening results do not suggest any broad scale ASS impact of the shallower fill, pockets of ASS within the shallower fill, as indicated by the results from BH111 and TP121 may be encountered.

In this regard, whilst ASS are not typically associated with fill, DP has previously encountered this scenario in reclaimed areas where ASS has been recorded in the fill, possibly due to use of dredged or excavated sediments used in the fill or a mixing occurring with the river/bay sediment during fill placement / reclamation.

It is noted that the results from within the footprint of the pools (BH116, BH118 and BH119) did not indicate the presence of ASS.

Given the depth that ASS has been encountered, even within the fill (i.e., 1.2 m bgl, ~2.4 m AHD), the disturbance of ASS is not expected to be encountered during works. Should any materials that are suspected of being potential ASS be disturbed during remedial works these would need to be subject to further ASS testing and possibly (lime) treatment. An ASS management plan would also need to be implemented in this scenario.

11.2.3 Preliminary Waste Classification

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

The CT, SCC, and TCLP values relevant to this preliminary *in situ* waste classification are shown in Table B5, Appendix B.

The following Table 13 presents the results of the six-step procedure outlined in NSW EPA (2014) for determining the type of waste and the waste classification.

Table 13: Six Step Classification Procedure

Step	Comments	Rationale
1. Is the waste special waste?	Yes	ACM were observed in test pits TP120, TP121, TP123 to TP130. Asbestos was also detected by the analytical laboratory in BH102, BH104, BH108, TP120, TP121, TP124, TP125, TP127, TP128 and TP129.
2. Is the waste liquid waste?	No	The fill comprised a soil matrix.
3. Is the waste “pre-classified”?	No	The fill is not pre-classified with reference to EPA (2014).
4. Does the waste possess hazardous waste characteristics?	No	The waste was not observed to contain or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances, corrosive substances, coal tar, batteries, lead paint or dangerous goods containers.
5. Determining a wastes classification using chemical assessment	Conducted	Refer to Table B5 (Appendix B).
6. Is the waste putrescible or non-putrescible?	No	The fill does not contain materials considered to be putrescible [a].

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

As shown in Table B5, Appendix B, all contaminant concentrations for the analysed fill samples were within the contaminant thresholds (CT1s) for General Solid Waste with the exception of chromium, lead, mercury, nickel and BaP in selected boreholes. TCLP tests were conducted for the analytes exceeding the CT1 thresholds on representative samples, focusing on the upper soil profile which would more likely require off-site disposal.

Based on the results, the samples were within SCC1 and TCLP1 criteria with the exception of lead in BH107/3.0-3.5 (140 mg/kg and TCLP 6 mg/L) and BH111/4.5-5.0 (1,600 mg/kg) exceeded the SCC1 criterion of 1,500 mg/kg.

As outlined in Section 11.2.1, widespread detection of asbestos was recorded. Given that any contamination of soil with asbestos is considered Special Waste (asbestos) under EPA (2014), any soils requiring off-site disposal should be considered to be asbestos impacted based on the current data. It is noted that an intensive sampling and validation process to confirm the absence of asbestos in the soils to be disposed off-site would be required to potentially alter the Special Waste (asbestos) classification.

Moreover, ASS has been detected in fill below at the shallowest depth of 1.2 m bgl (~2.4 m AHD) although this does not appear to be widespread.

Given the above, the fill in the upper 1.2 m is preliminary classified as General Solid Waste (non-putrescible) Special Waste (asbestos).

Soil below 1.2 m bgl would hold the same classification if confirmed not to contain ASS, otherwise would be classified as General Solid Waste (non-putrescible) Special Waste (asbestos), Acid Sulphate Soils.

Further assessment would be required to confirm the classification of the fill at depth at BH107 and BH111 given the detection of elevated lead at these locations (as indicated above).

It is noted that the above waste classification is preliminary in nature and that a final waste classification of soils prior to off-site disposal is required.

11.3 Groundwater

The results for the groundwater contamination testing are presented in Tables B6, Appendix B.

From the groundwater samples tested, all reported concentrations of contaminants were below the adopted SAC with the exception of copper, zinc, anthracene, phenanthrene and ammonia in some samples.

Exceedances of the SAC have been noted as:

- Copper in sample BH108 (15 µg/L) exceeding the GIL of 1.3 µg/L;
- Zinc in samples BH106 (20 µg/L), BH107 (16 µg/L), BH108 (22 µg/L) and BH110 (38 µg/L) exceeding the GIL of 15 µg/L;
- Anthracene in BH109 replicate sample BD1/20200729 (0.2 µg/L) exceeding the GIL of 0.1 µg/L;

- Phenanthrene in sample BH109 (1 µg/L) and in the replicate sample BD1/20200729 (0.9 µg/L) exceeding the GIL of 0.6 µg/L; and
- Ammonia in samples BH106 (20 mg/L), BH107 (12 mg/L), BH108 (1.5 mg/L, BH109 (5 mg/L) and BH110 (9.4 mg/L) exceeding the GIL of 0.91 mg/L.

Given the low reliability of the phenanthrene and anthracene GIL, and that these exceedances were minor and only recorded in BH109, these PAH detections were not considered to be significant.

The detections in all wells above the LRL of nickel, zinc, metals, TRH, PAH (except BH108), chlorobenzene (except BH108), ammonia and nitrate (except BH110) along with reported concentrations of copper in BH106 and BH108 suggest that impact on the local groundwater quality is more widespread and not limited to the site. This is also supported by the highest concentrations of PFOS being recorded in BH106 located in the western area of the site and lower concentrations being recorded in the hydraulic down-gradient wells BH108 and BH110 adjacent to eastern site boundary.

Silica gel clean-up was undertaken on samples BH106, BH107, BH109 and BH110 given the detections of TRH in the initial analysis. All results recorded TPH concentrations below LRL indicating the initial TRH concentrations were likely associated with naturally occurring hydrocarbons. Given this, the TRH detections were not considered to be of concern.

With respect to the ammonia, nitrate and nitrite concentrations recorded, these were considered to be more consistent with reclaimed land using uncontrolled fill in estuarine / mangrove / marine environments than a former landfill.

The elevated concentrations of total and faecal coliform recorded in some of the soil results from adjacent to the buildings and small pool have not been replicated in the groundwater results. This suggests these impacts are relatively immobile and are most likely associated with leakage of underground services associated the site's bathrooms and possibly the use of the small pool by children.

It is noted that chloride was recorded in all samples, although an elevated concentration was recorded in BH110 (1,200 mg/L) compared to 69-120 mg/L recorded in the other samples analysed. This is consistent with the outflow pipe and the pump / storage room located in the south-eastern corner of the site up-gradient of BH110).

In summary, the groundwater results do not indicate significant impact on groundwater quality from the site with the potential exception of some chloride impacts in the south-eastern corner of the site. *Ipso facto,* leaching of contaminants from fill above the water table is not considered to be a significant concern. It is therefore considered that results are reflective of broader groundwater quality in the area of the site and not limited to impacts from the site.

11.4 Landfill Gas

Monitoring from the wells recorded generally low concentrations of methane and associated bulk gases, consistent with reclaimed land using uncontrolled fill in estuarine / mangrove / marine environments (and the groundwater results). LFG flow rates were variable, however, were generally negative or only very marginally positive indicating limited release of LFG from the surface, consistent

with the surface monitoring results. It is noted that the flow rates (and to a lesser extent concentrations) may have also been impacted by the standing water levels in the wells, most notably in BH107 and BH109.

A GSV generated from the initial borehole screen, adopting the maximum gas concentration (carbon dioxide) and highest positive flow rate of 0.1 l/hr is calculated to be 0.0159 l/hr (and hence Characteristic Gas Situation (CGS) of 1). Table 6 of NSW EPA (2019) considers a site with such a CGS of 1 to be very low risk.

Given the proposed open space use of the site, the risk to site users from LFG is not considered to be of significant concern.

Further consideration is required to be given to LFG risk should enclosed spaces or services be built/installed. In addition, sub-surface penetration and excavation works should also take into consideration the presence of LFG when undertaking works.

12. Conclusions and Recommendations

With respect to soil chemical contamination the following exceedances are to be remediated and / or further investigated (including delineation) for any development works in the relevant area.

- Chromium in samples BH102/2.5-3.0 and TP130/2.7-2.8 due to HIL exceedances;
- Lead in sample BH1/1.5-1.9 (from CS (2019a)) due to HIL exceedance;
- Zinc in sample BH1/1.5-1.9 (from CS (2019a)) due to EIL exceedance;
- B(a)P TEQ in samples BH106/0.8-1.0 and TP124/0.8-0.9 due to HIL exceedances;
- TRH fraction F2 in sample BH111/1.7-1.8 due to ESL exceedance; and
- TRH fraction F3 in samples BH106/0.8-1.0, BH111/1.7-1.8, BH111/2.4-2.8 and TP124/0.8-0.9 due to ESL exceedances.

It is noted that sample TP124/0.8-0.9 is located in the eastern berm at around 4 m AHD and hence would be excavated as part of the works to reach a final surface level of around 3 m AHD. This would therefore address the HIL and ESL exceedances noted above at TP124 provided the excavated soils are not relocated within the site at a shallower depth.

Regarding the lead and zinc exceedances recorded in CS (2019a), these are located within the Tree Protection Zone (TPZ) and at depth. Given the results in the adjacent test pit (TP130) recorded significantly lower metal concentrations in samples TP130/0-0.1 and TP130/1-1.2 and the potential damage and limitations due to excavating within the TPZ (i.e., limited to 0.1 m to 0.15 m depth), removal of this contamination would be considered to provide an overall negative outcome for the project and hence it is recommended that this contamination is left in place and managed.

With respect to the chromium exceedance in sample TP130/2.7-2.8, given the depth at which the sample was taken, the non-volatile nature of the metal contamination and the shallow nature of groundwater at the site this would be addressed through generation of a barrier between the

contamination and site users and managed under a Long Term Environmental Management Plan (LTEMP).

Moreover, as redevelopment of the car park is not proposed, the exceedances outlined above at sample locations BH102, BH106 and BH111 would not require remediation for the project given they are located outside the project area subject to the development application.

Apropos the asbestos contamination, given the detection of asbestos (at varying concentrations) in the vast majority of test pits, this indicates that asbestos impacts are likely to be widespread at the site. Whilst a process of trying to remediate areas impacted with asbestos above the SAC could be considered, given the sporadic nature of asbestos contamination, there is a high risk that any such approach would result in greater areas requiring excavation than may be assumed based on the current data set. In addition, it is highly likely that the soils in the final landform would be impacted by asbestos, albeit at low concentrations within the SAC. Given this, the presence of ASS, the protection of tree root zones for those trees proposed to be retained and the shallow groundwater, DP would recommend a cap and contain remedial approach, thereby forming a physical barrier between the asbestos impacted soils and site users with the contamination managed under a LTEMP.

The fill in the upper 1.2 m is preliminarily classified as General Solid Waste (non-putrescible) Special Waste (asbestos) for the purpose of off-site disposal. Soil from below 1.2 m would hold the same waste classification if confirmed not to contain ASS, otherwise it would be classified as General Solid Waste (non-putrescible) Special Waste (asbestos), Acid Sulphate Soils. Further assessment would be required to confirm the classification of the fill at depth at BH107 and BH111 given the detection of elevated lead at these locations (refer to Section 11.2.3), noting that works in these areas is not proposed. It is further noted that a final waste classification of soils prior to off-site disposal is required.

The elevated concentrations of total and faecal coliform recorded in some of the soil results from adjacent to the buildings and small pool have not been replicated in the groundwater results. This suggests these impacts are relatively immobile and are most likely associated with leakage of underground services associated the site's bathrooms and possibly the use of the small pool by children. Removal of the existing structures and sub-surface infrastructure (e.g., pipes) along with the placement of a barrier over these impacted soils (as recommended to address asbestos impacts) would address any potential risk to future site user.

The groundwater results do not indicate significant impact on groundwater quality from the site. Potential chloride impacts in the south-eastern corner of the site are expected to reduce over time following the removal of existing structures and sub-surface infrastructure (e.g., pipes) as part of the works and when the site no longer being used as pool. It is therefore considered that the recorded levels of groundwater contamination are reflective of broader groundwater quality in the area of the site and not limited to impacts from the site. Moreover, notwithstanding the technical and feasibility constraints that the site presents given its location adjacent to Kogarah Bay, shallow groundwater, deep fill and deep rock profile (more than 32 m bgl in the north-eastern area of the site), it is considered groundwater remediation of the site (which forms a subsection of the reclaimed land within Carss Park / Carss Park Flats) would provide minimal to negligible environmental benefit. Any approach to improving groundwater quality at the site and neighbouring areas should therefore be undertaken at a broader level.

Given the depth that ASS has been encountered, even within the fill (i.e., 1.2 m bgl, ~2.4 m AHD), the disturbance of ASS is not expected to occur during works. Should any materials that are suspected of being potential ASS be disturbed during remedial works these would need to be subject to further ASS testing and possibly (lime) treatment. An ASS management plan would also need to be implemented in this scenario.

Considering the proposed open space use of the site, the risk to site users from LFG is not considered to be of significant concern. Further consideration is required to be given to LFG risk should enclosed spaces or services be built / installed. In addition, sub-surface penetration and excavation works should also take into consideration the presence of LFG when undertaking works.

Given the above, it is recommended that:

- A RAP is developed which details the remedial works required to render the site suitable for the proposed development. The RAP is to include, *inter alia*, an Unexpected Finds Protocol procedure outlining the procedures that would be undertaken in the event that additional unexpected contamination is encountered;
- An asbestos management plan is developed prior to commencing works;
- Management of potential exposure to LFG and microbiological (faecal and total coliform) contamination during excavation works is addressed in the site's construction environmental management plan prior to commencing works; and
- A LTEMP is developed on completion of the remedial works for long term management of the site and the LTEMP subject to a notification mechanism (such as on Council's Section 10.7 Planning Certificate).

13. Concluding Remarks

In summary, DP considers that the site can be rendered suitable for the proposed open space land use subject to development of a suitable RAP, undertaking the remediation works, subsequent validation of these works and the development and implementation of an LTEMP once remediation has been completed.

14. References

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- NSW EPA. (2020). *Guidelines for Consultants Reporting on Contaminated Land.* Contaminated Land Guidelines: NSW Environment Protection Authority.

15. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report for this project at Kogarah War Memorial Swimming Pool in general accordance with DP's proposal SYD200681 dated 1 July and acceptance received from SJB Planning Pty Ltd on behalf of SJB Architects Pty Ltd. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of SJB Architects for this project only and for the purposes as described in the report. It may also be used by Georges River Council under the same DP Conditions of Engagement. 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 environmental components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

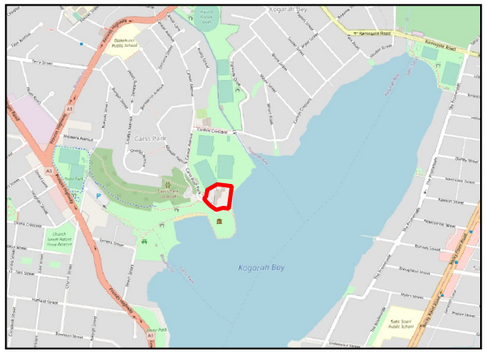
Douglas Partners Pty Ltd

Appendix A

Drawings and Photographs

Appendix A1

Drawings



LOCALITY MAP

Notes:
1. Basemap from nearmap.com (dated 01/06/2020)
2. Test locations shown are approximate only

Legend

- Approximate Site Boundary
- Approximate Location of Previous Shoreline
- Geotechnical Cross Section A- A'

Current Test Locations

- Env/ Geo Boreholes
- Test Pits
- Wells
- Hand Augers

0 15 30 45 m

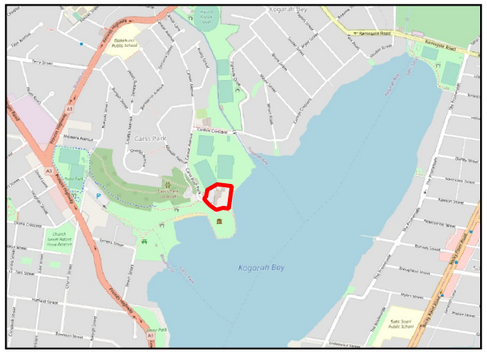
Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT:	SJB Architects		
OFFICE:	Sydney	DRAWN BY:	NW
SCALE:	1:700 @ A3	DATE:	21.08.2020

TITLE: **Current Investigation Test Location Plan**
Kogarah War Memorial Pool
Carss Park

N

PROJECT No:	99751.00
DRAWING No:	1
REVISION:	0



LOCALITY MAP

Notes:
1. Basemap from nearmap.com (dated 01/06/2020)
2. Test locations shown are approximate only

Legend

- Approximate Site Boundary
- Approximate Location of Previous Shoreline

Previous Test Locations

- CPT Locations (DP, 2018)
- Borehole Locations (DP, 2018)
- Geotechnical Investigation (Construction Sciences, 2019)

Current Test Locations

- Env/ Geo Boreholes
- Test Pits
- Wells
- Hand Augers
- CPTs

0 15 30 45 m

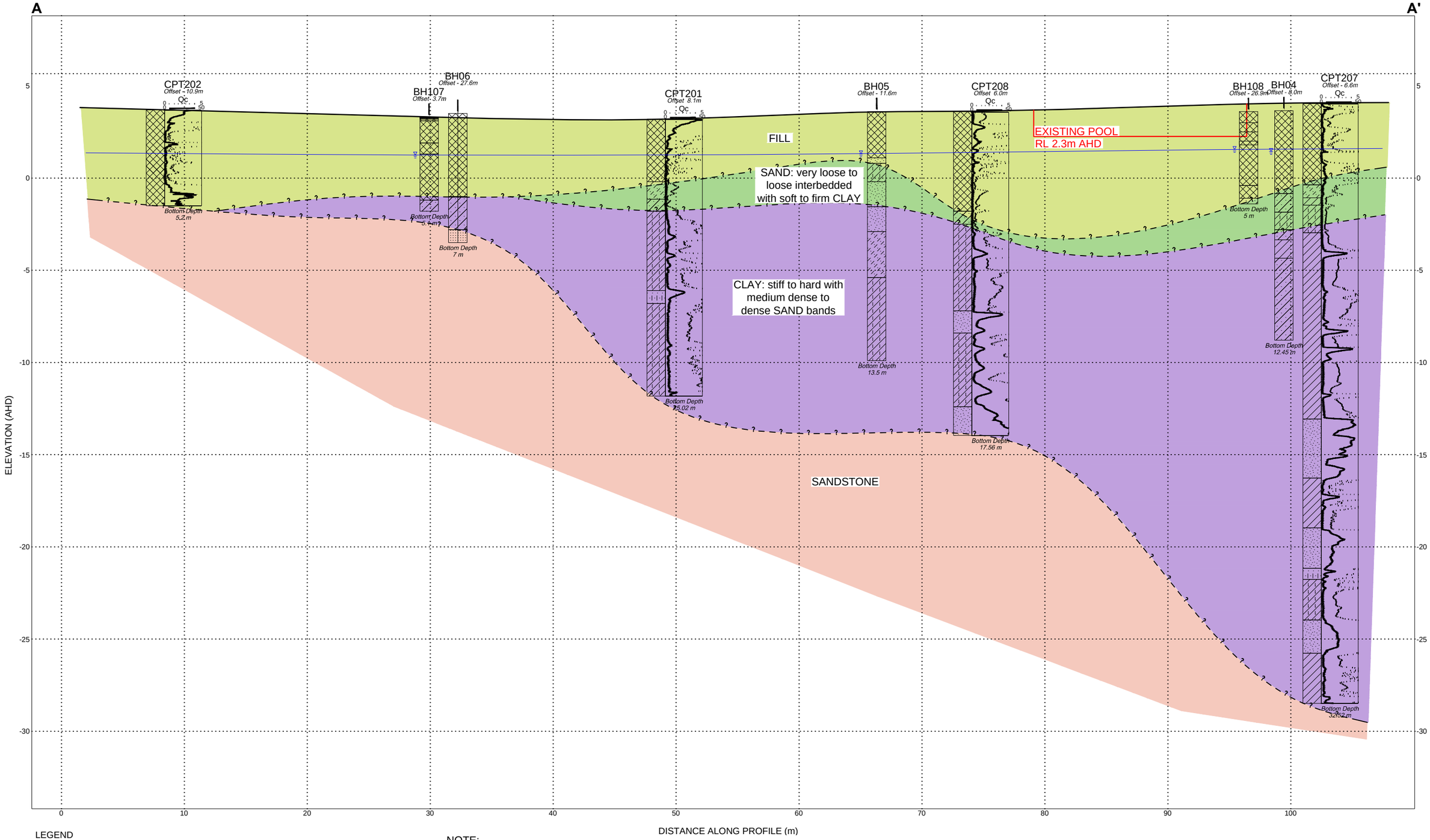
Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT:	SJB Architects		
OFFICE:	Sydney	DRAWN BY:	NW
SCALE:	1:700 @ A3	DATE:	21.08.2020

TITLE: **Current and Previous Test Location Plan**
Kogarah War Memorial Pool
Carss Park

N

PROJECT No:	99751.00
DRAWING No:	2
REVISION:	0



LEGEND

- Fill
- Sandy Clay
- Silty Clay
- Clay
- Sand
- Clayey Sand
- Sandstone
- Silty Sand

NOTE:

1. Subsurface conditions are accurate at borehole locations. Variations in subsurface conditions may occur between borehole locations. Interpreted strata boundaries are approximate and should be used as a guide only.
2. Summary logs only. Should be read in conjunction with detailed logs.
3. Test locations surveyed using differential GPS and measured using offsets from site features
4. BH04, BH05 and BH06 taken from Construction Sciences Report 5017200024 version 4 dated 12 November 2019

TESTS / OTHER

- Interpreted Geotechnical Boundary
- Measured Water level
- Infered Groundwater Table

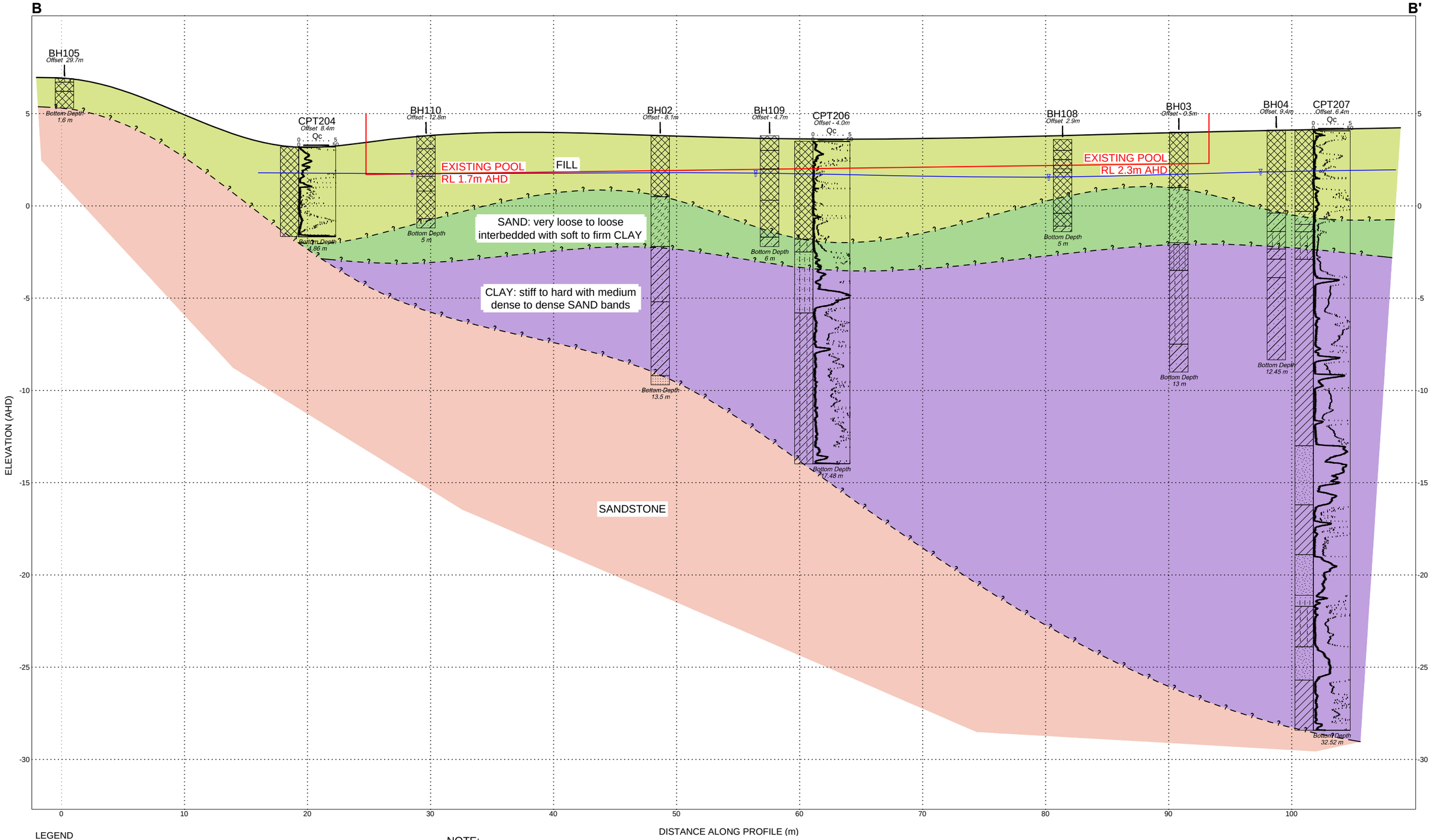
0 6

Horizontal Scale (metres)

Vertical Exaggeration = 1.5

Douglas Partners
Geotechnics | Environment | Groundwater

CLIENT: SJB Architects		TITLE: Cross-Section A-A'	PROJECT No: 99751.00
OFFICE: Sydney	DRAWN BY: JDB	Proposed Pool and Park Redevelopment	DRAWING No: 3
SCALE: 1:300 (H) 1:200 (V) @ A3	DATE: 21.08.2020	Kogarah War Memorial Pool, Carss Park	REVISION: 0



LEGEND

- Fill
- Clayey Sand
- Sandy Clay
- Sandstone
- Sandy Silty Clay
- Silty Clay
- Clay
- Topsoil
- Silty Sand
- Sand

NOTE:

1. Subsurface conditions are accurate at borehole locations. Variations in subsurface conditions may occur between borehole locations. Interpreted strata boundaries are approximate and should be used as a guide only.
2. Summary logs only. Should be read in conjunction with detailed logs.
3. Test locations surveyed using differential GPS and measured using offsets from site features
4. BH02, BH03 and BH04 taken from Construction Sciences Report 5017200024 version 4 dated 12 November 2019

TESTS / OTHER

- Interpreted Geotechnical Boundary
- Measured Water level
- Infered Groundwater Table

0 6
Horizontal Scale (metres)

Vertical Exaggeration = 1.5

Douglas Partners
Geotechnics | Environment | Groundwater

CLIENT: SJB Architects		TITLE: Cross-Section B-B'	PROJECT No: 99751.00
OFFICE: Sydney	DRAWN BY: JDB	Proposed Pool and Park Redevelopment	DRAWING No: 4
SCALE: 1:300 (H) 1:200 (V) @ A3	DATE: 21.08.2020	Kogarah War Memorial Pool, Carss Park	REVISION: 0

Appendix A2

Site Photographs

Photo 1: Looking north showing a large crack in the pool wall

Photo 2: TP121 looking east showing fill material from beneath water table

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99751.00
	Kogarah War Memorial Swimming Pool	PLATE No:	1
	78 Carwar Avenue, Carss Park	REV:	1
	CLIENT SJB Architects	DATE	28/08/20

Photo 3: BH114 showing the void beneath the concrete slab

Photo 4: TP123 looking south east showing stockpiles of fill layers

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99751.00
	Kogarah War Memorial Swimming Pool	PLATE No:	2
	78 Carwar Avenue, Carss Park	REV:	1
	CLIENT SJB Architects	DATE	28/08/20

Photo 5: TP126 looking west showing the soil profile

Photo 6: P128 looking east showing soil profile and groundwater at base of test pit

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99751.00
	Kogarah War Memorial Swimming Pool	PLATE No:	3
	78 Carwar Avenue, Carss Park	REV:	1
	CLIENT SJB Architects	DATE	28/08/20

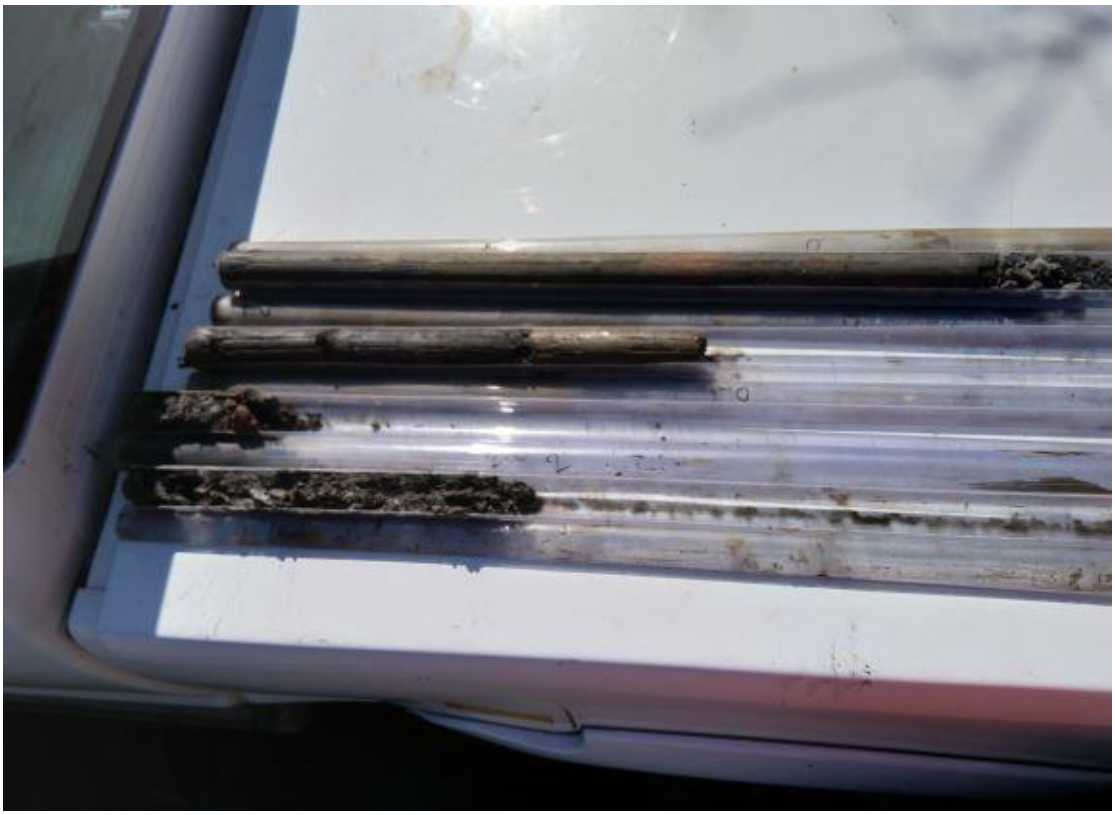


Photo 7: BH106 push tube sample showing loss of sample return

Photo 8: TP124 looking east showing soil profile with groundwater seepage at base of excavation

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99751.00
	Kogarah War Memorial Swimming Pool	PLATE No:	4
	78 Carwar Avenue, Carss Park	REV:	1
	CLIENT SJB Architects	DATE	28/08/20

Photo 9: Looking south showing the car park from the vicinity of BH101

Photo 10: Looking west showing the car park from the vicinity of BH103

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99751.00
	Kogarah War Memorial Swimming Pool	PLATE No:	5
	78 Carwar Avenue, Carss Park	REV:	1
	CLIENT SJB Architects	DATE	28/08/20

Photo 11: Looking south from the vicinity of TP 122 showing the location of TP 120

Photo 12: Looking west from the vicinity of TP124 showing the north eastern portion of the site

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99751.00
	Kogarah War Memorial Swimming Pool	PLATE No:	6
	78 Carwar Avenue, Carss Park	REV:	1
	CLIENT SJB Architects	DATE	28/08/20

Photo 13: Looking north from the vicinity of BH109 showing the eastern site boundary and the berm

Photo 14: Looking north from the vicinity of TP128 showing the south eastern portion of the site

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99751.00
	Kogarah War Memorial Swimming Pool	PLATE No:	7
	78 Carwar Avenue, Carss Park	REV:	1
	CLIENT SJB Architects	DATE	28/08/20

Photo 15: Looking south showing the location of TP120

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99751.00
	Kogarah War Memorial Swimming Pool	PLATE No:	8
	78 Carwar Avenue, Carss Park	REV:	1
	CLIENT SJB Architects	DATE	28/08/20

Appendix A3

Notes About this Report

About this Report

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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.

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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

Summary Results Tables

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Table B1: Summary of Soil Laboratory Results – Metals, TRH, TPH, BTEX, PAH

		Metals								TRH						TPH (Silica Gel Cleanup)			BTEX				PAH			
		Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	TPH>C10-C16	TPH >C16-C34	TPH >C34-C40	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene [b]	Benzo(a)pyrene (BaP)	Benzo(a)pyrene TEQ	Total PAHs
	PQL	4	0.4	1	1	1	0.1	1	1	25	50	25	50	100	100	50	100	100	0.2	0.5	1	1	1	0.05	0.5	0.05
Sample ID	Sample Date	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
BH101/0.1-0.2	23/07/2020	<4	<0.4	10	57	7	<0.1	62	37	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH101/0.3-0.5	23/07/2020	4	<0.4	7	69	66	0.1	8	98	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	1.1	1.6	8.9
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BD1/20200723	23/07/2020	<5	<1	5	17	49	0.2	4	69	<10	<50	<10	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH101/1.4-1.6	23/07/2020	9	<0.4	8	15	52	<0.1	3	68	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	0.5	0.6	3.3
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH101/2.2-2.7	24/07/2020	12	<0.4	15	24	200	0.2	9	360	<25	<50	<25	<50	110	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	0.2	<0.5	1.6
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH102/0.2-0.3	23/07/2020	<4	<0.4	9	62	3	<0.1	73	34	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH102/0.4-0.6	23/07/2020	7	<0.4	11	23	36	0.2	16	48	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	0.2	<0.5	1.7
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH102/2.5-3.0	23/07/2020	17	3	910	100	450	0.2	15	2800	<25	61	<25	61	700	270	<50	<100	570	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	0.67
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH103/0.1-0.2	23/07/2020	<4	<0.4	9	67	3	<0.1	82	36	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH103/0.4-0.5	23/07/2020	<4	<0.4	32	4	4	<0.1	9	7	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH103/1.6-1.8	23/07/2020	4	<0.4	10	20	61	0.2	3	130	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	0.2	<0.5	1.7
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BD3/20200723	23/07/2020	7	<1	12	32	100	0.3	8	171	<10	<50	<10	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH104/0.1-0.2	23/07/2020	<4	<0.4	9	59	5	<0.1	81	42	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH104/2.1-2.6	23/07/2020	6	3	14	59	95	0.3	8	1000	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	0.1	<0.5	0.64
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH104/2.6-3.1	24/07/2020	8	<0.4	31	51	86	0.3	42	140	<25	<50	<25	<50	240	130	NT	NT	NT	<0.2	<0.5	<1	<1	<1	3	4.1	23
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH105/0.1-0.2	24/07/2020	37	<0.4	11	24	75	<0.1	3	99	<25	<50	<25	<50	300	180	NT	NT	NT	<0.2	<0.5	<1	<1	<1	0.4	0.6	3.5
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH105/0.4-0.5	24/07/2020	23	<0.4	8	4	8	<0.1	<1	15	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BD2/20200724	24/07/2020	6	<1	7	<5	8	<0.1	<2	6	<10	<50	<10	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH105/1.6-1.7	24/07/2020	<4	<0.4	5	<1	9	<0.1	<1	5	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH106/0.2-0.4	23/07/2020	5	<0.4	6	9	23	<0.1	5	39	<25	<50	<25	<50	170	190	NT	NT	NT	<0.2	<0.5	<1	<1	<1	0.2	0.5	4.2
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH106/0.8-1.0	23/07/2020	<4	<0.4	15	26	14	<0.1	16	18	<25	<50	<25	<50	860	270	NT	NT	NT	<0.2	<0.5	<1	<1	<1	10	16	94
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH106/2.5-3.0	23/07/2020	8	0.7	24	89	710	0.2	26	470	<25	<50	<25	<50	280	130	NT	NT	NT	<0.2	<0.5	<1	<1	<1	0.09	<0.5	0.2
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH106/3.5-4.0	24/07/2020	8	1	24	120	180	0.3	26	300	<25	<50	<25	<50	160	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	0.83	1.1	9.6
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH107/0.1-0.2	23/07/2020	<4	<0.4	7	31	32	0.2	8	55	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	0.2	<0.5	1.1
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH107/0.7-0.8	23/07/2020	<4	<0.4	5	5	63	<0.1	1	18	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH107/1.8-2.0	23/07/2020	7	<0.4	22	16	160	0.1	4	140	<25	<50	<25	<50	270	100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	1.9	2.7	16
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH107/3.0-3.5	24/07/2020	8	<0.4	11	66	140	0.5	30	170	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	0.4	0.5	2.6
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BH108/0.1-0.2	24/07/2020	<4	<0.4	8	19	66	<0.1	2	140	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	0.08	<0.5	0.5
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC

		Metals								TRH						TPH (Silica Gel Cleanup)			BTEX				PAH			
		Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	TPH>C10-C16	TPH >C16-C34	TPH >C34-C40	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene [b]	Benzo(a)pyrene (BaP)	Benzo(a)pyrene TEQ	Total PAHs
	PQL	4	0.4	1	1	1	0.1	1	1	25	50	25	50	100	100	50	100	100	0.2	0.5	1	1	1	0.05	0.5	0.05
Sample ID	Sample Date	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
BH108/0.9-1.1	24/07/2020	**8** 300 100	<0.4 90 NC	**8** 300 410	**14** 17000 210	**19** 600 1100	<0.1 80 NC	**1** 1200 190	**7** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH108/4.7-5.0	24/07/2020	**11** 300 100	<0.4 90 NC	**17** 300 410	**2** 17000 210	**16** 600 1100	<0.1 80 NC	**3** 1200 190	**26** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH109/0.8-1.0	24/07/2020	**5** 300 100	**0.6** 90 NC	**19** 300 410	**50** 17000 210	**95** 600 1100	**0.1** 80 NC	**43** 1200 190	**92** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.3** NC 0.7	<0.5 3 NC	**2.9** 300 NC
BH109/2.5-3.0	24/07/2020	**9** 300 100	<0.4 90 NC	**29** 300 410	**21** 17000 210	**94** 600 1100	**0.4** 80 NC	**5** 1200 190	**180** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.05** NC 0.7	<0.5 3 NC	**0.3** 300 NC
BH109/5.5-6.0	24/07/2020	**12** 300 100	<0.4 90 NC	**21** 300 410	**12** 17000 210	**44** 600 1100	<0.1 80 NC	**7** 1200 190	**70** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH110/0.6-0.7	24/07/2020	<4 300 100	<0.4 90 NC	**6** 300 410	**4** 17000 210	**15** 600 1100	<0.1 80 NC	**1** 1200 190	**12** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BD3/20200724	24/07/2020	<4 300 100	<0.4 90 NC	**8** 300 410	**4** 17000 210	**21** 600 1100	<0.1 80 NC	**1** 1200 190	**24** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH110/3.5-4.0	24/07/2020	**10** 300 100	<0.4 90 NC	**19** 300 410	**18** 17000 210	**87** 600 1100	**0.2** 80 NC	**4** 1200 190	**100** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	**120** NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.2** NC 0.7	<0.5 3 NC	**1.8** 300 NC
BH110/4.5-5.0	24/07/2020	**6** 300 100	<0.4 90 NC	**18** 300 410	<1 17000 210	**8** 600 1100	<0.1 80 NC	**3** 1200 190	**13** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH111/0.1-0.2	23/07/2020	<4 300 100	<0.4 90 NC	**7** 300 410	**62** 17000 210	**5** 600 1100	<0.1 80 NC	**70** 1200 190	**38** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.55** NC 0.7	**0.7** 3 NC	**3.8** 300 NC
BH111/1.1-1.2	23/07/2020	<4 300 100	<0.4 90 NC	**2** 300 410	**2** 17000 210	<1 600 1100	<0.1 80 NC	**1** 1200 190	**4** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH111/1.7-1.8	23/07/2020	**7** 300 100	<0.4 90 NC	**12** 300 410	**21** 17000 210	**69** 600 1100	**0.2** 80 NC	**2** 1200 190	**80** 30000 520	<25 NC NC	**340** NC NC	<25 NL 180	**340** NL 120	**1200** NC 300	**560** NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.09** NC 0.7	<0.5 3 NC	**0.73** 300 NC
BH111/2.2-2.4	23/07/2020	NT 300 100	NT 90 NC	NT 300 410	NT 17000 210	NT 600 1100	NT 80 NC	NT 1200 190	NT 30000 520	NT NC NC	NT NC NC	NT NL 180	NT NL 120	NT NC 300	NT NC 2800	<50 NC NC	**240** NC 300	**1400** NC 2800	<100 NL 50	NT NL 85	NT NL 70	NT NL 105	NT NL 170	NT NC 0.7	NT 3 NC	NT 300 NC
BH111/2.4-2.8	23/07/2020	**11** 300 100	**3** 90 NC	**210** 300 410	**75** 17000 210	**120** 600 1100	**0.3** 80 NC	**33** 1200 190	**420** 30000 520	<25 NC NC	**95** NC NC	<25 NL 180	**95** NL 120	**2100** NC 300	**1400** NC 2800	<50 NC NC	**600** NC 300	**130** NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.08** NC 0.7	<0.5 3 NC	**1.7** 300 NC
BH111/4.5-5.0	23/07/2020	**7** 300 100	**2** 90 NC	**52** 300 410	**47** 17000 210	**1600** 600 1100	**0.4** 80 NC	**20** 1200 190	**3400** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	<50 NC NC	<100 NC 300	<100 NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH112/0.1-0.2	23/07/2020	<4 300 100	<0.4 90 NC	**8** 300 410	**65** 17000 210	**6** 600 1100	<0.1 80 NC	**74** 1200 190	**36** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH112/0.2-0.4	23/07/2020	**7** 300 100	<0.4 90 NC	**11** 300 410	**14** 17000 210	**64** 600 1100	**3.8** 80 NC	**4** 1200 190	**49** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.09** NC 0.7	<0.5 3 NC	**0.4** 300 NC
BD4/020200723	23/07/2020	**9** 300 100	<0.4 90 NC	**12** 300 410	**26** 17000 210	**61** 600 1100	**2.8** 80 NC	**3** 1200 190	**59** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.06** NC 0.7	<0.5 3 NC	**0.06** 300 NC
BH112/1.9-2.1	23/07/2020	**9** 300 100	<0.4 90 NC	**9** 300 410	**8** 17000 210	**44** 600 1100	<0.1 80 NC	**3** 1200 190	**53** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.06** NC 0.7	<0.5 3 NC	**0.4** 300 NC
BH112/3.5-4.0	23/07/2020	**7** 300 100	**2** 90 NC	**38** 300 410	**42** 17000 210	**320** 600 1100	**0.2** 80 NC	**18** 1200 190	**1300** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH113/0.9-1.0	22/07/2020	**5** 300 100	<0.4 90 NC	**6** 300 410	**8** 17000 210	**22** 600 1100	**3.4** 80 NC	**2** 1200 190	**53** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH114/0.7-0.8	22/07/2020	**4** 300 100	<0.4 90 NC	**2** 300 410	**2** 17000 210	**2** 600 1100	<0.1 80 NC	<1 1200 190	**5** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH115/1.5-1.6	22/07/2020	**6** 300 100	<0.4 90 NC	**4** 300 410	**21** 17000 210	**9** 600 1100	<0.1 80 NC	**5** 1200 190	**79** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH116/0.2-0.3	22/07/2020	**8** 300 100	<0.4 90 NC	**6** 300 410	<1 17000 210	**3** 600 1100	<0.1 80 NC	<1 1200 190	**4** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BD1/020200722	23/07/2020	<4 300 100	<0.4 90 NC	**3** 300 410	**6** 17000 210	**3** 600 1100	<0.1 80 NC	**1** 1200 190	**5** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BH116/1.8-1.9	22/07/2020	**12** 300 100	<0.4 90 NC	**8** 300 410	**7** 17000 210	**12** 600 1100	<0.1 80 NC	**2** 1200 190	**28** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.06** NC 0.7	<0.5 3 NC	**0.52** 300 NC
BH117/0.2-0.4	24/07/2020	<4 300 100	<0.4 90 NC	**3** 300 410	**27** 17000 210	**38** 600 1100	**0.2** 80 NC	**2** 1200 190	**72** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	**120** NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	**4** NL 105	<1 NL 170	**3.2** NC 0.7	**4.4** 3 NC	**30** 300 NC
BH117/0.4-0.6	24/07/2020	NT 300 100	NT 90 NC	NT 300 410	NT 17000 210	NT 600 1100	NT 80 NC	NT 1200 190	NT 30000 520	NT NC NC	NT NC NC	NT NL 180	NT NL 120	NT NC 300	NT NC 2800	NT NC NC	NT NC 300	NT NC 2800	NT NL 50	NT NL 85	NT NL 70	NT NL 105	NT NL 170	NT NC 0.7	NT 3 NC	NT 300 NC
BH118/0.2-0.3	22/07/2020	<4 300 100	<0.4 90 NC	**5** 300 410	**67** 17000 210	**61** 600 1100	**0.1** 80 NC	**3** 1200 190	**120** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**1.4** NC 0.7	**1.9** 3 NC	**12** 300 NC
BH118/0.4-0.5	22/07/2020	NT 300 100	NT 90 NC	NT 300 410	NT 17000 210	NT 600 1100	NT 80 NC	NT 1200 190	NT 30000 520	NT NC NC	NT NC NC	NT NL 180	NT NL 120	NT NC 300	NT NC 2800	NT NC NC	NT NC 300	NT NC 2800	NT NL 50	NT NL 85	NT NL 70	NT NL 105	NT NL 170	NT NC 0.7	NT 3 NC	NT 300 NC

		Metals								TRH						TPH (Silica Gel Cleanup)			BTEX				PAH			
		Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	TPH>C10-C16	TPH >C16-C34	TPH >C34-C40	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene [b]	Benzo(a)pyrene (BaP)	Benzo(a)pyrene TEQ	Total PAHs
	PQL	4	0.4	1	1	1	0.1	1	1	25	50	25	50	100	100	50	100	100	0.2	0.5	1	1	1	0.05	0.5	0.05
Sample ID	Sample Date	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
BH118/1.2-1.3	22/07/2020	NT 300 100	NT 90 NC	NT 300 410	NT 17000 210	NT 600 1100	NT 80 NC	NT 1200 190	NT 30000 520	NT NC NC	NT NC NC	NT NL 180	NT NL 120	NT NC 300	NT NC 2800	NT NC NC	NT NC 300	NT NC 2800	NT NL 50	NT NL 85	NT NL 70	NT NL 105	NT NL 170	NT NC 0.7	NT 3 NC	NT 300 NC
BH118/1.4-1.5	22/07/2020	<4 300 100	<0.4 90 NC	**2** 300 410	**5** 17000 210	**24** 600 1100	<0.1 80 NC	<1 1200 190	**56** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	**0.2** 300 NC
BH119/0.4-0.6	24/07/2020	**8** 300 100	<0.4 90 NC	**4** 300 410	**110** 17000 210	**110** 600 1100	**0.1** 80 NC	**6** 1200 190	**200** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.66** NC 0.7	**0.8** 3 NC	**5.5** 300 NC
TP120/0.5-0.6	28/07/2020	<4 300 100	<0.4 90 NC	**22** 300 410	**4** 17000 210	**11** 600 1100	**0.1** 80 NC	<1 1200 190	**22** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
TP120/2.9-3.0	28/07/2020	**9** 300 100	<0.4 90 NC	**16** 300 410	**47** 17000 210	**38** 600 1100	**0.3** 80 NC	**16** 1200 190	**85** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
TP120/1.0-1.1	28/07/2020	**10** 300 100	<0.4 90 NC	**15** 300 410	**14** 17000 210	**59** 600 1100	**0.4** 80 NC	**3** 1200 190	**76** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	**0.2** 300 NC
TP120/2.5-2.6	28/07/2020	**9** 300 100	**0.5** 90 NC	**17** 300 410	**38** 17000 210	**97** 600 1100	**0.1** 80 NC	**13** 1200 190	**270** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	**220** NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.1** NC 0.7	<0.5 3 NC	**0.57** 300 NC
TP121/0.2-0.3	27/07/2020	<4 300 100	<0.4 90 NC	**2** 300 410	**2** 17000 210	**10** 600 1100	**0.8** 80 NC	<1 1200 190	**11** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
TP121/0.6-0.7	27/07/2020	**6** 300 100	<0.4 90 NC	**9** 300 410	**23** 17000 210	**79** 600 1100	**50** 80 NC	**6** 1200 190	**73** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.06** NC 0.7	<0.5 3 NC	**0.3** 300 NC
TP121/1.2-1.3	27/07/2020	**10** 300 100	<0.4 90 NC	**7** 300 410	**3** 17000 210	**8** 600 1100	**0.3** 80 NC	**3** 1200 190	**20** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
BD1/20200727	27/07/2020	**9** 300 100	<0.4 90 NC	**7** 300 410	**2** 17000 210	**7** 600 1100	<0.1 80 NC	**2** 1200 190	**14** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
TP121/2.9-3.0	27/07/2020	**6** 300 100	**0.5** 90 NC	**15** 300 410	**36** 17000 210	**95** 600 1100	**11** 80 NC	**5** 1200 190	**280** 30000 520	<25 NC NC	**74** NC NC	<25 NL 180	**74** NL 120	**1400** NC 300	**380** NC 2800	<50 NC NC	**230** NC 300	<100 NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.5 NC 0.7	<5 3 NC	<0.5 300 NC
TP122/0.0-0.1	27/07/2020	<4 300 100	<0.4 90 NC	**6** 300 410	**17** 17000 210	**24** 600 1100	<0.1 80 NC	**4** 1200 190	**38** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.4** NC 0.7	<0.5 3 NC	**3.4** 300 NC
TP122/1.4-1.5	27/07/2020	**5** 300 100	<0.4 90 NC	**21** 300 410	**30** 17000 210	**23** 600 1100	<0.1 80 NC	**6** 1200 190	**20** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	**0.2** 300 NC
TP122/2.4-2.5	27/07/2020	**10** 300 100	<0.4 90 NC	**8** 300 410	**12** 17000 210	**28** 600 1100	<0.1 80 NC	**3** 1200 190	**52** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.09** NC 0.7	<0.5 3 NC	**0.5** 300 NC
TP123/0.3-0.4	27/07/2020	<4 300 100	**0.5** 90 NC	**3** 300 410	**5** 17000 210	**16** 600 1100	<0.1 80 NC	**1** 1200 190	**54** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
TP123/0.6-0.7	27/07/2020	**8** 300 100	<0.4 90 NC	**20** 300 410	**45** 17000 210	**93** 600 1100	**0.2** 80 NC	**5** 1200 190	**53** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.2** NC 0.7	<0.5 3 NC	**2.3** 300 NC
BD2/20200727	27/07/2020	**6** 300 100	<1 90 NC	**7** 300 410	**19** 17000 210	**129** 600 1100	**2** 80 NC	**5** 1200 190	**100** 30000 520	<10 NC NC	<50 NC NC	<10 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<0.5 NL 70	<0.5 NL 105	<0.5 NL 170	<0.5 NC 0.7	<0.5 3 NC	**2.8** 300 NC
TP123/1.9-2.0	27/07/2020	**7** 300 100	<0.4 90 NC	**15** 300 410	**25** 17000 210	**99** 600 1100	**0.2** 80 NC	**2** 1200 190	**67** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.3** NC 0.7	<0.5 3 NC	**3.2** 300 NC
TP124/0.3-0.4	27/07/2020	**8** 300 100	<0.4 90 NC	**11** 300 410	**34** 17000 210	**59** 600 1100	<0.1 80 NC	**15** 1200 190	**67** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	**110** NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.55** NC 0.7	**0.7** 3 NC	**4.7** 300 NC
TP124/0.8-0.9	27/07/2020	<4 300 100	<0.4 90 NC	**11** 300 410	**32** 17000 210	**20** 600 1100	<0.1 80 NC	**4** 1200 190	**24** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	**1700** NC 300	**1200** NC 2800	<50 NC NC	**590** NC 300	**430** NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**10** NC 0.7	**16** 3 NC	**140** 300 NC
TP124/1.3-1.4	27/07/2020	**10** 300 100	<0.4 90 NC	**69** 300 410	**19** 17000 210	**72** 600 1100	**0.4** 80 NC	**5** 1200 190	**86** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
TP124/4.5-4.6	27/07/2020	**10** 300 100	**5.8** 90 NC	**15** 300 410	**140** 17000 210	**150** 600 1100	**0.3** 80 NC	**18** 1200 190	**550** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	**220** NC 300	**110** NC 2800	<50 NC NC	**280** NC 300	<100 NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.1** NC 0.7	<0.5 3 NC	**1.2** 300 NC
TP125/0.2-0.3	28/07/2020	**4** 300 100	<0.4 90 NC	**13** 300 410	**9** 17000 210	**42** 600 1100	<0.1 80 NC	**3** 1200 190	**36** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.2** NC 0.7	<0.5 3 NC	**1.4** 300 NC
TP125/2.9-3.0	28/07/2020	**7** 300 100	<0.4 90 NC	**40** 300 410	**10** 17000 210	**45** 600 1100	**0.2** 80 NC	**2** 1200 190	**76** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
TP125/4.9-5.0	28/07/2020	<4 300 100	<0.4 90 NC	**2** 300 410	**12** 17000 210	**16** 600 1100	<0.1 80 NC	<1 1200 190	**4** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.08** NC 0.7	<0.5 3 NC	**0.91** 300 NC
TP126/0.1-0.2	28/07/2020	**11** 300 100	<0.4 90 NC	**11** 300 410	**11** 17000 210	**24** 600 1100	<0.1 80 NC	**3** 1200 190	**25** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.1** NC 0.7	<0.5 3 NC	**0.4** 300 NC
TP126/1.5-1.6	28/07/2020	**7** 300 100	<0.4 90 NC	**10** 300 410	**18** 17000 210	**39** 600 1100	**2.1** 80 NC	**3** 1200 190	**51** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	**0.08** NC 0.7	<0.5 3 NC	**0.3** 300 NC
TP127/0.3-0.4	28/07/2020	<4 300 100	<0.4 90 NC	**3** 300 410	**6** 17000 210	**11** 600 1100	<0.1 80 NC	**2** 1200 190	**20** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC
TP127/2.4-2.5	28/07/2020	**13** 300 100	<0.4 90 NC	**7** 300 410	<1 17000 210	**5** 600 1100	<0.1 80 NC	**1** 1200 190	**6** 30000 520	<25 NC NC	<50 NC NC	<25 NL 180	<50 NL 120	<100 NC 300	<100 NC 2800	NT NC NC	NT NC 300	NT NC 2800	<0.2 NL 50	<0.5 NL 85	<1 NL 70	<1 NL 105	<1 NL 170	<0.05 NC 0.7	<0.5 3 NC	<0.05 300 NC

		Metals								TRH						TPH (Silica Gel Cleanup)			BTEX				PAH			
		Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	TPH>C10-C16	TPH >C16-C34	TPH >C34-C40	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene [b]	Benzo(a)pyrene (BaP)	Benzo(a)pyrene TEQ	Total PAHs
	PQL	4	0.4	1	1	1	0.1	1	1	25	50	25	50	100	100	50	100	100	0.2	0.5	1	1	1	0.05	0.5	0.05
Sample ID	Sample Date	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
TP128/0.1-0.2	28/07/2020	<4	<0.4	**9**	**69**	**3**	<0.1	**49**	**25**	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
TP128/0.9-1.0	28/07/2020	**10**	**0.7**	**26**	**270**	**200**	**0.1**	**34**	**290**	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	**0.3**	<0.5	**3.4**
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
BD4/20200728	28/07/2020	**10**	**0.7**	**23**	**190**	**190**	**0.1**	**27**	**280**	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	**0.1**	<0.5	**1.2**
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
TP129/0.4-0.5	28/07/2020	**18**	**2**	**16**	**250**	**130**	**2.5**	**15**	**220**	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	**0.2**	<0.5	**1.4**
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
TP129/0.8-0.9	28/07/2020	**7**	<0.4	**12**	**32**	**33**	**0.2**	**13**	**85**	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
TP129/1.9-2.0	28/07/2020	**17**	**0.6**	**20**	**61**	**110**	**1**	**9**	**260**	<25	<50	<25	<50	**360**	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	**0.87**	**1.1**	**5.3**
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
TP130/0.0-0.1	28/07/2020	**7**	<0.4	**15**	**44**	**43**	**0.1**	**21**	**68**	<25	<50	<25	<50	**340**	**240**	NT	NT	NT	<0.2	<0.5	<1	<1	<1	**1.3**	**1.9**	**11**
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
TP130/1.1-1.2	28/07/2020	**6**	**0.7**	**10**	**24**	**120**	**0.2**	**4**	**110**	<25	<50	<25	<50	<100	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	**0.2**	<0.5	**1.9**
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC
TP130/2.7-2.8	28/07/2020	**7**	**3**	**990**	**86**	**130**	**0.4**	**17**	**1700**	<25	<50	<25	<50	**240**	<100	NT	NT	NT	<0.2	<0.5	<1	<1	<1	**0.07**	<0.5	**0.2**
		300 100	90 NC	300 410	17000 210	600 1100	80 NC	1200 190	30000 520	NC NC	NC NC	NL 180	NL 120	NC 300	NC 2800	NC NC	NC 300	NC 2800	NL 50	NL 85	NL 70	NL 105	NL 170	NC 0.7	3 NC	300 NC

Lab result	
HIL/HSL value	EIL/ESL value

HIL/HSL exceedance; EIL/ESL exceedance; HIL/HSL and EIL/ESL exceedance; ML exceedance; ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab below the PQL, refer to the lab report **Blue** = DC exceedance

Bold = Lab detections NT = Not tested NL = Non limiting NC = No criteria NA = Not applicable NAD = No asbestos detected

Notes:

HIL/HSL/DC	NEPC, Schedule B1 - HIL C, HSL C , DC HSL C (for upper 3 m).
EIL/ESL	NEPC, Schedule B1 - EIL, ESL (for upper 2 m).
ML	NEPC, Schedule B1 - ML
a	QA/QC replicate of sample listed directly below the primary sample
b	reported naphthalene laboratory result obtained from BTEXN suite
c	criteria applies to DDT only

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Table B2: Summary of Soil Laboratory Results – Phenol, OCP, OPP, PCB, Microbiological, Chloride

		Phenol	OCP											OPP	PCB	Microbiological			Chrloide
		Phenol	DDT+DDE+DDD	DDD	DDE	DDT	Aldrin & Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Chlorpyriphos	Total PCB	Total Coliforms	Faecal Coliforms	Hydrocarbon Utilising Bacteria (P. Aeruginosa)	Chloride
	PQL	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	200	200	10	10
Sample ID	Sample Date	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	MPN/100g	MPN/100g	cfu/g	mg/kg
BH101/0.1-0.2	23/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	**0.2** 10 NC	**0.3** 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH101/0.3-0.5	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BD1/20200723	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH101/0.7-0.8	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	<10 NC NC
BH101/1.4-1.6	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	<200 NC NC	<200 NC NC	<10 NC NC	<10 NC NC
BH101/2.2-2.7	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH102/0.2-0.3	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH102/0.4-0.6	23/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH102/0.8-1.0	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	<200 NC NC	<200 NC NC	<10 NC NC	<10 NC NC
BH102/2.5-3.0	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH103/0.1-0.2	23/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH103/0.4-0.5	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	<10 NC NC
BH103/1.6-1.8	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BD3/20200723	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH104/0.1-0.2	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH104/2.1-2.6	23/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH104/2.6-3.1	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH105/0.1-0.2	24/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH105/0.4-0.5	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BD2/20200724	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH105/1.6-1.7	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH106/0.8-1.0	23/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	<10 NC NC
BH106/2.5-3.0	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH106/3.5-4.0	24/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH107/0.1-0.2	23/07/2020	<5 120 NC	**0.2** 400 180	<0.1 NC NC	**0.2** NC NC	<0.1 NC 180	**0.8** 10 NC	**0.4** 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH107/0.7-0.8	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH107/1.8-2.0	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH107/3.0-3.5	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH108/0.1-0.2	24/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH108/0.9-1.1	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH108/4.7-5.0	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH109/0.8-1.0	24/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH109/2.5-3.0	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH109/5.5-6.0	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH111/0.1-0.2	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH110/0.6-0.7	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BD3/20200724	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH110/3.5-4.0	24/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH110/4.5-5.0	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH111/1.7-1.8	23/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	<10 NC NC
BH111/2.4-2.8	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH111/4.5-5.0	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	<200 NC NC	<200 NC NC	<10 NC NC	<10 NC NC
BH112/0.1-0.2	23/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH112/0.2-0.4	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	**27** NC NC

		Phenol	OCP											OPP	PCB	Microbiological			Chrloide
		Phenol	DDT+DDE+DDD c	DDD	DDE	DDT	Aldrin & Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Chlorpyriphos	Total PCB	Total Coliforms	Faecal Coliforms	Hydrocarbon Utilising Bacteria (P. Aeruginosa)	Chloride
	PQL	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	200	200	10	10
Sample ID	Sample Date	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	MPN/100g	MPN/100g	cfu/g	mg/kg
BD4/020200723	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH112/1.9-2.1	23/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH112/3.5-4.0	23/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	<200 NC NC	<200 NC NC	<10 NC NC	<10 NC NC
BH113/0.9-1.0	22/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	<10 NC NC
BH114/0.7-0.8	22/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	**20** NC NC
BH115/1.5-1.6	22/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	**36** NC NC
BH116/0.2-0.3	22/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	<10 NC NC
BD1/020200722	23/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH116/1.8-1.9	22/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	<10 NC NC
BH117/0.2-0.4	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH117/0.4-0.6	24/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH118/0.2-0.3	22/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	<10 NC NC
BH118/0.4-0.5	22/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	<10 NC NC
BH118/1.2-1.3	22/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH118/1.4-1.5	22/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BH119/0.4-0.6	24/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP120/0.5-0.6	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP120/1.0-1.1	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	<200 NC NC	<200 NC NC	<10 NC NC	<10 NC NC
TP120/2.5-2.6	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	**400** NC NC	<200 NC NC	<10 NC NC	<10 NC NC
TP120/2.9-3.0	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP121/0.1-0.2	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	<200 NC NC	<200 NC NC	**70** NC NC	**70** NC NC
TP121/0.2-0.3	27/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP121/0.6-0.7	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	**900** NC NC	<200 NC NC	<10 NC NC	<10 NC NC
TP121/1.2-1.3	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
BD1/20200727	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP121/1.9-2.0	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	**500** NC NC	**200** NC NC	<10 NC NC	<10 NC NC
TP121/2.9-3.0	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	**700** NC NC	<200 NC NC	<10 NC NC	<10 NC NC
TP122/0.0-0.1	27/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP122/1.4-1.5	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	**500** NC NC	<200 NC NC	<10 NC NC	<10 NC NC
TP122/2.4-2.5	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP122/2.9-3.0	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	**>180000** NC NC	**200** NC NC	<10 NC NC	<10 NC NC
TP123/0.3-0.4	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP123/0.6-0.7	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	**1200** NC NC	<200 NC NC	<10 NC NC	<10 NC NC
BD2/20200727	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP123/1.9-2.0	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP123/2.4-2.5	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	**900** NC NC	<200 NC NC	<10 NC NC	<10 NC NC
TP124/0.3-0.4	27/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP124/1.3-1.4	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP124/4.5-4.6	27/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP125/0.2-0.3	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP125/2.9-3.0	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP125/3.9-4.0	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	<10 NC NC	<10 NC NC
TP125/4.9-5.0	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP126/0.1-0.2	28/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP126/1.5-1.6	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP126/2.7-2.8	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	<10 NC NC	<10 NC NC
TP127/0.3-0.4	28/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC

		Phenol	OCP											OPP	PCB	Microbiological			Chrloide
		Phenol	DDT+DDE+DDD c	DDD	DDE	DDT	Aldrin & Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Chlorpyriphos	Total PCB	Total Coliforms	Faecal Coliforms	Hydrocarbon Utilising Bacteria (P. Aeruginosa)	Chloride
	PQL	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	200	200	10	10
Sample ID	Sample Date	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	MPN/100g	MPN/100g	cfu/g	mg/kg
TP127/2.4-2.5	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP128/0.1-0.2	28/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP128/0.9-1.0	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	**70** NC NC	**70** NC NC
BD4/20200728	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP129/0.4-0.5	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP129/0.8-0.9	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP129/1.9-2.0	28/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	1100 NC NC	<200 NC NC	<10 NC NC	<10 NC NC
TP130/0.0-0.1	28/07/2020	<5 120 NC	<0.1 400 180	<0.1 NC NC	<0.1 NC NC	<0.1 NC 180	<0.1 10 NC	<0.1 70 NC	<0.1 340 NC	<0.1 20 NC	<0.1 10 NC	<0.1 10 NC	<0.1 400 NC	<0.1 250 NC	<0.1 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP130/0.6-0.7	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	**800** NC NC	**500** NC NC	<10 NC NC	<10 NC NC
TP130/1.1-1.2	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	NT NC NC	NT NC NC	NT NC NC	NT NC NC
TP130/2.7-2.8	28/07/2020	NT 120 NC	NT 400 180	NT NC NC	NT NC NC	NT NC 180	NT 10 NC	NT 70 NC	NT 340 NC	NT 20 NC	NT 10 NC	NT 10 NC	NT 400 NC	NT 250 NC	NT 1 NC	**13000** NC NC	**3300** NC NC	<10 NC NC	<10 NC NC

Lab result	
HIL/HSL value	EIL/ESL value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance ML and HIL/HSL or EIL/ESL exceedanc

Indicates that asbestos has been detected by the lab below the PQL, refer to the lab report **Blue** = DC exceedance

Bold = Lab detections NT = Not tested NL = Non limiting NC = No criteria NA = Not applicable NAD = No asbestos detected

Notes:

HIL/HSL/DC	NEPC, Schedule B1 - HIL C, HSL C , DC HSL C (for upper 3 m).
EIL/ESL	NEPC, Schedule B1 - EIL, ESL (for upper 2 m).
ML	NEPC, Schedule B1 - ML
a	QA/QC replicate of sample listed directly below the primary sample
b	reported naphthalene laboratory result obtained from BTEXN suite
c	criteria applies to DDT only

Table B3: Summary of Asbestos Results

Asbestos Content (assumed)	15%

Health Screening Levels	0.02	**% w/w**	Bonded ACM (Recreational C)
	0.001	**% w/w**	FA/AF

Test Pit	Sample Depth (m)	Sample Depth (m RL)	Date	Field Screening						Laboratory Analysis					
				Sample Volume	Weight of Sample (g)	Number of Fragments	Size Range of Fragments (mm)	Weight of Retained ACM (g)	Bonded ACM in Soil (% w/w)	Asbestos ID in soil >0.1g/kg	Trace Analysis	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	FA and AF Estimation (% w/w)
BH101	0.1-0.6	3.1	22/07/20	~10 L	14,588	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
BH101	0.1-0.2	3.1	23/07/20	~ 40 mL	~ 30	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH101	0.3-0.5	2.9	23/07/20	~ 40 mL	~ 30	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH101	1.4-1.6	1.8	23/07/20	~ 40 mL	~ 25	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH101	2.2-2.7	1	23/07/20	~ 40 mL	~ 45	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH102	0.1-0.7	3.5	22/07/20	~10 L	17,333	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
BH102	0.2-0.3	3.4	23/07/20	~ 40 mL	~ 30	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH102	0.4-0.6	3.2	23/07/20	~ 40 mL	~ 60	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH102	2.5-3.0	1.1	23/07/20	~ 40 mL	18	NT	NT	NT	NT	**Yes**	NAD	NT	NT	NT	NT
BH103	0.0-0.5	4.7	22/07/20	~10 L	14,696	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
BH103	0.1-0.2	4.6	23/07/20	~ 40 mL	~ 30	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH103	0.4-0.5	4.3	23/07/20	~ 40 mL	~ 25	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH103	1.0-1.5	3.7	22/07/20	~10 L	15,075	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
BH103	1.6-1.8	3.1	23/07/20	~ 40 mL	~ 40	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH104	0.1-0.8	4.7	22/07/20	~10 L	14,055	0	0	0	0.000	NAD	NAD	**Chrysotile**	–	**0.0055**	<0.001
BH104	0.1-0.2	4.7	23/07/20	~ 40 mL	~ 35	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH104	1.0-1.6	3.8	22/07/20	~10 L	14,465	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
BH104	2.1-2.6	2.7	23/07/20	~ 40 mL	~ 25	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH104	2.6-3.1	2.2	23/07/20	~ 40 mL	~ 35	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH105	0.0-0.6	6.9	22/07/20	~10 L	15,107	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
BH105	0.1-0.2	6.8	23/07/20	~ 40 mL	~ 25	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH105	0.4-0.5	6.5	23/07/20	~ 40 mL	~ 35	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH105	1.6-1.7	5.3	23/07/20	~ 40 mL	~ 60	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH106	0.1-0.7	3.5	22/07/20	~10 L	15,761	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
BH106	0.8-1.0	2.8	23/07/20	~ 40 mL	~ 35	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH106	2.5-3.0	1.1	23/07/20	~ 40 mL	~ 75	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH106	3.0-3.5	0.6	23/07/20	~ 500 mL	583	NT	NT	NT	NT	NAD	NAD	NAD	–	–	<0.001
BH106	4.0-4.5	-0.4	23/07/20	~ 40 mL	~ 50	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH107	0.1-0.2	3.2	23/07/20	~ 40 mL	~ 40	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT

Test Pit	Sample Depth (m)	Sample Depth (m RL)	Date	Field Screening						Laboratory Analysis					
				Sample Volume	Weight of Sample (g)	Number of Fragments	Size Range of Fragments (mm)	Weight of Retained ACM (g)	Bonded ACM in Soil (% w/w)	Asbestos ID in soil >0.1g/kg	Trace Analysis	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	FA and AF Estimation (% w/w)
BH107	0.7-0.8	2.6	23/07/20	~ 40 mL	~ 50	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH107	1.8-2.0	1.8	23/07/20	~ 40 mL	~ 20	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH108	0.1-0.2	3.5	23/07/20	~ 40 mL	~ 30	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH108	0.9-1.1	2.7	23/07/20	~ 40 mL	~ 35	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH108	3.0-3.5	0.6	23/07/20	~ 40 mL	58	NT	NT	NT	NT	**Chrysotile**	NAD	NT	NT	NT	NT
BH109	0.8-1.0	3	23/07/20	~ 40 mL	~ 40	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH110	0.6-0.7	3.2	23/07/20	~ 40 mL	~ 40	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH110	3.5-4.0	0.3	23/07/20	~ 500 mL	517	NT	NT	NT	NT	NAD	NAD	NAD	–	–	<0.001
BH111	0.1-0.2	3.5	23/07/20	~ 40 mL	~ 55	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH111	1.7-1.8	1.9	23/07/20	~ 40 mL	~ 40	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH111	2.4-2.8	1.2	23/07/20	~ 40 mL	~ 50	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH111	4.5-5.0	-0.9	23/07/20	~ 40 mL	~ 20	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH112	0.1-0.2	3.2	23/07/20	~ 40 mL	~ 70	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH112	0.2-0.4	3.1	23/07/20	~ 40 mL	~ 45	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH112	1.9-2.1	1.4	23/07/20	~ 40 mL	~ 25	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH112	3.5-4.0	-0.2	23/07/20	~ 40 mL	~ 10	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH113	0.9-1.0	3.3	22/07/20	~ 40 mL	~ 30	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH114	0.7-0.8	3.6	22/07/20	~ 40 mL	~ 50	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH115	1.5-1.6	2.7	22/07/20	~ 40 mL	~ 50	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH116	0.2-0.3	2.7	22/07/20	~ 40 mL	~ 35	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH116	1.8-1.9	1.1	22/07/20	~ 40 mL	~ 50	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH117	0.4-0.6	1.9	24/07/20	~ 40 mL	~40	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT
BH118	0.4-0.5	1.8	22/07/20	~ 500 mL	1,403	NT	NT	NT	NT	NAD	NAD	NAD	–	–	<0.001
BH118	1.2-1.3	1	22/07/20	~ 500 mL	1,523	NT	NT	NT	NT	NAD	NAD	NAD	–	–	<0.001
TP120	0.0-0.1	3.5	28/07/20	~10 L	10,475	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP120	0.5-0.6	3	28/07/20	~10 L	13,763	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP120	1.0-1.1	2.5	28/07/20	~10 L	8,839	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP120	1.5-1.6	2	28/07/20	~10 L	10,417	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP120	2.0-2.1	1.5	28/07/20	~10 L	8,536	**1**	**45**	**11**	**0.019**	NAD	NAD	**Amosite**	-	**0.0001**	<0.001
TP121	0.1-0.2	3.5	27/07/20	~10 L	10,501	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP121	0.2-0.3	3.4	27/07/20	~10 L	12,301	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP121	0.6-0.7	3	27/07/20	~10 L	14,735	**1***	**70**	**21**	**0.021**	NAD	NAD	NAD	–	–	<0.001
TP121	1.2-1.3	2.4	27/07/20	~10 L	14,981	**1**	**20**	**3**	**0.003**	NAD	NAD	NAD	–	–	<0.001
TP121	1.9-2.0	1.7	27/07/20	~10 L	11,407	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP121	2.9-3.0	0.7	27/07/20	~ 500 mL	1,082	NT	NT	NT	NT	NAD	NAD	NAD	–	–	<0.001
TP122	0.0-0.1	3.8	27/07/20	~10 L	10,936	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP122	0.3-0.4	3.5	27/07/20	~10 L	12,371	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP122	0.8-0.9	3	27/07/20	~10 L	12,519	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001

Test Pit	Sample Depth (m)	Sample Depth (m RL)	Date	Field Screening						Laboratory Analysis					
				Sample Volume	Weight of Sample (g)	Number of Fragments	Size Range of Fragments (mm)	Weight of Retained ACM (g)	Bonded ACM in Soil (% w/w)	Asbestos ID in soil >0.1g/kg	Trace Analysis	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	FA and AF Estimation (% w/w)
TP122	1.4-1.5	2.4	27/07/20	~10 L	13,712	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP122	1.8-1.9	2	27/07/20	~10 L	8,951	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP123	0.1-0.2	3.3	27/07/20	~10 L	12,406	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP123	0.3-0.4	3.1	27/07/20	~10 L	15,117	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP123	0.6-0.7	2.8	27/07/20	~10 L	13,878	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP123	1.3-1.4	2.1	27/07/20	~10 L	16,700	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP123	1.9-2.0	1.5	27/07/20	~10 L	12,455	**1**	**35**	**6**	0.007	NT	NT	NT	NT	NT	NT
TP123	2.4-2.5	1	27/07/20	~10 L	13,448	**16**	**15-130**	**527**	**0.588**	NAD	NAD	NAD	–	–	<0.001
TP124	0.1-0.2	4.7	27/07/20	~10 L	12,384	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP124	0.3-0.4	4.5	27/07/20	~10 L	14,066	**1**	**20**	**4**	**0.004**	NAD	NAD	NAD	–	–	<0.001
TP124	0.8-0.9	4	27/07/20	~10 L	12,284	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP124	1.3-1.4	3.5	27/07/20	~10 L	10,396	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP124	1.9-2.0	2.9	27/07/20	~10 L	12,083	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP124	2.6-2.7	2.2	27/07/20	~10 L	15,699	**1**	**65**	**13**	**0.012**	NAD	NAD	NAD	–	–	<0.001
TP124	3.4-3.5	1.4	27/07/20	~10 L	11,659	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP124	4.5-4.6	0.3	27/07/20	~10 L	13,128	**5**	**40-142**	**201**	**0.230**	NAD	NAD	**Chrysotile**	–	**0.0021**	<0.001
TP125	0.0-0.1	4.8	28/07/20	~10 L	13,301	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP125	0.2-0.3	4.6	28/07/20	~10 L	16,382	**6***	**20-60**	**42**	**0.038**	NT	NT	NT	NT	NT	NT
TP125	0.8-0.9	4	28/07/20	~10 L	14,381	**10**	**15-90**	**263**	**0.274**	NAD	NAD	NAD	–	–	<0.001
TP125	1.6-1.7	3.2	28/07/20	~10 L	15,887	**3**	**50-75**	**78**	**0.074**	NT	NT	NT	NT	NT	NT
TP125	2.3-2.4	2.5	28/07/20	~10 L	12,436	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP125	2.9-3.0	1.9	28/07/20	~10 L	12,578	**2**	**25-55**	**45**	**0.054**	NAD	NAD	NAD	–	–	<0.001
TP125	3.4-3.5	1.4	28/07/20	~10 L	11,643	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP125	3.9-4.0	0.9	28/07/20	~10 L	11,618	**4**	**20-50**	**47**	**0.061**	NAD	NAD	NAD	–	–	<0.001
TP125	4.0-4.1	0.8	28/07/20	~10 L	15,706	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP125	4.4-4.5	0.4	28/07/20	~10 L	12,521	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP125	4.9-5.0	-0.1	28/07/20	~10 L	11,717	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP126	0.1-0.2	4.7	28/07/20	~10 L	12,941	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP126	0.4-0.5	4.4	28/07/20	~10 L	12,770	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP126	0.9-1.0	3.9	28/07/20	~10 L	11,246	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP126	1.5-1.6	3.3	28/07/20	~10 L	12,959	**1**	**10**	**6**	**0.007**	NAD	NAD	NAD	–	–	<0.001
TP126	2.0-2.1	2.8	28/07/20	~10 L	12,853	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP126	2.5-2.6	2.3	28/07/20	~10 L	12,453	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP126	2.7-2.8	2.1	28/07/20	~10 L	11,218	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP126	3.4-3.5	1.4	28/07/20	~10 L	11,602	**1**	**10**	**11**	**0.014**	NAD	NAD	NAD	–	–	<0.001
TP126	4.0-4.1	0.8	28/07/20	~10 L	11,196	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP126	4.5-4.6	0.3	28/07/20	~10 L	11,871	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP126	4.9-5.0	-0.1	28/07/20	~10 L	12,030	0	0	0	0.000	NT	NT	NT	NT	NT	NT

Test Pit	Sample Depth (m)	Sample Depth (m RL)	Date	Field Screening						Laboratory Analysis					
				Sample Volume	Weight of Sample (g)	Number of Fragments	Size Range of Fragments (mm)	Weight of Retained ACM (g)	Bonded ACM in Soil (% w/w)	Asbestos ID in soil >0.1g/kg	Trace Analysis	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	FA and AF Estimation (% w/w)
TP127	0.0-0.1	3.6	28/07/20	~10 L	10,244	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP127	0.3-0.4	3.3	28/07/20	~10 L	13,521	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP127	0.9-1.0	2.7	28/07/20	~10 L	14,006	**3***	**30-90**	**84**	**0.090**	NAD	NAD	NAD	–	–	<0.001
TP127	1.4-1.5	2.2	28/07/20	~10 L	11,673	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP127	1.9-2.0	1.7	28/07/20	~10 L	12,253	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP127	2.4-2.5	1.2	28/07/20	~10 L	13,200	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP128	0.0-0.1	3.4	28/07/20	~10 L	16,572	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP128	0.4-0.5	3	28/07/20	~10 L	14,126	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP128	0.9-1.0	2.5	28/07/20	~10 L	12,086	**14***	**10-90**	**273**	**0.339**	NAD	NAD	NAD	–	–	<0.001
TP128	1.4-1.5	2	28/07/20	~10 L	8,843	**3**	**40-150**	**83**	**0.141**	NT	NT	NT	NT	NT	NT
TP128	2.0-2.1	1.4	28/07/20	~10 L	13,223	**2**	**65-75**	**32**	**0.036**	NT	NT	NT	NT	NT	NT
TP129	0.1-0.2	3.3	28/07/20	~10 L	11,849	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP129	0.4-0.5	3	28/07/20	~10 L	10,136	**1***	**10**	**7**	**0.010**	NAD	NAD	NAD	–	–	<0.001
TP129	0.8-0.9	2.6	28/07/20	~10 L	11,147	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP129	1.4-1.5	2	28/07/20	~10 L	11,464	**11**	**5-120**	**350**	**0.458**	NAD	NAD	NAD	–	–	<0.001
TP129	1.9-2.0	1.5	28/07/20	~10 L	11,216	**3**	**5-35**	**35**	**0.047**	NT	NT	NT	NT	NT	NT
TP130	0.0-0.1	3.5	28/07/20	~10 L	10,143	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP130	0.6-0.7	2.9	28/07/20	~10 L	15,854	0	0	0	0.000	NAD	NAD	NAD	–	–	<0.001
TP130	1.1-1.2	2.4	28/07/20	~10 L	11,255	0	0	0	0.000	NT	NT	NT	NT	NT	NT
TP130	1.5-1.6	2	28/07/20	~10 L	11,559	**4**	**5-150**	**160**	**0.208**	NAD	NAD	NAD	–	–	<0.001

NOTES: NT = Not Tested
NAD = No Asbestos Detected

* Material confirmed by laboratory analysis to contain asbestos

Table B4: Summary of Acid Sulfate Soil Results

Sample			Screening Tests				SCr Suite Laboratory Results								
Location		Date Sampled	pH_F	pH_{FOX}	pH_{FOX} minus pH_F	Reaction	pH_{KCl}	Chromium Reducible Sulphur	Total Actual Acidity	Net Acid Soluble Sulfur	Acid Neutralising Capacity	Net Acidity	Net Acidity (excluding ANC)	Net Acidity (excluding ANC)	Liming Rate (excluding ANC)
ID	Depth							(S_{Cr})	(s-TAA)	(s-S_{NAS})	(s-ANC_{BT})				
			pH units			-	pH units	(%w/w S)						moles H+/T	kg CaCO3/T
Investigation Levels															
ASSMAC (1998)															
Screening Indicators				<3.5	≤ -1										
Threshold, >1,000 tonnes, Any Texture								0.03	0.03				0.03	18	
Test Results															
BH101	2.2-2.7	24/07/2020	7.5	4.4	-3.1	4									
BH103	1.4-1.6	23/07/2020	7.1	4	-3.1	3									
BH103	1.6-1.8	23/07/2020	7.9	5.5	-2.4	2									
BH103	2.8-3.0	23/07/2020	8.1	2.8	-5.3	2	6.7	**0.06**	<0.01	NA	0.45	<0.005	**0.061**	**38**	2.9
BH104	1.5-1.7	23/07/2020	6.9	4.9	-2	2									
BH104	2.6-3.1	24/07/2020	7.9	6.2	-1.7	4									
BH106	3.0-3.5	24/07/2020	7.9	5.5	-2.4	4									
BH106	3.5-4.0	24/07/2020	8	5.3	-2.7	4									
BH106	4.0-4.5	24/07/2020	7.8	5.3	-2.5	4	8.3	**0.14**	<0.01	NA	0.67	<0.005	**0.14**	**88**	6.6
BH106	4.5-4.6	24/07/2020	8.5	5.6	-2.9	1									
BH106	4.5-5.0	24/07/2020	8.3	4.8	-3.5	4									
BH107	1.3-1.4	23/07/2020	7.1	4.9	-2.2	3									
BH107	1.8-2.0	23/07/2020	8	6.4	-1.6	4									
BH107	2.0-2.5	24/07/2020	7.5	4.6	-2.9	4									
BH107	2.5-3.0	24/07/2020	7.7	5.9	-1.8	4									
BH107	3.0-3.5	24/07/2020	7.6	4.8	-2.8	4									
BH107	4.5-5.0	24/07/2020	8.3	4.1	-4.2	2	6.6	0.03	<0.01	NA	0.16	<0.005	0.027	17	1.3
BH108	0.6-0.8	24/07/2020	7.7	6.5	-1.2	2									
BH108	2.0-2.9	24/07/2020	7.9	6.3	-1.6	4									
BH108	3.0-3.5	24/07/2020	7.9	4.1	-3.8	4									
BH108	4.0-4.5	24/07/2020	8.2	2.1	-6.1	4	7.3	**0.91**	<0.01	NA	0.18	0.8	**0.91**	**570**	43
BH108	4.7-5.0	24/07/2020	7.9	2.9	-5	2									
BH110	0.7-0.9	24/07/2020	7.7	5.9	-1.8	4									
BH110	2.2-2.7	24/07/2020	7.9	6.6	-1.3	4									
BH110	3.0-3.5	24/07/2020	7.7	6.4	-1.3	3									
BH110	3.5-4.0	24/07/2020	7.6	5.8	-1.8	3									
BH110	4.0-4.5	24/07/2020	8.4	4.3	-4.1	1	8.8	**0.22**	<0.01	NA	0.43	<0.005	**0.22**	**140**	10
BH110	4.5-5.0	24/07/2020	8.4	6.4	-2	1									
BH111	0.8-1.0	23/07/2020	9.2	9	-0.2	4									
BH111	1.2-1.4	23/07/2020	7.8	2.6	-5.2	4	6.8	**0.09**	<0.01	NA	0.19	<0.005	**0.094**	**59**	4.4
BH111	2.2-2.4	23/07/2020	8	6.8	-1.2	4									
BH111	2.4-2.8	23/07/2020	7.7	6.9	-0.8	3									
BH111	3.6-4.0	23/07/2020	7.5	3.9	-3.6	3									
BH111	4.5-5.0	23/07/2020	7.3	6.5	-0.8	4									
BH112	1.1-1.3	23/07/2020	8	5	-3	2									

Sample			Screening Tests				SCr Suite Laboratory Results								
Location		Date Sampled	pH_F	pH_{FOX}	pH_{FOX} minus pH_F	Reaction	pH_{KCl}	Chromium Reducible Sulphur	Total Actual Acidity	Net Acid Soluble Sulfur	Acid Neutralising Capacity	Net Acidity	Net Acidity (excluding ANC)	Net Acidity (excluding ANC)	Liming Rate (excluding ANC)
ID	Depth							(S_{Cr})	(s-TAA)	(s-S_{NAS})	(s-ANC_{BT})				
			pH units			-	pH units	(%w/w S)						moles H+/T	kg CaCO3/T
Investigation Levels															
ASSMAC (1998)															
Screening Indicators				<3.5	≤ -1										
Threshold, >1,000 tonnes, Any Texture								0.03	0.03				0.03	18	
Test Results															
BH112	1.9-2.1	23/07/2020	8.1	3.6	-4.5	4									
BH112	2.2-2.6	23/07/2020	8	7.2	-0.8	2									
BH112	3.5-4.0	23/07/2020	7.6	3	-4.6	4	8.7	**0.27**	<0.01	NA	1	<0.005	**0.27**	**170**	13
BH116	0.2-0.3	22/07/2020	8.9	6.4	-2.5	2									
BH116	0.9-1.0	22/07/2020	8.7	6.5	-2.2	2									
BH116	1.5-1.6	22/07/2020	8.5	6.5	-2	1									
BH116	1.8-1.9	22/07/2020	8.2	6.1	-2.1	1									
BH118	0.2-0.3	22/07/2020	9.8	6.4	-3.4	1									
BH118	0.7-0.8	22/07/2020	8.1	6	-2.1	1									
BH118	0.9-1.0	22/07/2020	8.1	6	-2.1	1									
BH118	1.4-1.5	22/07/2020	7.9	6	-1.9	1									
BH118	1.9-2.0	22/07/2020	8.1	6.1	-2	1	8.8	0.02	<0.01	NA	0.35	<0.005	0.018	11	0.86
BH119	0.2-0.4	24/07/2020	8.2	7.9	-0.3	3									
BH119	0.4-0.6	24/07/2020	7.5	4.9	-2.6	4									
TP120	1.5-1.6	28/07/2020	7	2.8	-4.2	2	6.7	<0.01	0.02	NA	0.22	<0.005	0.02	12	0.92
TP120	2.0-2.1	28/07/2020	7.5	3.6	-3.9	3									
TP120	2.9-3.0	28/07/2020	7.4	4.9	-2.5	4									
TP121	0.6-0.7	27/07/2020	8	5.9	-2.1	1									
TP121	1.2-1.3	27/07/2020	7.9	2.7	-5.2	3	8.1	**0.49**	<0.01	NA	0.3	0.29	**0.49**	**310**	23
TP121	2.4-2.5	27/07/2020	7.9	2.9	-5	4	8.4	**0.21**	<0.01	NA	0.38	<0.005	**0.21**	**130**	9.9
TP123	1.3-1.4	27/07/2020	6.7	4	-2.7	2									
TP123	1.8-2.0	27/07/2020	8	6	-2	3									
TP123	2.4-2.5	27/07/2020	8.4	5.9	-2.5	4									
TP123	2.9-3.0	27/07/2020	7.4	4.7	-2.7	2	8.3	**0.36**	<0.01	NA	1	<0.005	**0.36**	**230**	17
TP124	0.8-0.9	27/07/2020	7.8	5.7	-2.1	1									
TP124	1.3-1.4	27/07/2020	6.2	4.3	-1.9	2									
TP124	1.9-2.0	27/07/2020	5.7	3.5	-2.2	2									
TP124	2.6-2.7	27/07/2020	6.2	3.5	-2.7	2									
TP124	3.4-3.5	27/07/2020	7	5.1	-1.9	3									
TP124	4.5-4.6	27/07/2020	7.2	4.3	-2.9	3									
TP125	1.6-1.7	28/07/2020	8.2	6.3	-1.9	1									
TP125	2.9-3.0	28/07/2020	8.2	6	-2.2	2									
TP125	3.4-3.5	28/07/2020	7.6	6.3	-1.3	2									
TP125	4.0-4.1	28/07/2020	6.7	4.4	-2.3	4									
TP125	4.9-5.0	28/07/2020	6.8	4.2	-2.6	3	4.2	**0.04**	0.009	0.031	NA	0.083	**0.083**	**52**	3.9
TP127	1.4-1.5	28/07/2020	7.4	5.8	-1.6	2									
TP127	2.4-2.5	28/07/2020	8.3	6.7	-1.6	1									
TP127	3.9-4.0	28/07/2020	7.5	6.7	-0.8	4									

Sample			Screening Tests				SCr Suite Laboratory Results								
Location		Date Sampled	pH_F	pH_{FOX}	pH_{FOX} minus pH_F	Reaction	pH_{KCl}	Chromium Reducible Sulphur	Total Actual Acidity	Net Acid Soluble Sulfur	Acid Neutralising Capacity	Net Acidity	Net Acidity (excluding ANC)	Net Acidity (excluding ANC)	Liming Rate (excluding ANC)
ID	Depth							(S_{Cr})	(s-TAA)	(s-S_{NAS})	(s-ANC_{BT})				
			pH units			-	pH units	(%w/w S)						moles H+/T	kg CaCO3/T
Investigation Levels															
ASSMAC (1998)															
Screening Indicators				<3.5	≤ -1										
Threshold, >1,000 tonnes, Any Texture								0.03	0.03				0.03	18	
Test Results															
TP127	4.9-5.0	28/07/2020	7.8	7.2	-0.6	4									
TP129	0.8-0.9	28/07/2020	7.9	6.2	-1.7	4									
TP129	2.4-2.5	28/07/2020	8.1	6.4	-1.7	4	8.5	<0.01	**0.13**	NA	0.67	<0.005	**0.13**	**79**	6
TP130	1.1-1.2	28/07/2020	7.6	4.9	-2.7	2									
TP130	2.7-2.8	28/07/2020	7.5	5	-2.5	4	8.2	<0.01	**0.59**	NA	0.74	0.1	**0.59**	**370**	28

Notes:

Reaction Descriptions

1 No or slight effervescence
2 Moderate effervescence
3 Vigorous effervescence
4 Very vigorous effervescence with gas and heat

Blue	Sample collected from beneath water table recorded during drilling /expected groundwater table
Shaded	Exceedance of ASS screening indicator
Bold	Exceedance of ASSMAC (1998) Action Criteria

#	The laboratory report included the comment: Liming rate could not be determined as TSA exceeded the sulfidic acidity predicted from aSPOS. Such differences can indicate release of complex Fe & Al from organic sources &/or formation of simple organic acids during peroxide oxidation. While this acidity is commonly not rapidly released in the environment in the short term, it should not be immediately dismissed as being of no consequence. The client may want to increase the application of lime to nearer that indicated when TSA is substituted into the ABA (acid based accounting) equation.

Douglas Partners

Table B5: Summary of Preliminary Waste Classification Results

		Metals												TRH		TPH	BTEX					PAH			Phenol	OCP		OPP	PCB	Asbestos								
		Arsenic	TCLP Arsenic	Cadmium	TCLP Cadmium	Total Chromium	TCLP Total Chromium	Lead	TCLP Lead	Mercury (inorganic)	TCLP Mercury (inorganic)	Nickel	TCLP Nickel	TRH C6 - C9	C10 C36 recoverable hydrocarbons	C10 C36 petroleum hydrocarbons	Benzene	Toluene	Ethylbenzene	Xylenes (total)	Total Xylenes	Benzo(a)pyrene (BaP)	TCLP Benzo(a)pyrene (BaP)	Total PAHs	Phenol	Total Endosulfan	Total Analysed OCP	Total Analysed OPP	Total PCB	Asbestos ID in soil >0.1g/kg	Trace Analysis	Asbestos ID in soil >0.1g/kg	Asbestos ID in soil <0.1g/kg	Trace Analysis	ACM >7mm Estimation	FA and AF Estimation	FA and AF Estimation	Total Asbestos
	PQL	4	0.05	0.4	0.01	1	0.01	1	0.03	0.1	0.0005	1	0.02	25	50	50	0.2	0.5	1	3	1	0.05	0.001	0.05	5	0.1	0.1	0.1	0.1								<0.001	0.001
Sample ID	Sample Date	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	g	g	%(w/w)	-
BH101/0.1-0.2	23/07/2020	<4	NT	<0.4	NT	10	NT	7	NT	<0.1	NT	62	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	<5	<0.1	0.5	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NT
BH101/0.1-0.6	27/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
BH101/0.3-0.5	23/07/2020	4	NT	<0.4	NT	7	NT	66	NT	0.1	NT	8	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	1.1	<0.001	8.9	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NT
BH101/1.4-1.6	23/07/2020	9	NT	<0.4	NT	8	NT	52	NT	<0.1	NT	3	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.5	NT	3.3	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NT
BH101/2.2-2.7	24/07/2020	12	NT	<0.4	NT	15	NT	200	0.36	0.2	NT	9	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.2	NT	1.6	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH102/0.1-0.7	27/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
BH102/0.2-0.3	23/07/2020	<4	NT	<0.4	NT	9	NT	3	NT	<0.1	NT	73	0.2	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BD4/020200723	23/07/2020	9	NT	<0.4	NT	12	NT	61	NT	2.8	NT	3	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.06	NT	0.06	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH102/0.4-0.6	23/07/2020	7	NT	<0.4	NT	11	NT	36	NT	0.2	NT	16	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.2	NT	1.7	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH102/2.5-3.0	23/07/2020	17	0.06	3	<0.01	910	0.02	450	0.2	0.2	<0.0005	15	0.07	<25	780	550	<0.2	<0.5	<1	<3	<1	<0.05	NT	0.67	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH103/0.0-0.5	27/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
BH103/0.1-0.2	23/07/2020	<4	NT	<0.4	NT	9	NT	3	NT	<0.1	NT	82	0.1	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH103/0.4-0.5	23/07/2020	<4	NT	<0.4	NT	32	NT	4	NT	<0.1	NT	9	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH103/1.0-1.5	27/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
BH103/1.6-1.8	23/07/2020	4	NT	<0.4	NT	10	NT	61	NT	0.2	NT	3	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.2	NT	1.7	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH104/0.1-0.2	23/07/2020	<4	NT	<0.4	NT	9	NT	5	NT	<0.1	NT	81	0.1	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH104/0.1-0.8	27/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	Detected	NAD	NT	Detected	NAD	Detected
BH104/1.0-1.6	27/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
BH104/2.1-2.6	23/07/2020	6	NT	3	NT	14	NT	95	NT	0.3	NT	8	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.1	NT	0.64	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH104/2.6-3.1	24/07/2020	8	NT	<0.4	NT	31	NT	86	NT	0.3	NT	42	NT	<25	280	NT	<0.2	<0.5	<1	<3	<1	3	<0.001	23	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH105/0.0-0.6	27/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
BH105/0.1-0.2	24/07/2020	37	NT	<0.4	NT	11	NT	75	NT	<0.1	NT	3	NT	<25	320	NT	<0.2	<0.5	<1	<3	<1	0.4	NT	3.5	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH105/0.4-0.5	24/07/2020	23	NT	<0.4	NT	8	NT	8	NT	<0.1	NT	<1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH105/1.6-1.7	24/07/2020	<4	NT	<0.4	NT	5	NT	9	NT	<0.1	NT	<1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH106/0.1-0.7	27/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
BH106/0.2-0.4	23/07/2020	5	NT	<0.4	NT	6	NT	23	NT	<0.1	NT	5	NT	<25	160	NT	<0.2	<0.5	<1	<3	<1	0.4	NT	4.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH106/0.8-1.0	23/07/2020	<4	NT	<0.4	NT	15	NT	14	NT	<0.1	NT	16	NT	<25	1030	NT	<0.2	<0.5	<1	<3	<1	10	<0.001	94	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH106/2.5-3.0	23/07/2020	8	NT	0.7	NT	24	NT	710	4.4	0.2	NT	26	NT	<25	320	NT	<0.2	<0.5	<1	<3	<1	0.09	NT	0.2	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH106/3.0-3.5	24/07/2020	NT	NT	NT	NT	NT	NT	NT	0.1	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<0.001	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
BH106/3.5-4.0	24/07/2020	8	NT	1	NT	24	NT	180	NT	0.3	NT	26	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.83	NT	9.6	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH106/4.0-4.5	24/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH107/0.1-0.2	23/07/2020	<4	NT	<0.4	NT	7	NT	32	NT	0.2	NT	8	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.2	NT	1.1	<5	<0.1	1.4	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH107/0.7-0.8	23/07/2020	<4	NT	<0.4	NT	5	NT	63	NT	<0.1	NT	1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH107/1.8-2.0	23/07/2020	7	NT	<0.4	NT	22	NT	160	1.2	0.1	NT	4	NT	<25	310	NT	<0.2	<0.5	<1	<3	<1	1.9	<0.001	16	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH107/3.0-3.5	24/07/2020	8	NT	<0.4	NT	11	NT	140	6	0.5	NT	30	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.4	NT	2.6	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH108/0.1-0.2	24/07/2020	<4	NT	<0.4	NT	8	NT	66	NT	<0.1	NT	2	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.08	NT	0.5	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH108/0.9-1.1	24/07/2020	8	NT	<0.4	NT	8	NT	19	NT	<0.1	NT	1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH108/3.0-3.5	24/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	Detected	NAD	NT	NT	NT	NT	NT	NT	Detected
BH108/4.7-5.0	24/07/2020	11	NT	<0.4	NT	17	NT	16	NT	<0.1	NT	3	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH109/0.8-1.0	24/07/2020	5	NT	0.6	NT	19	NT	95	NT	0.1	NT	43	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.3	NT	2.9	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH109/2.5-3.0	24/07/2020	9	NT	<0.4	NT	29	NT	94	NT	0.4	NT	5	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.05	NT	0.3	NT	NT	NT	NT	NT	Detected	NAD	NT	NT	NT	NT	NT	NT	NAD
BH109/5.5-6.0	24/07/2020	12	NT	<0.4	NT	21	NT	44	NT	<0.1	NT	7	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH110/0.6-0.7	24/07/2020	<4	NT	<0.4	NT	6	NT	15	NT	<0.1	NT	1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BD3/20200724	24/07/2020	<4	NT	<0.4	NT	8	NT	21	NT	<0.1	NT	1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH110/3.5-4.0	24/07/2020	10	NT	<0.4	NT	19	NT	87	NT	0.2	NT	4	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.2	NT	1.8	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NAD	NAD	NT	NT	NAD	Detected
BH110/4.5-5.0	24/07/2020	6	NT	<0.4	NT	18	NT	8	NT	<0.1	NT	3	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH111/0.1-0.2	23/07/2020	<4	NT	<0.4	NT	7	NT	5	NT	<0.1	NT	70	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	0.55	NT	3.8	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH111/1.1-1.2	23/07/2020	<4	NT	<0.4	NT	2	NT	<1	NT	<0.1	NT	1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH111/1.7-1.8	23/07/2020	7	NT	<0.4	NT	12	NT	69	NT	0.2	NT	2	NT	<25	1690	NT	<0.2	<0.5	<1	<3	<1	0.09	NT	0.73	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH111/2.4-2.8	23/07/2020	11	0.05	3	<0.01	210	0.07	120	0.64	0.3	<0.0005	33	0.2	<25	2484	630	<0.2	<0.5	<1	<3	<1	0.08	NT	1.7	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD

		Metals												TRH		TPH	BTEX					PAH			Phenol	OCP		OPP	PCB	Asbestos								
		Arsenic	TCLP Arsenic	Cadmium	TCLP Cadmium	Total Chromium	TCLP Total Chromium	Lead	TCLP Lead	Mercury (inorganic)	TCLP Mercury (inorganic)	Nickel	TCLP Nickel	TRH C6 - C9	C10 -C36 recoverable hydrocarbons	C10 -C36 petroleum hydrocarbons	Benzene	Toluene	Ethylbenzene	Xylenes (total)	Total Xylenes	Benzo(a)pyrene (BaP)	TCLP Benzo(a)pyrene (BaP)	Total PAHs	Phenol	Total Endosulfan	Total Analysed OCP	Total Analysed OPP	Total PCB	Asbestos ID in soil >0.1g/kg	Trace Analysis	Asbestos ID in soil >0.1g/kg	Asbestos ID in soil <0.1g/kg	Trace Analysis	AOM >2mm Estimation	FA and AF Estimation	FA and AF Estimation	Total Asbestos
	PQL	4	0.05	0.4	0.01	1	0.01	1	0.03	0.1	0.0005	1	0.02	25	50	50	0.2	0.5	1	3	1	0.05	0.001	0.05	5	0.1	0.1	0.1	0.1								<0.001	0.001
Sample ID	Sample Date	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	g	g	%(w/w)	-
BH111/3.6-4.0	23/07/2020	NT	**0.05**	NT	<0.01	NT	<0.01	NT	**4.7**	NT	<0.0005	NT	**0.1**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH111/4.5-5.0	23/07/2020	**7**	NT	**2**	NT	**52**	NT	**1600**	NT	**0.4**	NT	**20**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH112/0.1-0.2	23/07/2020	<4	NT	<0.4	NT	**8**	NT	**6**	NT	<0.1	NT	**74**	**0.2**	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH112/0.2-0.4	23/07/2020	**7**	NT	<0.4	NT	**11**	NT	**64**	NT	**3.8**	NT	**4**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.09**	NT	**0.4**	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH112/1.9-2.1	23/07/2020	**9**	NT	<0.4	NT	**9**	NT	**44**	NT	<0.1	NT	**3**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.06**	NT	**0.4**	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH112/3.5-4.0	23/07/2020	**7**	NT	**2**	NT	**38**	NT	**320**	**0.34**	**0.2**	NT	**18**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH113/0.9-1.0	22/07/2020	**5**	NT	<0.4	NT	**6**	NT	**22**	NT	**3.4**	NT	**2**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH114/0.7-0.8	22/07/2020	**4**	NT	<0.4	NT	**2**	NT	**2**	NT	<0.1	NT	<1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH115/1.5-1.6	22/07/2020	**6**	NT	<0.4	NT	**4**	NT	**9**	NT	<0.1	NT	**5**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH116/0.2-0.3	22/07/2020	**8**	NT	<0.4	NT	**6**	NT	**3**	NT	<0.1	NT	<1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BD1/020200722	23/07/2020	<4	NT	<0.4	NT	**3**	NT	**3**	NT	<0.1	NT	**1**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH116/1.8-1.9	22/07/2020	**12**	NT	<0.4	NT	**8**	NT	**12**	NT	<0.1	NT	**2**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.06**	NT	**0.52**	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH117/0.2-0.4	24/07/2020	<4	NT	<0.4	NT	**3**	NT	**38**	NT	**0.2**	NT	**2**	NT	<25	<50	NT	<0.2	<0.5	<1	**4**	**4**	**3.2**	<0.001	**30**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH117/0.4-0.6	24/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NT	NT	NT	NT	NT	NT	NAD
BH118/0.2-0.3	22/07/2020	<4	NT	<0.4	NT	**5**	NT	**61**	NT	**0.1**	NT	**3**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**1.4**	<0.001	**12**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH118/0.4-0.5	22/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
BH118/1.2-1.3	22/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
BH118/1.4-1.5	22/07/2020	<4	NT	<0.4	NT	**2**	NT	**24**	NT	<0.1	NT	<1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	**0.2**	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH119/0.4-0.6	24/07/2020	**8**	NT	<0.4	NT	**4**	NT	**110**	**0.2**	**0.1**	NT	**6**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.66**	NT	**5.5**	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP120/0.5-0.6	28/07/2020	<4	NT	<0.4	NT	**22**	NT	**11**	NT	**0.1**	NT	<1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
TP120/1.0-1.1	28/07/2020	**10**	NT	<0.4	NT	**15**	NT	**59**	NT	**0.4**	NT	**3**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	**0.2**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP120/2.0-2.1	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	**Detected**	NAD	NT	**Detected**	NAD	**Detected**
TP120/2.5-2.6	28/07/2020	**9**	NT	**0.5**	NT	**17**	NT	**97**	NT	**0.1**	NT	**13**	NT	<25	**180**	NT	<0.2	<0.5	<1	<3	<1	**0.1**	NT	**0.57**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP120/2.9-3.0	28/07/2020	**9**	NT	<0.4	NT	**16**	NT	**38**	NT	**0.3**	NT	**16**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP121/0.1-0.2	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
TP121/0.2-0.3	27/07/2020	<4	NT	<0.4	NT	**2**	NT	**10**	NT	**0.8**	NT	<1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP121/0.6-0.7	27/07/2020	**6**	NT	<0.4	NT	**9**	NT	**79**	NT	**50**	NT	**6**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.06**	NT	**0.3**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP121/0.6-0.7	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP121/1.2-1.3	27/07/2020	**10**	NT	<0.4	NT	**7**	NT	**8**	NT	**0.3**	NT	**3**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BD1/20200727	27/07/2020	**9**	NT	<0.4	NT	**7**	NT	**7**	NT	<0.1	NT	**2**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP121/1.2-1.3	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP121/2.9-3.0	27/07/2020	**6**	NT	**0.5**	NT	**15**	NT	**95**	NT	**11**	NT	**5**	NT	<25	**1603**	NT	<0.2	<0.5	<1	<3	<1	<0.5	NT	<0.5	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP122/0.0-0.1	27/07/2020	<4	NT	<0.4	NT	**6**	NT	**24**	NT	<0.1	NT	**4**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.4**	NT	**3.4**	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP122/0.3-0.4	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP122/0.8-0.9	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP122/1.4-1.5	27/07/2020	**5**	NT	<0.4	NT	**21**	NT	**23**	NT	<0.1	NT	**6**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	**0.2**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP122/2.4-2.5	27/07/2020	**10**	NT	<0.4	NT	**8**	NT	**28**	NT	<0.1	NT	**3**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.09**	NT	**0.5**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP123/0.1-0.2	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP123/0.3-0.4	27/07/2020	<4	NT	**0.5**	NT	**3**	NT	**16**	NT	<0.1	NT	**1**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP123/0.6-0.7	27/07/2020	**8**	NT	<0.4	NT	**20**	NT	**93**	NT	**0.2**	NT	**5**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.2**	NT	**2.3**	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP123/1.9-2.0	27/07/2020	**7**	NT	<0.4	NT	**15**	NT	**99**	NT	**0.2**	NT	**2**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.3**	NT	**3.2**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**Detected**
TP123/2.4-2.5	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP124/0.3-0.4	27/07/2020	**8**	NT	<0.4	NT	**11**	NT	**59**	NT	<0.1	NT	**15**	NT	<25	**100**	NT	<0.2	<0.5	<1	<3	<1	**0.55**	NT	**4.7**	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP124/0.3-0.4	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP124/0.8-0.9	27/07/2020	<4	NT	<0.4	NT	**11**	NT	**20**	NT	<0.1	NT	**4**	NT	<25	**2020**	NT	<0.2	<0.5	<1	<3	<1	**10**	<0.001	**140**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP124/1.3-1.4	27/07/2020	**10**	NT	<0.4	NT	**69**	NT	**72**	NT	**0.4**	NT	**5**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP124/2.6-2.7	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**

		Metals												TRH		TPH	BTEX					PAH			Phenol	OCP		OPP	PCB	Asbestos							
		Arsenic	TCLP Arsenic	Cadmium	TCLP Cadmium	Total Chromium	TCLP Total Chromium	Lead	TCLP Lead	Mercury (inorganic)	TCLP Mercury (inorganic)	Nickel	TCLP Nickel	TRH C6 - C9	C10 -C36 recoverable hydrocarbons	C10 -C36 petroleum hydrocarbons	Benzene	Toluene	Ethylbenzene	Xylenes (total)	Total Xylenes	Benzo(a)pyrene (BaP)	TCLP Benzo(a)pyrene (BaP)	Total PAHs	Phenol	Total Endosulfan	Total Analysed OCP	Total Analysed OPP	Total PCB	Asbestos ID in soil >0.1g/kg	Trace Analysis	Asbestos ID in soil >0.1g/kg	Asbestos ID in soil <0.1g/kg	Trace Analysis	AOM >2mm Estimation	FA and AF Estimation	FA and AF Estimation	Total Asbestos
	PQL	4	0.05	0.4	0.01	1	0.01	1	0.03	0.1	0.0005	1	0.02	25	50	50	0.2	0.5	1	3	1	0.05	0.001	0.05	5	0.1	0.1	0.1	0.1								<0.001	0.001
Sample ID	Sample Date	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	-	g	g	%(w/w)	-
TP124/4.5-4.6	27/07/2020	**10**	NT	**5.8**	NT	**15**	NT	**150**	**0.3**	**0.3**	NT	**18**	NT	<25	**280**	**300**	<0.2	<0.5	<1	<3	<1	**0.1**	NT	**1.2**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**Detected**
TP124/4.5-4.6	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	**Detected**	NAD	NT	**Detected**	NAD	**Detected**
TP125/0.0-0.1	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP125/0.2-0.3	28/07/2020	**4**	NT	<0.4	NT	**13**	NT	**42**	NT	<0.1	NT	**3**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.2**	NT	**1.4**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**Detected**
TP125/0.8-0.9	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP125/2.9-3.0	28/07/2020	**7**	NT	<0.4	NT	**40**	NT	**45**	NT	**0.2**	NT	**2**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP125/3.9-4.0	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP125/4.9-5.0	28/07/2020	<4	NT	<0.4	NT	**2**	NT	**16**	NT	<0.1	NT	<1	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.08**	NT	**0.91**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP126/0.1-0.2	28/07/2020	**11**	NT	<0.4	NT	**11**	NT	**24**	NT	<0.1	NT	**3**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.1**	NT	**0.4**	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP126/0.4-0.5	28/07/2020	**7**	NT	<0.4	NT	**8**	NT	**42**	NT	<0.1	NT	**6**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**1.2**	NT	**11**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP126/1.5-1.6	28/07/2020	**7**	NT	<0.4	NT	**10**	NT	**39**	NT	**2.1**	NT	**3**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.08**	NT	**0.3**	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP126/3.4-3.5	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP127/0.0-0.1	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP127/0.3-0.4	28/07/2020	<4	NT	<0.4	NT	**3**	NT	**11**	NT	<0.1	NT	**2**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP127/0.9-1.0	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP127/2.4-2.5	28/07/2020	**13**	NT	<0.4	NT	**7**	NT	**5**	NT	<0.1	NT	**1**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP128/0.1-0.2	28/07/2020	<4	NT	<0.4	NT	**9**	NT	**3**	NT	<0.1	NT	**49**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP128/0.4-0.5	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP128/0.9-1.0	28/07/2020	**10**	NT	**0.7**	NT	**26**	NT	**200**	**0.08**	**0.1**	NT	**34**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.3**	NT	**3.4**	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
BD4/20200728	28/07/2020	**10**	NT	**0.7**	NT	**23**	NT	**190**	NT	**0.1**	NT	**27**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.1**	NT	**1.2**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TP128/1.4-1.5	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**Detected**
TP128/2.0-2.1	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**Detected**
TP129/0.1-0.2	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NT
TP129/0.4-0.5	28/07/2020	**18**	NT	**2**	NT	**16**	NT	**130**	**0.06**	**2.5**	NT	**15**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.2**	NT	**1.4**	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP129/0.8-0.9	28/07/2020	**7**	NT	<0.4	NT	**12**	NT	**33**	NT	**0.2**	NT	**13**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
TP129/1.4-1.5	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP129/1.9-2.0	28/07/2020	**17**	NT	**0.6**	NT	**20**	NT	**110**	**0.1**	**1**	NT	**9**	NT	<25	**400**	NT	<0.2	<0.5	<1	<3	<1	**0.87**	<0.001	**5.3**	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NT	NT	NT	NT	NT	NT	**Detected**
TP130/0.0-0.1	28/07/2020	**7**	NT	<0.4	NT	**15**	NT	**43**	NT	**0.1**	NT	**21**	NT	<25	**420**	NT	<0.2	<0.5	<1	<3	<1	**1.3**	<0.001	**11**	<5	<0.1	<0.1	<0.1	<0.1	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
TP130/0.6-0.7	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	NAD
TP130/1.1-1.2	28/07/2020	**6**	NT	**0.7**	NT	**10**	NT	**120**	**0.05**	**0.2**	NT	**4**	NT	<25	<50	NT	<0.2	<0.5	<1	<3	<1	**0.2**	NT	**1.9**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD
TP130/1.5-1.6	28/07/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD	NT	NT	NAD	**Detected**
TP130/2.7-2.8	28/07/2020	**7**	NT	**3**	NT	**990**	<0.01	**130**	**0.1**	**0.4**	NT	**17**	NT	<25	**270**	NT	<0.2	<0.5	<1	<3	<1	**0.07**	NT	**0.2**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Waste Classification Criteria [f]																																						
CT1		100	N/A	20	N/A	100	N/A	100	N/A	4	N/A	40	N/A	650	10000	10000	10	288	600	1000	N/A	0.8	N/A	200	288	60	<50	4	<50	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
SCC1		500	N/A	100	N/A	1900	N/A	1500	N/A	50	N/A	1050	N/A	650	10000	10000	18	518	1080	1800	N/A	10	N/A	200	518	108	<50	7.5	<50	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
TCLP1		N/A	5	N/A	1	N/A	5	N/A	5	N/A	0.2	N/A	2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.04	N/A	N/A	N/A	N/A	N/A	N/A	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
CT2		400	N/A	80	N/A	400	N/A	400	N/A	16	N/A	160	N/A	2600	40000	40000	40	1152	2400	4000	N/A	3.2	N/A	800	1152	240	<50	16	<50	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
SCC2		2000	N/A	400	N/A	7600	N/A	6000	N/A	200	N/A	4200	N/A	2600	40000	40000	72	2073	4320	7200	N/A	23	N/A	800	2073	432	<50	30	<50	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD
TCLP2		N/A	20	N/A	4	N/A	20	N/A	20	N/A	0.8	N/A	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.16	N/A	N/A	N/A	N/A	N/A	N/A	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD	NAD

CT1 exceedance TCLP1 and/or SCC1 exceedance CT2 exceedance TCLP2 and/or SCC2 exceedance Asbestos detection

NT = Not tested NC = No criteria AD = Asbestos detected NAD = No asbestos detected

Notes:

a	QA/QC replicate of sample listed directly below the primary sample
b	Total chromium used as initial screen for chromium(VI).
c	Total recoverable hydrocarbons (TRH) used as an initial screen for total petroleum hydrocarbons (TPH)
d	Criteria for scheduled chemicals used as an initial screen
e	Criteria for Chlorpyrifos used as initial screen
f	All criteria are in the same units as the reported results
PQL	Practical quantitation limit
CT1	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values of specific contaminant concentration (SCC) for classification without TCLP: General solid waste
SCC1	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
TCLP1	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
CT2	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values of specific contaminant concentration (SCC) for classification without TCLP: Restricted solid waste
SCC2	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid
TCLP2	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid

Table B6: Summary of Groundwater Results

		Metals								TRH										TPH (Silica Gel Cleanup)						BTEX				
		Arsenic (Filtered)	Cadmium (Filtered)	Chromium (III+VI) (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Zinc (Filtered)	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29-C36	C6-C10 less BTEX (F1)	C6-C10	C10-C16	C16-C34	C34-C40	C10 - C14	C15 - C28	C29-C36	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL		0.001	0.0001	0.001	0.001	0.001	0.00005	0.001	0.001	0.05	0.1	0.1	0.05	0.01	0.05	0.1	0.05	0.01	0.01	0.05	0.1	0.1	0.05	0.1	0.05	0.001	0.001	0.001	0.002	0.001
ANZG (2018) Marine water (unknown reliability) toxicant DGVs																											**0.005**	**0.18**		**0.35**
ANZG (2018) Marine water 95% toxicant DGVs		**0.013**	**0.0055**	**0.0314**	**0.0013**	**0.0044**	**0.0004**	**0.07**	**0.015**																	**0.7**	**0.08**	**0.18**		
PFAS NEMP 2020 Interim Marine 95%																														
NHMRC, NRMMC. (2016). Australian Drinking Water Guidelines		**0.01**	**0.002**	**0.05**	**2**	**0.01**	**0.001**	**0.02**																		**0.001**	**0.3**	**0.8**	**0.6**	**0.6**
NEPM 2013 Table 1A(4) HSL C GW for Vapour Intrusion, Sand 2-4m													**NL**					**NL**								**NL**	**NL**	**NL**		
Sample ID	**Sample Date**																													
BH106	29/07/2020	<0.001	<0.0001	0.001	**0.003**	<0.001	<0.00005	**0.004**	**0.02**	**0.071**	**0.15**	<0.1	**0.071**	<0.01	**0.065**	**0.13**	<0.1	<0.01	<0.01	<0.05	<0.1	<0.1	<0.05	<0.1	<0.1	<0.001	<0.001	<0.001	<0.002	<0.001
BH107	29/07/2020	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.00005	**0.002**	**0.016**	**0.061**	**0.13**	<0.1	**0.061**	<0.01	**0.058**	**0.12**	<0.1	**0.012**	**0.012**	<0.05	<0.1	<0.1	<0.05	<0.1	<0.1	<0.001	<0.001	<0.001	<0.002	<0.001
BH108	29/07/2020	**0.003**	<0.0001	<0.001	**0.015**	<0.001	<0.00005	**0.002**	**0.022**	<0.05	<0.1	<0.1	<0.05	<0.01	<0.05	<0.1	<0.1	<0.01	<0.01	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.002	<0.001
BH109	29/07/2020	0.001	<0.0001	<0.001	<0.001	<0.001	<0.00005	**0.001**	**0.01**	**0.11**	<0.1	<0.1	**0.11**	**0.015**	**0.12**	<0.1	<0.1	**0.033**	**0.033**	<0.05	<0.1	<0.1	<0.05	<0.1	<0.1	<0.001	<0.001	<0.001	<0.002	<0.001
BD1/20200729	29/07/2020	0.001	<0.0001	<0.001	<0.001	<0.001	<0.00005	<0.001	**0.013**	**0.81**	<0.1	<0.1	**0.81**	**0.014**	**0.087**	<0.1	<0.1	**0.032**	**0.032**	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.002	<0.001
BH110	29/07/2020	0.001	<0.0001	<0.001	<0.001	<0.001	<0.00005	**0.001**	**0.038**	**0.66**	**0.13**	<0.1	**0.66**	<0.01	**0.069**	0.11	<0.1	**0.013**	**0.013**	<0.05	<0.1	<0.1	<0.05	<0.1	<0.1	<0.001	<0.001	<0.001	<0.002	<0.001
QAQC Results																														
Trip Blank	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	-	-	-	<0.01	<0.01	-	-	-	-	-	-	<0.001	<0.001	<0.001	<0.002	<0.001
Trip Spike	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	112%	103%	99%	106%	105%

Note: # Where marine water GIL not available, fresh water GIL have been used as a screening criteria

Bold = Lab detections

Table B6: Summary of Groundwater Results

			PAH																Phenols	Polychlorinated Biphenyls										
		Xylene Total	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(b,j+k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)	Phenolics Total	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	4,4-DDE	a-BHC	Aldrin	b-BHC
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL		0.002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.05	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.000001	0.000001	0.000001	0.000001
ANZG (2018) Marine water (unknown reliability) toxicant DGVs					**0.0001**		**0.0001**					**0.001**				**0.0006**											**0.0000005**		**0.000003**	
ANZG (2018) Marine water 95% toxicant DGVs															**0.07**				**0.004**		**0.001**	**0.0003**	**0.0003**	**0.00003**	**0.00001**					
PFAS NEMP 2020 Interim Marine 95%																														
NHMRC, NRMMC. (2016). Australian Drinking Water Guidelines		**0.6**					**0.00001**												**0.4**										**0.0003**	
NEPM 2013 Table 1A(4) HSL C GW for Vapour Intrusion, Sand 2-4m		**NL**													**NL**															
Sample ID	**Sample Date**																													
BH106	29/07/2020	<0.001	**0.0003**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	**0.0002**	<0.0001	<0.0002	**0.0002**	<0.0001	**0.0008**	<0.05	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.000001	<0.000001	<0.000001	0.000004
BH107	29/07/2020	<0.001	**0.0005**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**0.0004**	<0.0001	<0.0002	<0.0001	<0.0001	**0.00089**	<0.05	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.000001	<0.000001	<0.000001	<0.000001
BH108	29/07/2020	<0.001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0001	<0.0001	<0.0001	<0.05	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.000001	<0.000001	<0.000001	<0.000001
BH109	29/07/2020	<0.001	**0.0008**	<0.0001	**0.0001**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**0.0002**	**0.0004**	<0.0001	**0.0002**	**0.001**	**0.0001**	**0.0028**	<0.05	-	-	-	-	-	-	-	-	-	-	-
BD1/20200729	29/07/2020	<0.001	**0.0007**	<0.0001	**0.0002**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**0.0002**	**0.0004**	<0.0001	<0.0002	**0.0009**	**0.0001**	**0.0024**	<0.05	-	-	-	-	-	-	-	-	-	-	-
BH110	29/07/2020	<0.001	**0.0003**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	**0.0002**	<0.0001	<0.0001	**0.00049**	<0.05	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.000001	<0.000001	<0.000001	<0.000001
QAQC Results																														
Trip Blank	29/07/2020	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: # Where marine water GIL not available, fresh water GIL have been u

Bold = Lab detections

Table B6: Summary of Groundwater Results

		Organochlorine Pesticides															Organophosphorous Pesticides													
		Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Methyl parathion	Ronnel	Parathion	1,2,4-trimethylbenzene
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL		0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000002	0.000002	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001	0.00002	0.0002	0.000009	0.0002	0.00001	0.0002	0.00015	0.0002	0.0002	0.00005	0.0002	0.0002	0.000004	0.001
ANZG (2018) Marine water (unknown reliability) toxicant DGVs						**0.0000004**	**0.00001**						**0.000007**	**0.0000004**		**0.000004**	**0.00001**				**0.00001**		**0.00015**		**0.000001**	**0.00005**			**0.000004**	
ANZG (2018) Marine water 95% toxicant DGVs								**0.00001**			**0.000008**								**0.000009**											
PFAS NEMP 2020 Interim Marine 95%																														
NHMRC, NRMMC. (2016). Australian Drinking Water Guidelines		**0.002**	**0.002**			**0.009**	**0.0003**	**0.02**	**0.02**	**0.02**					**0.0003**		**0.03**		**0.01**		**0.004**	**0.005**	**0.007**	**0.004**	**0.007**	**0.07**	**0.0007**		**0.02**	
NEPM 2013 Table 1A(4) HSL C GW for Vapour Intrusion, Sand 2-4m																														
Sample ID	**Sample Date**																													
BH106	29/07/2020	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000002	<0.000002	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.00002	<0.0002	<0.000009	<0.0002	<0.00001	<0.0002	<0.00015	<0.0002	<0.0002	<0.00005	<0.0002	<0.0002	<0.000004	<0.001
BH107	29/07/2020	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000002	<0.000002	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.00002	<0.0002	<0.000009	<0.0002	<0.00001	<0.0002	<0.00015	<0.0002	<0.0002	<0.00005	<0.0002	<0.0002	<0.000004	<0.001
BH108	29/07/2020	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000002	<0.000002	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.00002	<0.0002	<0.000009	<0.0002	<0.00001	<0.0002	<0.00015	<0.0002	<0.0002	<0.00005	<0.0002	<0.0002	<0.000004	<0.001
BH109	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001
BD1/20200729	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110	29/07/2020	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000002	<0.000002	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.000001	<0.00002	<0.0002	<0.000009	<0.0002	<0.00001	<0.0002	<0.00015	<0.0002	<0.0002	<0.00005	<0.0002	<0.0002	<0.000004	<0.001
QAQC Results																														
Trip Blank	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: # Where marine water GIL not available, fresh water GIL have been u

Bold = Lab detections

Table B6: Summary of Groundwater Results

		VOCs																												
		1,3,5-trimethylbenzene	isopropylbenzene	n-butylbenzene	n-propylbenzene	sec-butylbenzene	Styrene	tert-butylbenzene	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.01	0.001	0.01	0.001
ANZG (2018) Marine water (unknown reliability) toxicant DGVs			**0.03**							**0.27**		**0.33**		**0.7**				**1.9**	**0.9**	**1.1**					**0.24**			**0.37**		
ANZG (2018) Marine water 95% toxicant DGVs												**1.9**																		
PFAS NEMP 2020 Interim Marine 95%																														
NHMRC, NRMMC. (2016). Australian Drinking Water Guidelines							**0.03**							**0.03**				**0.003**							**0.003**			**0.003**		**0.06**
NEPM 2013 Table 1A(4) HSL C GW for Vapour Intrusion, Sand 2-4m																														
Sample ID	**Sample Date**																													
BH106	29/07/2020	<0.001	**0.001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.001
BH107	29/07/2020	<0.001	**0.001**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.001
BH108	29/07/2020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.001
BH109	29/07/2020	<0.001	**0.002**	**0.002**	**0.004**	**0.002**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.001
BD1/20200729	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110	29/07/2020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.001
QAQC Results																														
Trip Blank	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: # Where marine water GIL not available, fresh water GIL have been u

Bold = Lab detections

Table B6: Summary of Groundwater Results

																										PFAS in Water					
		cis-1,3-dichloropropene	Dibromomethane	Hexachlorobutadiene	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Trichlorofluoromethane	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	2-chlorotoluene	4-chlorotoluene	Bromobenzene	Chlorobenzene	Cyclohexane	6:2 FtS	8:2 FTS	Perfluorohexanesulfonic acid PFHxS	Perfluorooctanesulfonic acid PFOS	Perfluorooctanoic acid PFOA	Total Positive PFHxS & PFOS	Total Positive PFOA & PFOS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
EQL		0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.01	0.001	0.01	0.01	0.01	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001
ANZG (2018) Marine water (unknown reliability) toxicant DGVs						**0.07**			**0.1**					**0.003**		**0.16**	**0.26**	**0.06**				**0.055**								
ANZG (2018) Marine water 95% toxicant DGVs															**0.08**															
PFAS NEMP 2020 Interim Marine 95%																											**0.13**	**220**		
NHMRC, NRMMC. (2016). Australian Drinking Water Guidelines			**0.004**			**0.05**			**0.0003**					**0.03**	**0.03**	**1.5**		**0.04**				**0.3**								
NEPM 2013 Table 1A(4) HSL C GW for Vapour Intrusion, Sand 2-4m																														
Sample ID	**Sample Date**																													
BH106	29/07/2020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.002**	<0.001	<0.001	<0.002	**0.049**	**0.13**	**0.015**	**0.18**	**0.15**
BH107	29/07/2020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.002**	<0.001	-	-	-	-	-	-	-
BH108	29/07/2020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	**0.001**	**0.002**	**0.005**	**0.003**	**0.006**
BH109	29/07/2020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.01**	<0.001	-	-	-	-	-	-	-
BD1/20200729	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH110	29/07/2020	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.01	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	**0.003**	<0.001	<0.001	<0.002	**0.012**	**0.012**	**0.011**	**0.024**	**0.023**
QAQC Results																														
Trip Blank	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: # Where marine water GIL not available, fresh water GIL have been u

Bold = Lab detections

Table B6: Summary of Groundwater Results

			Nutrients			Mircobiological			Anions and Cations											Physical Paramaters	
		Total Positive PFAS	Ammonia	Nitrate	Nitrite	Total Coliforms	Faecal Coliforms	Hydrocarbon Utilising Bacteria (Pseudomonas Aeruginosa)	Calcium - Dissolved	Potassium - Dissolved	Sodium - Dissolved	Magnesium - Dissolved	Hydroxide Alkalinity (OH-) as CaCO3	Bicarbonate Alkalinity as CaCO3	Carbonate Alkalinity as CaCO3	Total Alkalinity as CaCO3	Sulphate, SO4	Chloride	Ionic Balance	Biochemical Oxygen Demand	Chemical Oxygen Demand
		ug/L	mg/L	mg/L	mg/L	cfu/100mL	cfu/100mL	cfu/100mL	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	mg/L	mg/L
EQL		0.001	0.005	0.005	0.005		1	0	0.5	0.5	0.5	0.5	5	5	5	5	1	1		5	50
ANZG (2018) Marine water (unknown reliability) toxicant DGVs																					
ANZG (2018) Marine water 95% toxicant DGVs			**0.91**				**1000**														
PFAS NEMP 2020 Interim Marine 95%																					
NHMRC, NRMMC. (2016). Australian Drinking Water Guidelines				**50**	**3**												**500**				
NEPM 2013 Table 1A(4) HSL C GW for Vapour Intrusion, Sand 2-4m																					
Sample ID	**Sample Date**																				
BH106	29/07/2020	**0.2**	**20**	**0.01**	<0.005	<20	<20	<100	**130**	**15**	**72**	**15**	<5	**580**	<5	**580**	<1	**93**	**-12**	**18**	**90**
BH107	29/07/2020	-	**12**	**0.005**	<0.005	-	-	<100	**150**	**18**	**73**	**18**	<5	**550**	<5	**550**	**31**	**100**	**-7**	**23**	**70**
BH108	29/07/2020	**0.007**	**1.5**	**0.01**	<0.005	**50**	**80**	<100	**78**	**3.8**	**87**	**8**	<5	**280**	<5	**280**	**26**	**69**	**2**	**18**	**70**
BH109	29/07/2020	-	**5**	**0.007**	<0.005	**110**	<20	<100	**94**	**6.7**	**130**	**11**	<5	**470**	<5	**470**	**1**	**120**	**-5**	**9**	**50**
BD1/20200729	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**130**	-	-	-
BH110	29/07/2020	**0.034**	**9.4**	<0.005	<0.005	**170**	**20**	<100	**180**	**27**	**830**	**58**	<5	**600**	<5	**600**	**17**	**1200**	**6**	**12**	**90**
QAQC Results																					
Trip Blank	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	29/07/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: # Where marine water GIL not available, fresh water GIL have been u

Bold = Lab detections

Appendix C

Data Quality Assessment

Appendix C - Data Quality Assessment

Q1. Data Quality Objectives

The contamination investigation was prepared with reference to the seven step Data Quality Objective (DQO) process which is provided in Appendix B, Schedule B2 of the *National Environment Protection (Assessment of Site Contamination) Measure* 1999 as amended 2013 (NEPC, 2013). The DQO process is outlined as follows:

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

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

Table Q1: Data Quality Objectives

Data Quality Objective	Report Section where Addressed
State the Problem	S1 Introduction
Identify the Decision	S11 Discussion of Results S12 Conclusions and Recommendations S13 Concluding Remarks
Identify Inputs to the Decision	S1 Introduction S3 Site Information S4 Site History S5 Previous Reports S6 Site Walkover S7 Preliminary Conceptual Site Model S9 Site Assessment Criteria S10 Results
Define the Boundary of the Assessment	S3.1 Site Identification Drawing 1 - Appendix A
Develop a Decision Rule	S9 Site Assessment Criteria
Specify Acceptable Limits on Decision Errors	S8 Field Work Methodology and Analytical Rationale Field and Laboratory Quality Control – Section Q2

Data Quality Objective	Report Section where Addressed
Optimise the Design for Obtaining Data	S2 Scope of Works S8 Field Work Methodology and Analytical Rationale Field and Laboratory Quality Control - Section Q2

Q2. Field and Laboratory Quality Control

The field and laboratory QC procedures and results are summarised in the Table2 Q2 below. Reference should be made to the fieldwork and analysis procedures in Section 8 and the laboratory results certificates in Appendix I for further details.

Table Q2: Field and Laboratory QC

Item	Evaluation / Acceptance Criteria	Achievement
Analytical laboratories used	NATA accreditation	yes
Holding times	Various based on type of analysis	yes
Intra-laboratory replicates	5% of primary samples; <50% RPD (>5 x PQL)	yes[1]
Inter-laboratory replicates	5% of primary samples; <50% RPD (10-20 x PQL)	yes[1]
Trip Spikes	1 per sampling event; 60-140% recovery	yes
Trip Blanks	1 per sampling event; <PQL	yes
Laboratory / Reagent Blanks	1 per batch; <PQL	yes
Matrix Spikes	1 per lab batch; 70-130% recovery (inorganics); 60-140% recovery (organics)	yes
Surrogate Spikes	All organics analysis; 70-130% recovery (inorganics); 60-140% recovery (organics)	yes
Control Samples	1 per lab batch; 70-130% recovery (inorganics); 60-140% recovery (organics)	yes

NOTE: 1- qualitative assessment of RPD results overall below see Section Q2.1 and Tables Q4 and Q5

All trip spikes recorded results within the adopted criteria. Furthermore, trip blank results for all analytes in all samples were recorded at below a laboratory reporting limit (LRL). This is summarised in Table Q6.

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

Q2.1 Intra- and Inter- 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.

Inter-laboratory replicates were conducted as a check of the reproducibility of results between the primary laboratory ELS and the secondary laboratory ALS Environmental and as a measure of consistency of sampling techniques

The calculated RPD values were within the acceptable range of { 30 for inorganic analytes and {|50% for organics with some minor exceptions. However, this is not considered to be significant because:

- The typically low actual differences in the concentrations of the replicate pairs where some RPD exceedances occurred. High RPD values reflect the small differences between two small numbers. In this regard, it is also noted that ELS do not consider RPD exceedances for results that are less than five times the PQL to be significant;
- Replicate samples (soil) with high RPD values for inorganic analytes were taken from fill material that is heterogeneous in nature and the distribution of metals in soil are also generally non-homogenous;
- 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 inter- and intra-laboratory replicate comparisons indicate that the sampling techniques were generally consistent and repeatable.

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

Q3. Data Quality Indicators

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

- Completeness – a measure of the amount of usable data from a data collection activity;
- Comparability – the confidence (qualitative) that data may be considered to be equivalent for each sampling and analytical event;
- Representativeness – the confidence (qualitative) of data representativeness of media present on-site;
- Precision – a measure of variability or reproducibility of data; and
- Accuracy – a measure of closeness of the data to the ‘true’ value.
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The DQIs were assessed as outlined in the following Table Q3.

Table Q3: Data Quality Indicators

Data Quality Indicator	Method(s) of Achievement
Completeness	Systematic and selected target locations sampled; Preparation of borehole logs, sample location plan and chain of custody records; Preparation of field groundwater sampling sheets; Preparation of LFG sampling sheers; 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 chain of custody (COC) documentation; NATA accredited laboratory results certificates provided by the laboratory; and Satisfactory frequency and results for field and laboratory quality control (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; Use of calibrated equipment in the field; Experienced samplers used; 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; 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; and Samples were analysed in accordance with the COC.
Precision	Field staff followed standard operating procedures; Acceptable RPD between original samples and replicates; and Satisfactory results for all other field and laboratory QC samples.
Accuracy	Field staff followed standard operating procedures; and Satisfactory results for all field and laboratory QC samples.

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

Table Q4: Soil RPD Table

				Intra laboratory Replicate			Intra laboratory Replicate			Intra laboratory Replicate			Intra laboratory Replicate		
			Field ID	BH116/0.2-0.3	BD1/020200722	RPD	BH112/0.2-0.4	BD4/020200723	RPD	BH110/0.6-0.7	BD3/20200724	RPD	TP121/1.2-1.3	BD1/20200727	RPD
			Sampled Date/Time	22/07/2020	22/07/2020		23/07/2020	23/07/2020		24/07/2020	24/07/2020		27/07/2020	27/07/2020	
Chemical Group	**Analyte**	**Units**	**PQL**												
PAHs in Soil	Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Total +ve PAHs	mg/kg	0.05	<0.05	<0.05	0	0.4	0.06	**148**	<0.05	<0.05	0	<0.05	<0.05	0
Metals	Arsenic	mg/kg	4 (Primary): 5 (Interlab)	8	<4	67	7	9	25	<4.0	<4.0	0	10	9	11
	Cadmium	mg/kg	0.4 (Primary): 1 (Interlab)	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<0.4	0
	Chromium (III+VI)	mg/kg	1 (Primary): 2 (Interlab)	6	3	**67**	11	12	9	6	8	29	7	7	0
	Copper	mg/kg	1 (Primary): 5 (Interlab)	<1	6	**143**	14	26	**60**	4	4	0	3	2	**40**
	Lead	mg/kg	1 (Primary): 5 (Interlab)	3	3	0	64	61	5	15	21	**33**	8	7	13
	Mercury	mg/kg	0.1	<0.1	<0.1	0	3.8	2.8	30	<0.1	<0.1	0	0.3	<0.1	**100**
	Nickel	mg/kg	1 (Primary): 2 (Interlab)	<1	1	0	4	3	29	1	1	0	3	2	**40**
	Zinc	mg/kg	1 (Primary): 5 (Interlab)	4	5	22	49	59	10	12	24	**67**	20	14	**35**
TRH	C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0
	C16-C34	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0
	C34-C40	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0
	F2-NAPHTHALENE	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0
	C6 - C9	mg/kg	25 (Primary): 10 (Interlab)	<25.0	<25.0	0	<25.0	<25.0	0	<25.0	<25.0	0	<25.0	<25.0	0
	C10 - C14	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0
	C15 - C28	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0
	C29-C36	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0
	C10 - C40 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0
	C6-C10 less BTEX (F1)	mg/kg	25 (Primary): 10 (Interlab)	<25.0	<25.0	0	<25.0	<25.0	0	<25.0	<25.0	0	<25.0	<25.0	0
	C6-C10	mg/kg	25 (Primary): 10 (Interlab)	<25.0	<25.0	0	<25.0	<25.0	0	<25.0	<25.0	0	<25.0	<25.0	0
BTEX	Benzene	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0
	Ethylbenzene	mg/kg	1 (Primary): 0.5 (Interlab)	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0
	Toluene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Xylene (m & p)	mg/kg	2 (Primary): 0.5 (Interlab)	<2.0	<2.0	0	<2.0	<2.0	0	<2.0	<2.0	0	<2.0	<2.0	0
	Xylene (o)	mg/kg	1 (Primary): 0.5 (Interlab)	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0
	Xylene Total	mg/kg	3 (Primary): 0.5 (Interlab)	<3.0	<3.0	0	<3.0	<3.0	0	<3.0	<3.0	0	<3.0	<3.0	0
PAH/Phenols	Acenaphthene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Acenaphthylene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Anthracene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Benz(a)anthracene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Benzo(a) pyrene	mg/kg	0.05 (Primary): 0.5 (Interlab)	<0.05	<0.05	0	0.09	0.06	**40**	<0.05	<0.05	0	<0.05	<0.05	0
	Benzo(g,h,i)perylene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Chrysene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Dibenz(a,h)anthracene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Fluoranthene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	0.2	**67**	<0.1	<0.1	0	<0.1	<0.1	0
	Fluorene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Naphthalene	mg/kg	1 (Primary): 0.5 (Interlab)	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0	<1.0	<1.0	0
	Naphthalene	mg/kg	0.1 (Primary): 1 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Phenanthrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
	Pyrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	0.2	**67**	<0.1	<0.1	0	<0.1	<0.1	0

Table Q4: Soil RPD Table

				Intra laboratory Replicate			Inter laboratory Replicate			Inter laboratory Replicate			Inter laboratory Replicate		
			Field ID	TP128/0.9-1.0	BD4/20200728	RPD	BH101/0.3-0.5	BD1/20200723	RPD	BH103/1.6-1.8	BD3/020200723	RPD	BH105/0.4-0.5	BD2/20200724	RPD
			Sampled Date/Time	28/07/2020	28/07/2020		23/07/2020	23/07/2020		23/07/2020	23/07/2020		24/07/2020	24/07/2020	
Chemical Group	**Analyte**	**Units**	**PQL**												
PAHs in Soil	Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.5	<0.5	<0.5	0	1.6	<0.5	**105**	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5	<0.5	<0.5	0	1.6	<0.5	**105**	<0.5	<0.5	0	<0.5	<0.5	0
	Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.5	<0.5	<0.5	0	1.6	<0.5	**105**	<0.5	<0.5	0	<0.5	<0.5	0
	Total +ve PAHs	mg/kg	0.05	3.4	1.2	**96**	8.9	<0.5	**179**	1.7	<0.5	**109**	<0.05	<0.05	0
Metals	Arsenic	mg/kg	4 (Primary): 5 (Interlab)	10	10	0	4	<5	22	4	7	**55**	23	6	**117**
	Cadmium	mg/kg	0.4 (Primary): 1 (Interlab)	0.7	0.7	0	<0.4	<1	0	<0.4	<1	0	<0.4	<1	0
	Chromium (III+VI)	mg/kg	1 (Primary): 2 (Interlab)	26	23	12	7.0	5	**33**	10	12	18	8	7	13
	Copper	mg/kg	1 (Primary): 5 (Interlab)	270	190	**35**	69	17	**121**	20	32	**46**	4	<5	22
	Lead	mg/kg	1 (Primary): 5 (Interlab)	200	190	5	66	49	30	61	100	**48**	8	8	0
	Mercury	mg/kg	0.1	0.1	0.1	0	0.1	0.2	**67**	0.2	0.3	40	<0.1	<0.1	0
	Nickel	mg/kg	1 (Primary): 2 (Interlab)	34	27	23	8	4	**67**	3	8	**91**	<1	<2	0
	Zinc	mg/kg	1 (Primary): 5 (Interlab)	290	280	4	98	69	**35**	130	171	27	15	6	**86**
TRH	C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0
	C16-C34	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0
	C34-C40	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0
	F2-NAPHTHALENE	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0
	C6 - C9	mg/kg	25 (Primary): 10 (Interlab)	<25.0	<25.0	0	<25.0	<10.0	0	<25.0	<10.0	0	<25.0	<10.0	0
	C10 - C14	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0
	C15 - C28	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0
	C29-C36	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0
	C10 - C40 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0
	C6-C10 less BTEX (F1)	mg/kg	25 (Primary): 10 (Interlab)	<25.0	<25.0	0	<25.0	<10.0	0	<25.0	<10.0	0	<25.0	<10.0	0
	C6-C10	mg/kg	25 (Primary): 10 (Interlab)	<25.0	<25.0	0	<25.0	<10.0	0	<25.0	<10.0	0	<25.0	<10.0	0
BTEX	Benzene	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0
	Ethylbenzene	mg/kg	1 (Primary): 0.5 (Interlab)	<1.0	<1.0	0	<1.0	<0.5	0	<1.0	<0.5	0	<1.0	<0.5	0
	Toluene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
	Xylene (m & p)	mg/kg	2 (Primary): 0.5 (Interlab)	<2.0	<2.0	0	<2.0	<0.5	0	<2.0	<0.5	0	<2.0	<0.5	0
	Xylene (o)	mg/kg	1 (Primary): 0.5 (Interlab)	<1.0	<1.0	0	<1.0	<0.5	0	<1.0	<0.5	0	<1.0	<0.5	0
	Xylene Total	mg/kg	3 (Primary): 0.5 (Interlab)	<3.0	<3.0	0	<3.0	<0.5	0	<3.0	<0.5	0	<3.0	<0.5	0
PAH/Phenols	Acenaphthene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0	<0.1	<0.5	0
	Acenaphthylene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	0.1	<0.5	0	<0.1	<0.5	0	<0.1	<0.5	0
	Anthracene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.1	<0.1	0	0.1	<0.5	0	<0.1	<0.5	0	<0.1	<0.5	0
	Benz(a)anthracene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.3	0.1	**100**	0.8	<0.5	46	0.2	<0.5	0	<0.1	<0.5	0
	Benzo(a) pyrene	mg/kg	0.05 (Primary): 0.5 (Interlab)	0.3	0.1	**100**	1.1	<0.5	**75**	0.2	<0.5	0	<0.05	<0.5	0
	Benzo(g,h,i)perylene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.2	<0.1	67	0.9	<0.5	**57**	0.2	<0.5	0	<0.1	<0.5	0
	Chrysene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.3	0.2	40	0.9	<0.5	**57**	0.2	<0.5	0	<0.1	<0.5	0
	Dibenz(a,h)anthracene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	0.2	<0.5	0	<0.1	<0.5	0	<0.1	<0.5	0
	Fluoranthene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.6	0.2	**100**	1	<0.5	**67**	0.2	<0.5	0	<0.1	<0.5	0
	Fluorene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0	<0.1	<0.5	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.2	<0.1	**67**	0.5	<0.5	0	0.1	<0.5	0	<0.1	<0.5	0
	Naphthalene	mg/kg	1 (Primary): 0.5 (Interlab)	<1.0	<1.0	0	<1.0	<0.5	0	<1.0	<0.5	0	<1.0	<0.5	0
	Naphthalene	mg/kg	0.1 (Primary): 1 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.5	0	<0.1	<0.5	0
	Phenanthrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.4	0.2	67	0.3	<0.5	0	0.2	<0.5	0	<0.1	<0.5	0
	Pyrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.6	0.2	**100**	1.2	<0.5	**82**	<0.1	<0.5	0	<0.1	<0.5	0

Table Q4: Soil RPD Table

				Inter laboratory Replicate		
			Field ID	TP123/0.6-0.7	BD2/20200727	RPD
			Sampled Date/Time	27/07/2020	27/07/2020	
Chemical Group	Analyte	Units	PQL			
PAHs in Soil	Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.5	<0.5	<0.5	0
	Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5	<0.5	<0.5	0
	Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.5	<0.5	<0.5	0
	Total +ve PAHs	mg/kg	0.05	2.3	2.8	20
Metals	Arsenic	mg/kg	4 (Primary): 5 (Interlab)	8	6	29
	Cadmium	mg/kg	0.4 (Primary): 1 (Interlab)	<0.4	<1	0
	Chromium (III+VI)	mg/kg	1 (Primary): 2 (Interlab)	20	7	**96**
	Copper	mg/kg	1 (Primary): 5 (Interlab)	45	19	**81**
	Lead	mg/kg	1 (Primary): 5 (Interlab)	93	129	**32**
	Mercury	mg/kg	0.1	0.2	2	**164**
	Nickel	mg/kg	1 (Primary): 2 (Interlab)	5	5	0
	Zinc	mg/kg	1 (Primary): 5 (Interlab)	53	100	**61**
TRH	C10-C16	mg/kg	50	<50.0	<50.0	0
	C16-C34	mg/kg	100	<100.0	<100.0	0
	C34-C40	mg/kg	100	<100.0	<100.0	0
	F2-NAPHTHALENE	mg/kg	50	<50.0	<50.0	0
	C6 - C9	mg/kg	25 (Primary): 10 (Interlab)	<25.0	<10.0	0
	C10 - C14	mg/kg	50	<50.0	<50.0	0
	C15 - C28	mg/kg	100	<100.0	<100.0	0
	C29-C36	mg/kg	100	<100.0	<100.0	0
	C10 - C40 (Sum of total)	mg/kg	50	<50.0	<50.0	0
	C6-C10 less BTEX (F1)	mg/kg	25 (Primary): 10 (Interlab)	<25.0	<10.0	0
	C6-C10	mg/kg	25 (Primary): 10 (Interlab)	<25.0	<10.0	0
BTEX	Benzene	mg/kg	0.2	<0.2	<0.2	0
	Ethylbenzene	mg/kg	1 (Primary): 0.5 (Interlab)	<1.0	<0.5	0
	Toluene	mg/kg	0.5	<0.5	<0.5	0
	Xylene (m & p)	mg/kg	2 (Primary): 0.5 (Interlab)	<2.0	<0.5	0
	Xylene (o)	mg/kg	1 (Primary): 0.5 (Interlab)	<1.0	<0.5	0
	Xylene Total	mg/kg	3 (Primary): 0.5 (Interlab)	<3.0	<0.5	0
PAH/Phenols	Acenaphthene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.5	0
	Acenaphthylene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.5	0
	Anthracene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.5	0
	Benz(a)anthracene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.2	<0.5	0
	Benzo(a) pyrene	mg/kg	0.05 (Primary): 0.5 (Interlab)	0.2	<0.5	0
	Benzo(g,h,i)perylene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.1	<0.5	0
	Chrysene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.2	<0.5	0
	Dibenz(a,h)anthracene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.5	0
	Fluoranthene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.4	1.1	**93**
	Fluorene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.5	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.1	<0.5	0
	Naphthalene	mg/kg	1 (Primary): 0.5 (Interlab)	<1.0	<0.5	0
	Naphthalene	mg/kg	0.1 (Primary): 1 (Interlab)	<0.1	<0.5	0
	Phenanthrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.1	0.6	**143**
	Pyrene	mg/kg	0.1 (Primary): 0.5 (Interlab)	0.4	1.1	**93**

Table Q5: Groundwater RPD Table

				Intra laboratory Replicate		
			Lab Report Number	247980	247980	
			Field ID	BH109	BD1/20200729	RPD
			Sampled Date/Time	29/07/2020	29/07/2020	
Chemical Group	**Chemical Name**	**Units**	**LRL**			
Metals	Arsenic (Filtered)	mg/l	0.001	0.001	0.001	0
	Cadmium (Filtered)	mg/l	0.0001	<0.0001	<0.0001	0
	Chromium (III+VI) (Filtered)	mg/l	0.001	<0.001	<0.001	0
	Copper (Filtered)	mg/l	0.001	<0.001	<0.001	0
	Lead (Filtered)	mg/l	0.001	<0.001	<0.001	0
	Mercury (Filtered)	mg/l	0.00005	<0.00005	<0.00005	0
	Nickel (Filtered)	mg/l	0.001	0.001	<0.001	0
	Zinc (Filtered)	mg/l	0.001	0.01	0.013	26
TRH	C10-C16	mg/l	0.05	0.11	0.81	**152**
	C16-C34	mg/l	0.1	<0.1	<0.1	0
	C34-C40	mg/l	0.1	<0.1	<0.1	0
	F2-NAPHTHALENE	mg/l	0.05	0.11	0.81	**152**
	C6 - C9	mg/l	0.01	0.015	0.014	7
	C10 - C14	mg/l	0.05	0.12	0.087	32
	C15 - C28	mg/l	0.1	<0.1	<0.1	0
	C29-C36	mg/l	0.1	<0.1	<0.1	0
	C6-C10 less BTEX (F1)	mg/l	0.01	0.033	0.032	3
	C6-C10	mg/l	0.01	0.033	0.032	3
						-
BTEX	Benzene	mg/l	0.001	<0.001	<0.001	0
	Ethylbenzene	mg/l	0.001	<0.001	<0.001	0
	Toluene	mg/l	0.001	<0.001	<0.001	0
	Xylene (m & p)	mg/l	0.002	<0.002	<0.002	0
	Xylene (o)	mg/l	0.001	<0.001	<0.001	0
PAH/Phenols	Acenaphthene	mg/l	0.0001	0.0008	0.0007	13
	Acenaphthylene	mg/l	0.0001	<0.0001	<0.0001	0
	Anthracene	mg/l	0.0001	0.0001	0.0002	**67**
	Benz(a)anthracene	mg/l	0.0001	<0.0001	<0.0001	0
	Benzo(a) pyrene	mg/l	0.0001	<0.0001	<0.0001	0
	Benzo(g,h,i)perylene	mg/l	0.0001	<0.0001	<0.0001	0
	Chrysene	mg/l	0.0001	<0.0001	<0.0001	0
	Dibenz(a,h)anthracene	mg/l	0.0001	<0.0001	<0.0001	0
	Fluoranthene	mg/l	0.0001	<0.0001	<0.0001	0
	Fluorene	mg/l	0.0001	0.0002	0.0002	0
	Indeno(1,2,3-c,d)pyrene	mg/l	0.0001	0.0004	0.0004	0
	Naphthalene	mg/l	0.001	<0.0001	<0.0001	0
	Naphthalene	mg/l	0.0002	0.0002	<0.0002	0
	Phenanthrene	mg/l	0.0001	0.001	0.0009	11
	Phenolics Total	mg/l	0.05	<0.05	<0.05	0
	Pyrene	mg/l	0.0001	0.0001	0.0001	0

Table Q6: Trip Spike and Trip Blank Results

		Field ID	Trip Spike	Trip Blank	Trip Spike	Trip Blank	Trip Spike	Trip Blank	Trip Spike
		Sampled Date	22/07/2020	22/07/2020	24/07/2020	24/07/2020	27/07/2020	27/07/2020	28/07/2020
		Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Chemical Name	**Units [Soil | Water]**	**LRL [Soil | Water]**							
Benzene	mg/kg | mg/l	0.2 | 0.001	98%	<0.2	101%	<0.2	78%	<0.2	99%
Ethylbenzene	mg/kg | mg/l	1 | 0.001	101%	<1	101%	<1	75%	<1	95%
Toluene	mg/kg | mg/l	0.5 | 0.001	84%	<0.5	102%	<0.5	77%	<0.5	99%
Xylene (m & p)	mg/kg | mg/l	2 | 0.002	101%	<2	102%	<2	76%	<2	95%
Xylene (o)	mg/kg | mg/l	1 | 0.001	101%	<1	102%	<1	76%	<1	95%
Naphthalene	mg/kg | mg/l	1| 0.0001	-	<1	-	-	-	<1	-
C6 - C9	mg/kg | mg/l	25 | 0.01	-	<25	-	-	-	<25	-
C6-C10 less BTEX (F1)	mg/kg | mg/l	25 | 0.01	-	<25	-	-	-	<25	-
C6-C10	mg/kg | mg/l	25 | 0.01	-	<25	-	-	-	<25	-

Table Q6: Trip Spike and Trip Blank Results

		Field ID	Trip Blank	Trip Spike	Trip Blank
		Sampled Date	28/07/2020	26/06/2020	26/06/2020
		Sample Type	Soil	Water	Water
Chemical Name	**Units [Soil | Water]**	**LRL [Soil | Water]**			
Benzene	mg/kg | mg/l	0.2 | 0.001	<0.2	112%	<0.001
Ethylbenzene	mg/kg | mg/l	1 | 0.001	<1	99%	<0.001
Toluene	mg/kg | mg/l	0.5 | 0.001	<0.5	103%	<0.001
Xylene (m & p)	mg/kg | mg/l	2 | 0.002	<2	106%	<0.002
Xylene (o)	mg/kg | mg/l	1 | 0.001	<1	105%	<0.001
Naphthalene	mg/kg | mg/l	1| 0.0001	<1	-	<0.001
C6 - C9	mg/kg | mg/l	25 | 0.01	<25	-	<0.01
C6-C10 less BTEX (F1)	mg/kg | mg/l	25 | 0.01	<25	-	<0.01
C6-C10	mg/kg | mg/l	25 | 0.01	<25	-	<0.01

Appendix D

Land Insight and Resource Report

Fast, Accurate and Comprehensive Environmental and Development Risk Information

LAND INSIGHT & RESOURCES

DUE DILIGENCE *INSIGHT* REPORT

Property Details

Lot 511 DP752046, Part Lot 1 DP125981, & Part Lot 376 DP111749

78 Carwar Avenue, Carss Park NSW

Search Date: 16 July 2020

Executive Summary

Dataset	Identified	Not identified
Sensitive Receptors	✓	
Planning Controls	✓	
Soil Landscape	✓	
Salinity	!	
Radon	✓	
Acid Sulfate Soil	!	
Geology	✓	
Naturally Occurring Asbestos Potential (NOA)	✓	
Topography	✓	
Hydrogeology	✓	
Groundwater Bores	✓	
Groundwater Dependent Ecosystems	✓	
Other Bores		✗
Environmental Registers, Licences and Incidents		
Contaminated Land Record of Notices	!	
Sites Notified as Contaminated to the NSW EPA	!	
Potentially Contaminated Areas		
Defence Sites (current, former and RCIP)		✗
Former Gasworks Sites		✗
PFAS Sites		✗
Licensing under the POEO Act		
Licences		✗
Surrendered Licences still Regulated by EPA		✗
Clean Up and Penalty Notices		✗
NPI Industrial Facilities		✗
Public Register of Properties Affected by Loose-Fill Asbestos Insulation		✗
Other Potentially Contaminating Activities		
Contamination Legacy Areas		✗
Derelict Mines and Quarries		✗
Historical Landfills		✗
Unexploded Ordnance (UXO) Sites - Department of Defence (DoD)		✗
Aviation Fuel Depots/Terminals		✗
Cattle Dip Sites		✗
Dry Cleaners		✗
Liquid Fuel Depots/Terminals		✗
Fire and Rescue Sites		✗
Mines and Quarries		✗
Power Stations		✗
Service Stations		✗
Substation/Switching Station		✗
Telephone Exchanges		✗
Waste Management Facilities		✗
Wastewater Treatment Facilities		✗
Current Commercial & Trade Directory Data		✗
Other Environmental Constraints		
Historic Commercial & Trade Directory Data		✗
Federal, State and Local Heritage	!	
Natural Hazards	!	
State Environmental Planning Policy (Coastal Management)	!	

Understanding your Report

Your Report has been produced by Land Insight and Resources (LI Resources).

Your Report is based on information available from public databases and sources at the date of reporting. The information gathered relates to land that is within a 200 to 2000 m radius (buffer zone) from the boundaries of the Property. A smaller or larger radius may be applied for certain records (as listed under records and as shown in report maps).

While every effort is made to ensure the details in your Report are correct, LI Resources cannot guarantee the accuracy or completeness of the information or data provided.

The report provided by LI Resources includes data listed on page 3 (table of contents). All sources of data and definitions are provided on the report maps and as listed in the Product Guide (Attached). For a full list of references, metadata, publications or additional information not provided in this report, please contact LI Resources at info@liresources.com.au.

The report does not include title searches; dangerous good searches or; property certificates (unless requested); or information derived from a physical inspection, such as hazardous building materials, areas of infilling or dumping/spilling of potentially contaminated materials. It is important to note that these documents and an inspection can contain information relevant to contamination that may not be identified by this Report.

This Report, and your use of it, is regulated by LI Resources Terms and Conditions (See LIR Product Guide).

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LIR Product Guide and Terms and Conditions

Section 1 - Property Setting

1.1 SITE LOCATION MAP AND SENSITIVE RECEPTORS

Map 1 (200m Buffer)

Sensitive receptor	Category	Distance (m)*	Direction
Kogarah War Memorial Swimming Pool	Swimming Pool	0	onsite
Sydney sailing school	Clubs - General Sporting	11.6	south-west
Sydney sailing school	Clubs - General Sporting	11.6	south-west
Carss Cottage Museum	Museum	36.5	south-east
Carss Park Flats Soccer Amenities / Fitness Equipment	Park	56	north-west
Picnic Area	Park	83.1	north-west
Swimming Pool	Swimming Pool	127	south-west
Cricket Field	Sports Field	142.6	north-west
Picnic Area	Picnic Area	150.3	south-west
Carss Bush Park	Park	150.6	west
Carss Park Lookout	Lookout	195.2	west

*Distance from the sensitive receptor point feature to the site boundary centroid.

1.2 PLANNING CONTROLS

Map 2 (onsite)

Zoning

Zoning	RE1	Public Recreation

Environmental Planning Instruments

Type	Local Environmental Plan	Classification
Not identified	-	-

1.3 SOIL AND LAND USE INFORMATION

Map 3a/3b (onsite)

Soil Landscape

Soil Landscape	DTxx	DISTURBED TERRAIN	Soil Group	DISTURBED TERRAIN
Description	**Landscape**— Disturbed Terrain consists of landscape has been extensively disturbed by human activity and the features of the original landscape have been extensively modified. Includes extensive areas of coal mining in the Hunter valley and past coastal sand mined areas. Also occurs as numerous quarries and garbage tips, industrial sites and other areas where excavation and deposition of material has occurred. **Soils**— Soils are often absent or extensively disturbed. **Qualities and limitations**— Not recorded.			

Salinity

Salinity Hazard	-	Not identified

Radon

Radon Level	On the Property?	Within Buffer?
Bq/m3	6	6

Typical radon levels in Australia are low and the values shown are the average values for each census district. For specific location, factors such as the local geology and house type could lead to different values. (ARPANSA).

Acid Sulfate Soil

ASS Risk Maps *(Table 1.3.1)*	On the Property?		Within Buffer?	
Class	Class 2 / Class 5		Class 2 / Class 5	
Atlas of Australian Acid Sulfate Soil *(Table 1.3.2)*	Bx(p-)	Disturbed ASS	**Probability of Occurrence**	Low Probability of occurrence

Table 1.3.1. Classification scheme in the ASS Planning Maps

Class of Land as shown on ASS Planning Maps	
1	Acid sulfate soils in a class 1 area are likely to be found on and below the natural ground surface.
2	Acid sulfate soils in a class 2 area are likely to be found below the natural ground surface.
3	Acid sulfate soils in a class 3 area are likely to be found beyond 1 metre below the natural ground surface.
4	Acid sulfate soils in a class 4 area are likely to be found beyond 2 metres below the natural ground surface.
5	Acid sulfate soils are not typically found in Class 5 areas. Areas classified as Class 5 are located within 500 metres on adjacent class 1,2,3 or 4 land.

For each class of land, the maps identify the type of works likely to present an environmental risk if undertaken in the particular class of land. If these types of works are proposed, further investigation is required to determine if ASS are actually present and whether they are present in such concentrations as to pose a risk to the environment.

Table 1.3.2. Atlas of Australian Acid Sulfate Soils[1] (ASRIS) (CSIRO/NatCASS)

Code	Distinguishing soil/sediment properties, vegetation, landforms, or other characteristics
	Probability of Occurrence of ASS[1]
A	**High Probability of occurrence -** (>70% chance of occurrence in mapping unit)
B	**Low Probability of occurrence -** (6-70% chance of occurrence in mapping unit)
C	**Extremely low probability of occurrence -** (1-5% chance of occurrence in mapping unit)
D	**No probability of occurrence -** (<1% chance of occurrence in mapping unit)
x	**Disturbed ASS[1] terrain -** (ASS[1] material present below urban development).
u	**Unclassified -** (Insufficient information to classify map unit)
	Zones
a	Potential acid sulfate soil material and/or Monosulfidic Black Ooze (MBO).
b, c	Potential acid sulfate soil generally within upper 1 m.
c, d, e	ASS[1] generally within upper 1 m.
f	ASS[1] generally below 1 m from the surface
g	ASS[1], generally below 3 m from the surface.
h	ASS[1] generally within 1 m of the surface.
i, j	ASS[1] generally below 1 m of the surface.
k	ASS[1] material and/or Monosulfidic Black Ooze (MBO).
l, m, n, o, p, q	ASS[1] generally within upper 1 m in wet / riparian areas.
	Subscripts to codes
(a)	Actual acid sulfate soil (AASS) = sulfuric material.

Code	Distinguishing soil/sediment properties, vegetation, landforms, or other characteristics
Probability of Occurrence of ASS[1]	
(p)	Potential acid sulfate soil (PASS) = sulfidic material.
(q)	Monosulfidic Black Ooze (MBO) is organic ooze enriched by iron monosulfides.
Confidence levels	
(1)	All necessary analytical and morphological data are available
(2)	Analytical data are incomplete but are sufficient to classify the soil with a reasonable degree of confidence
(3)	No necessary analytical data are available, but confidence is fair, based on a knowledge of similar soils in similar environments
(4)	No necessary analytical data are available, and classifier has little knowledge or experience with ASS, hence classification is provisional

[1]Acid Sulfate Soils (ASS) are all those soils in which sulfuric acid may be produced, is being produced, or has been produced in amounts that have a lasting effect on main soil characteristics (Pons 1973). Acid sulfate soil (ASS) may include PASS or AASS + PASS. Potential acid sulfate soil (PASS) = sulfidic material. Actual acid sulfate soil (AASS) = sulfuric material.

1.4 GEOLOGY AND TOPOGRAPHY

Map 4 (onsite)

Geology

Map Sheet	Symbol	Formation	Group	Era	Period	Description

Naturally Occurring Asbestos Potential (NOA)

Category	On the Property?	Within Buffer?
Not identified	-	-

Topography

Topography	2-6mAHD

Section 2 - Hydrogeology

2.1 HYDROGEOLOGY AND GROUNDWATER BORES

Map 5a (500m - 2000m Buffer)

	On the Property?	Within Buffer?[1]
Aquifer Type		
Drinking Water Catchments	Not identified	Not identified
Protected Riparian Corridor	Not identified	Not identified
UPSS Environmentally sensitive zone	Not identified	Not identified
Wetlands	Not identified	Not identified
Groundwater Bores	Not identified	Yes, see 2.1.1 and 2.1.2

[1] - Groundwater bore buffer size will change depending on the number of GW bores found within buffer; if there are less than 7 bores within buffer, buffer will increase to max 2km until bores are found.

Table 2.1.1. Groundwater Bore Details

Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL (m)	Salinity	Yield (L/s)	Distance (m)	Direction
GW106410	Household	05-Aug-04	3	3	1	-	0.1	446.17	south-west
GW108675	Household	19-Mar-07	180	180	17	-	0.2	509.48	south-west
GW109691	Monitoring	09-Oct-08	5	5	-	-	-	611.68	south-west
GW109690	Monitoring	10-Oct-08	5	5	-	-	-	617.41	south-west
GW109692	Monitoring	09-Oct-08	5	5	-	-	-	621.26	south-west
GW109689	Monitoring	10-Oct-08	5	5	-	-	-	633.03	south-west
GW109693	Monitoring	09-Oct-08	5	5	-	-	-	662.64	south-west

Table 2.1.2. Groundwater Bore Driller Lithology Details

Groundwater Bore ID	From Depth (m)	To Depth (m)	Lithology	Description	Distance (m)	Direction
GW106410	0	1.5	SAND	Sand, grey	446.17	south-west
GW106410	1.5	3	CLAY	Clay, sandy with re decomposed sandstone rocks	446.17	south-west
GW108675	0	0.5	TPSL	Topsoil	509.48	south-west
GW108675	0.5	17.5	SDSN	Sandstone, grey	509.48	south-west
GW108675	17.5	19	SDSN	Sandstone, quartz	509.48	south-west
GW108675	19	19.5	SDSN	Sandstone, grey	509.48	south-west

GW108675	19.5	20	CLAY	Clay	509.48	south-west
GW108675	20	23	SHLE	Shale	509.48	south-west
GW108675	23	34	SDSN	Sandstone, grey	509.48	south-west
GW108675	34	34.5	SHLE	Shale	509.48	south-west
GW108675	34.5	69	SDSN	Sandstone, grey	509.48	south-west
GW108675	69	70.5	SLSN	Siltstone	509.48	south-west
GW108675	70.5	84	SDSN	Sandstone, grey	509.48	south-west
GW108675	84	85	SLSN	Siltstone	509.48	south-west
GW108675	85	95	SDSN	Sandstone, quartz	509.48	south-west
GW108675	95	110	SDSN	Sandstone, grey	509.48	south-west
GW108675	110	115	SDSN	Sandstone, quartz	509.48	south-west
GW108675	115	126	SDSN	Sandstone, grey	509.48	south-west
GW108675	126	127.5	SLSN	Siltstone	509.48	south-west
GW108675	127.5	133.5	SDSN	Sandstone, grey	509.48	south-west
GW108675	133.5	136	UNKN	Missing	509.48	south-west
GW108675	136	140	SDSN	Sandstone, grey , quartz	509.48	south-west
GW108675	140	149	SDSN	Sandstone, quartz	509.48	south-west
GW108675	149	165	SDSN	Sandstone, grey	509.48	south-west
GW108675	165	167.5	SDSN	Sandstone, quartz	509.48	south-west
GW108675	167.5	170	SDSN	Sandstone, grey	509.48	south-west
GW108675	170	171	SDSN	Sandstone, quartz	509.48	south-west
GW108675	171	172	SDSN	Sandstone, grey	509.48	south-west
GW108675	172	178	SDSN	Sandstone, quartz	509.48	south-west
GW108675	178	180	SDSN	Sandstone, grey	509.48	south-west
GW109691	0	0.1	CGLM	Concrete	611.68	south-west
GW109691	0.1	1	SAND	Sand,silty,light brown	611.68	south-west
GW109691	1	2	SAND	Sand,clayey	611.68	south-west
GW109691	2	4	SAND	Sand,orange,grey,coarse	611.68	south-west
GW109691	4	5	CLAY	Clay.samdu,red.grey.orange	611.68	south-west
GW109690	0	0.1	CGLM	Concrete	617.41	south-west
GW109690	0.1	0.5	FILL	Fill,sand,organic matter,coarse sand	617.41	south-west
GW109690	0.5	1	FILL	Fill,sand brown ,yellow,moist	617.41	south-west
GW109690	1	2	CLLM	Clay silty,wet,soft	617.41	south-west
GW109690	2	3	SLSN	Siltstone,some clay	617.41	south-west
GW109690	3	5	CLAY	Clay,silty,red/brown	617.41	south-west
GW109692	0	0.1	CGLM	Concrete	621.26	south-west
GW109692	0.1	1	SAND	Sand,light brown,coarse	621.26	south-west
GW109692	1	5	CLAY	Clay,sandy,orange,silty,grey	621.26	south-west
GW109689	0	0.2	CGLM	Concrete/ fill	633.03	south-west
GW109689	0.2	1	SDLC	Sand black to dark	633.03	south-west
GW109689	1	5	SLSN	Siltstone,grey,red.orange,moist.	633.03	south-west
GW109693	0	0.1	CGLM	Concrete	662.64	south-west
GW109693	0.1	0.5	FILL	Fill,silty black,damp,dense	662.64	south-west
GW109693	0.5	1	SAND	Sand,golden brown	662.64	south-west
GW109693	1	5	CLAY	Clay,sandy,red,grey wet	662.64	south-west

2.2 HYDROGEOLOGY AND OTHER BOREHOLES

Map 5b (500m Buffer)

	On the Property?	Within Buffer?
Groundwater Vulnerability	Not identified	Not identified
Groundwater Exclusion Zones[1,2]	Not identified	Not identified
Hydrogeologic Unit	Late Permian/Triassic sediments (porous media - consolidated)	Late Permian/Triassic sediments (porous media - consolidated)
Other known borehole investigations	Not identified	Not identified

[1] - Botany Groundwater Management Zones (BGMZ): Zone 1 – the use of groundwater remains banned; Zones 2 to 4 – domestic groundwater use is banned, especially for drinking water, watering gardens, washing windows and cars, bathing, or to fill swimming pools.

[2] - Williamtown Groundwater Management Zones (WGMZ): Primary Management Zone – this area has significantly higher levels of PFAS detected and therefore, the strongest advice applies. Secondary Management Zone – this area has some detected levels of PFAS; Broader Management Zone – the topography and hydrology of the area means PFAS detections could occur now and into the future.

Groundwater Dependent Ecosystems

Site	On the Property?	Within Buffer?
Ecosystems that rely on the Surface expression of Groundwater	Not identified	Not identified
Ecosystems that rely on Subsurface presence of Groundwater	Not identified	High / Medium / Low potential for GW interaction

Table 2.2.1. Other known borehole investigations (Coal Seam Gas (CSG), Petroleum Wells and Other Boreholes) (500m buffer)

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
Not identified	-	-	-	-	-	-	-

Section 3 – Environmental Registers, Licences and Incidents

3.1 CONTAMINATED LAND PUBLIC REGISTER

Map 6 (1000m Buffer)

Contaminated Land Record of Notices

Site Name[2]	Area nº	Address[1]	Notices	Distance (m)	Direction
Woolworths Service Station Blakehurst	3389	390 Princes Highway, Blakehurst	2 current	545	South-west

1. Some addresses do not contain specific street numbers. Records identified as being in the surrounding area have been added for information.
2. Former NSW EPA sites. These sites have been removed from the Record of Notices and/or the Sites Notified lists and are kept here for information purposes only.

Sites Notified as Contaminated to the EPA

Site Name[2]	Address[1]	Activity that caused Contamination	EPA Site Management Class[3]	Distance (m)	Direction
The Bay Nursing Home	392 & 394 Princes Highway, Blakehurst	Service Station	Regulation under CLM Act not required	452	South-west
Woolworths Service Station Blakehurst	390 Princes Highway Blakehurst	Service Station	Contamination currently regulated under CLM Act	545	South-west
Vacant Property	334 Princes Highway, Carss Park	Other Industry	Regulation under CLM Act not required	615	North-west

1. Some addresses do not contain specific street numbers. Records identified as being in the surrounding area have been added for information.
2. Former NSW EPA sites. These sites have been removed from the Record of Notices and/or the Sites Notified lists and are kept here for information purposes only.
3. The EPA maintains a record of sites that have been notified to the EPA by owners or occupiers as contaminated land. The sites notified to the EPA and recorded on the register are at various stages of the assessment and/or remediation process. Table 5 outlines the possible management status that can be attributed to a registered contaminated site.

Table 3.3.1. EPA Site Management Class Explanation

EPA Site Management Class	
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.
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.
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.
Contamination currently regulated under the 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.
Contamination currently regulated under the 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 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.

EPA Site Management Class	
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 by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A 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.

3.2 POTENTIALLY CONTAMINATED AREAS

Map 6 (1000m Buffer)

Defence Sites

Site name	RCIP*	Description	Source	Distance (m)	Direction
Not identified	-		-	-	-

*RCIP (Regional Contamination Investigation Program)

Former Gasworks Sites

Site name	Description	Source	Distance (m) *	Direction
Not identified	-	-	-	-

PFAS Sites

Site name	Description	Source	Distance (m) *	Direction
Not identified	-	-	-	-

*2km search. If the site is not within 1km buffer, it will not be shown on the map.

3.3 LICENSING UNDER THE POEO ACT

Map 7 (500m Buffer)

Licences

EPL Number	Licence holder	Location Name	Premise Address[1]	Fee Based Activity	Distance (m)	Direction
Not identified	-		-	-	-	

[1]. Some sites do not contain specific addresses. Records identified as being in the surrounding area have been added for information.

Surrendered Licences still Regulated by EPA

Licence Nº	Licence holder	Location Name	Premise Address[1]	Fee Based Activity	Status	Distance (m)	Direction
Not identified	-		-	-	-	-	-

[1]. Some sites do not contain specific addresses. Records identified as being in the surrounding area have been added for information.

Clean Up and Penalty Notices

Location ID	Notice Nº	Notice Type	Licence holder	Location Name	Premise Address[1]	Distance (m)	Direction
-	Not identified	-	-	-	-	-	-

[1]. Some sites do not contain specific addresses. Records identified as being in the surrounding area have been added for information.

3.4 NATIONAL POLLUTANT INVENTORY (NPI)

Map 7 (500m Buffer)

Facility name	Address	Primary ANZSIC Class	Latest report	Distance (m)	Direction
Not identified	-		-	-	-

3.5 PUBLIC REGISTER OF PROPERTIES AFFECTED BY LOOSE-FILL ASBESTOS INSULATION

Map 7 (onsite)

Address	Match Found
Not identified	-

Section 4 – Other Potentially Contaminating Activities

4.1 POTENTIALLY CONTAMINATING ACTIVITIES

Map 8a (500m Buffer)

Aviation Fuel Depots/Terminals

Site name	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-

Cattle Dip Sites

Site name	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-

Dry Cleaners

Site name	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-

Fire Rescue Sites

Site name	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-

Liquid Fuel Depots/Terminals

Site name	Owner	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Mines and Quarries

Deposit Name	Method	Description	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Petrol Stations

Site name	Owner	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Power Stations

Site name	Owner	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Substation / Switching Stations

Site name	Owner	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Telephone Exchanges

Site name	Location	Status*	Distance (m)	Direction
Not identified	-	-	-	-

Waste Management Facilities

Site name	Owner	Class	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

Wastewater Treatment Facilities

Site name	Operator	Class	Status*	Distance (m)	Direction
Not identified	-	-	-	-	-

***Status:**
Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.
Current: business that are operational on the day this report was issued.
Former: business that have been closed or discontinued 1 to 2 years from the day this report was issued. All former sites older than 2 years will be reported in the historical business section in this report.

4.2 CURRENT COMMERCIAL AND TRADE DATA

Map 8b (200m Buffer)

Current Commercial and Trade Data

Site name [1]	Category	Location	Status [2]	Distance (m)	Direction
Not identified	-		-	-	-

[1] Data includes categories associated with potentially contaminating activities. All negligible risk data is not reported.

[2] Status: Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.
Current: business that are operational on the day this report was issued.
Former: business that have been closed or discontinued 1 to 2 years from the day this report was issued. All former sites older than 2 years will be reported in the historical business section in this report.

Tanks (AST/UST)

ID	Tank type	Description	Status	Distance (m)	Direction
Not identified	-		-	-	-

Note: This is not an exhaustive list of all existing tanks.

4.3 FORMER POTENTIALLY CONTAMINATED LAND

Map 8c (500m Buffer)

Contaminated Legacy Areas

Site Name	Description	Source	Distance (m)	Direction
Not identified	-	-	-	-

Note: This section includes known contaminated areas such as James Hardies Asbestos waste legacy areas, Pasminco Smelter and Uranium processing site.

Derelict Mines and Quarries

Site name	Method	Description	Source	Distance (m)	Direction
Not identified	-	-	-	-	-

Historical Landfills

Site name	Description	Source	Distance (m)	Direction
Not identified	-		-	-

Unexploded Ordnance (UXO) Areas

Site name	Category	Description	Source	Distance (m)	Direction
Not identified	-	-	-	-	-

4.4 HISTORICAL COMMERCIAL AND TRADE DATA (not mapped)

1930 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

1940 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

1950 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

1965 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

1970 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

1975 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

1980 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

1990 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

2005 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

2010 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

2015 Historical Commercial & Trade Directory Data

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

Historical data positional accuracy and georeferencing results explanation

Positional accuracy	Georeferenced	Description
Address	Located to the address level	*When street address and names fully match.*
Street	Located to the street centroid	*When street names match but no exact address was found. Location is approximate.*
Place	Located to the structure, building or complex	*When building, residential complex or structure name match but no exact address was found. Location is approximate.*
Suburb	Located to the suburb area	*When suburb name match but no exact address was found. Location is approximate.*
Not georeferenced	Not found	*When it was not georeferenced, and address could not be found.*

Land Insight and Resources use a number of different address georeferencing methods and characterised them according to the following criteria: completeness (match rates) and positional accuracy. When address do not contain specific street numbers or a match is not found, records identified as being in the surrounding areas are included for reference.

Section 5 - Other Environmental Constraints

5.1 FEDERAL, STATE AND LOCAL HERITAGE

Map 9 (200m Buffer)

Local Environment Plan (LEP) Heritage

Site ID	Site Name	Class	Significance	Distance (m)*	Direction
I31	Carss Bush Park	Item - General	Local	0	onsite
I32	Carss Cottage	Item - General	State	0	onsite

National Heritage List (NHL)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Register of the National Estate (RNE)

Site ID	Site Name	Class	Status	Distance (m)	Direction
102096	Carss Park Urban Conservation Area	Historic	Indicative Place	0	onsite
103497	Carss Bush Park Pool	Historic	Indicative Place	59	South-west

Non-Aboriginal heritage item (Local)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Non-Aboriginal heritage item (SHR)*

Site ID	Site Name	Listing nº	Plan nº	Distance (m)	Direction
5045326	Carss Cottage	00587	1533	0	onsite

*State Heritage Register

Commonwealth Heritage List (CHL)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

World Heritage Area (WHA)

Site ID	Site Name	IUCN	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

5.2 NATURAL HAZARDS

Map 10 (500m Buffer)

Bush Fire Prone Land (BLP)

Category	On the Property?	Within Buffer?
Not identified	-	-

Fire History

Category	On the Property?	Within Buffer?
Not identified	-	-

Flood Hazard

Category	On the Property?	Within Buffer?
Kogarah Local Environmental Plan 2012	Not identified	Yes

5.3 COASTAL MANAGEMENT (STATE ENVIRONMENTAL PLANNING POLICY)

Map 10 (500m Buffer)

Type	On the Property?	Within Buffer?
Coastal Wetlands Proximity Area	-	-
Coastal Wetlands	-	-
Coastal Environment Area Map	Yes	Yes
Coastal Use Area Map	Yes	Yes

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ATTACHMENT A

Report Maps

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Subject area
Transmission Line
Stormwater channel
Sewer Main
Water Main
Pipeline

Sensitive Receptors

Parks
Sports and Recreation Activities

0 100 200 300 400m

SUBJECT AREA AND SENSITIVE RECEPTORS

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MAP 1 Enviro-Screen

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Subject area

Local Provisions

Land Zoning

- R2, Low Density Residential
- R3, Medium Density Residential
- RE1, Public Recreation
- SP2, Infrastructure
- W2, Recreational Waterways

0 200 400 600 800m

PLANNING CONTROLS

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MAP 2

Enviro-Screen

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Subject area

Soils Landscape

- DTxx | DISTURBED TERRAIN
- ERgy | EROSIONAL
- REIh | RESIDUAL
- WATER | WATER

Radon Level (Bq/m3)

- 5-19

0 200 400 600 800m

SOIL LANDSCAPES AND SALINITY

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MAP 3a Enviro-Screen

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Subject area

Acid Sulfate Soil Risk

- Class 1
- Class 2
- Class 3
- Class 5

ASRIS Atlas of Australian Sulfate Soils

- Aa(p-) | ASS in subtidal marine environments
- Ak(p4) | ASS in inland lakes, waterways, wetlands and riparian zones
- Bx(p-) | Disturbed ASS

0 200 400 600 800m

ACID SULFATE SOILS

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MAP 3b

Enviro-Screen

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Subject area

Topographic contour (m)

1:100 000 Geological Map

- Qha | Silty to peaty quartz sand, silt, and clay. Ferruginous and humic cementation in places. Common shell layers
- Rh | Medium to coarse grained quartz sandstone, very minor shale and laminite lenses
- w | Water

0 200 400 600 800m

GEOLOGY AND TOPOGRAPHY

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MAP 4 Enviro-Screen

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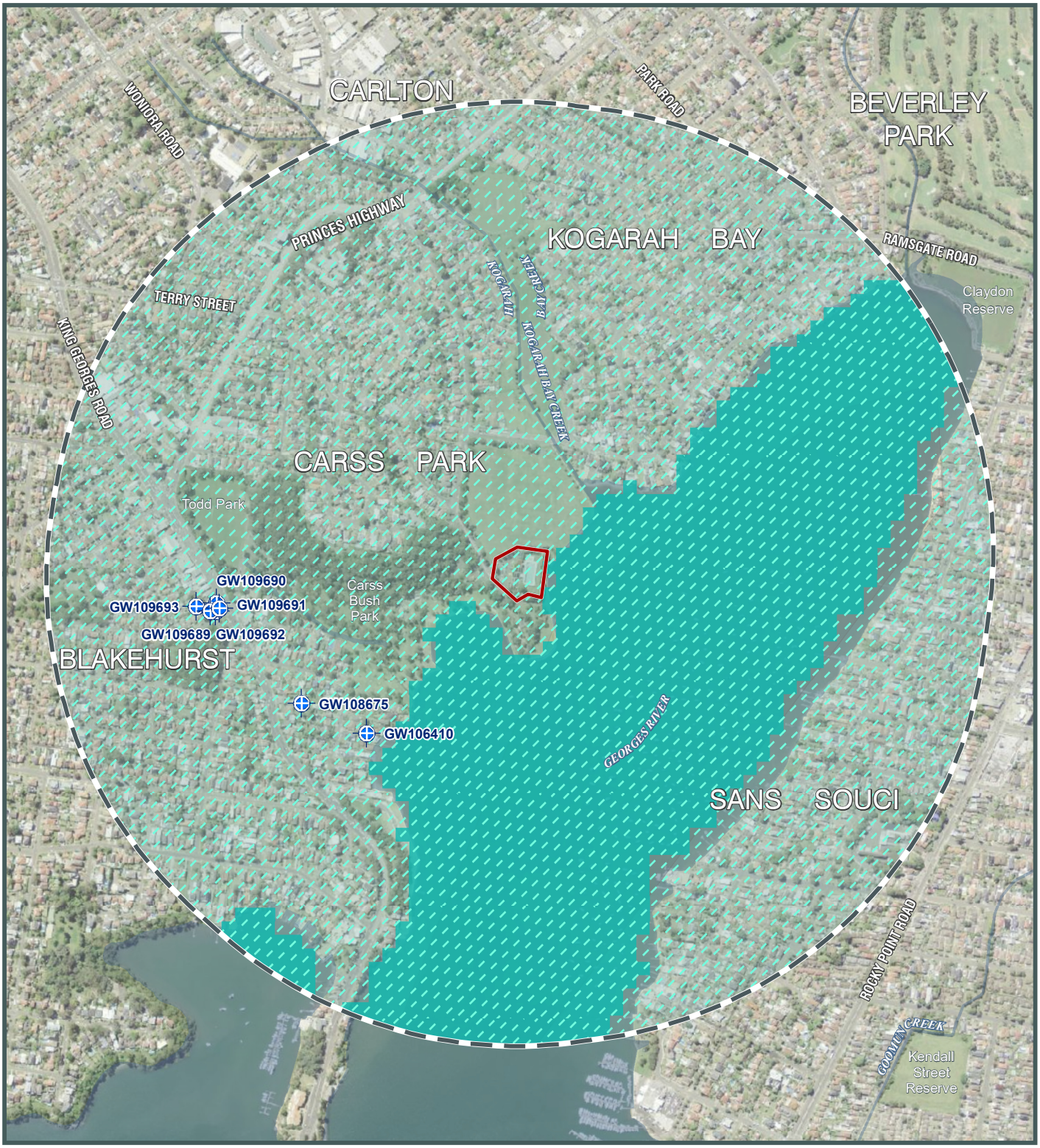

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Subject area

Groundwater bores

Protected riparian corridor

Wetlands

Drinking Water Catchments

UPSS Environmentally Sensitive Zone

Aquifer Type

Porous, extensive aquifers of low to moderate productivity

0 200 400 600 800 1,000 m

HYDROGEOLOGY AND GROUNDWATER BORES

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MAP 5a

Enviro-Screen

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Subject area

Other borehole/monitoring well location

Ecosystems that rely on Subsurface presence of Groundwater

High potential for GW interaction

Moderate potential for GW interaction

Low potential for GW interaction

Hydrogeologic Unit

Late Permian/Triassic sediments (porous media - consolidated)

0 200 400 600 800m

HYDROGEOLOGY AND OTHER BOREHOLES

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MAP 5b

Enviro-Screen

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Subject area

Contaminated Land Register (EPA)

- Current - Sites notified as contaminated
- Former - Sites notified as contaminated
- Contaminated Land Record of Notices
- PFAS Sites

Potentially Contaminated Areas

- Defence Sites
- Former Gasworks Sites

0 250 500 750 1,000 1,250 1,500 m

CONTAMINATED LAND REGISTER AND POTENTIALLY CONTAMINATED AREAS

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MAP 6 Enviro-Screen

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Subject area

POEO Register

POEO licences

Surrendered Licences still Regulated by EPA

Clean Up and Penalty Notices

NPI Facilities

0 200 400 600 800m

ENVIRONMENTAL REGISTER & LICENCES AND NPI FACILITIES

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MAP 7

Enviro-Screen

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Subject area

Aviation fuel depots
Cattle dip/ saleyards
Dry cleaners
Fire Rescue sites
Liquid fuel depots / terminals
Mine/quarry
Petrol stations
Power stations
Substation locations
Telephone exchanges
Waste management facilities
Wastewater Treatment Facility

Current: business that are operational on the day this report was issued.
Former: business that have been closed or discontinued 1 to 2 years from the day this report was issued. All former sites older than 5 years will be reported in the historical business section in this report.

0 200 400 600 800m

POTENTIALLY CONTAMINATING ACTIVITIES

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MAP 8a

Enviro-Screen

Land Insight & Resources do no warrant the accuracy or completeness of information in this publication and any person using or relying upon such information does so on the basis that this company shall bear no responsibility or liability whatsover for any errors, faults, defects or omissions in the information.

©2020 Land Insight & Resources (LIR) www.liresources.com | 16-Jul-20 | Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

Commercial & Trade Directory

- Other potentially contaminating activities
- Former potentially contaminating activities

Tanks

- Aboveground Storage Tank - Current
- Aboveground Storage Tank - Former
- Underground Storage Tank - Current
- Underground Storage Tank - Forrmer/Unknown
- Unknown

*This is not an exhaustive list of all tanks.

0 100 200 300 400m

CURRENT COMMERCIAL AND TRADE DATA

LAND INSIGHT & RESOURCES

MAP 8b

Enviro-Screen

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©2020 Land Insight & Resources (LIR) www.lireources.com | 16-Jul-20 | Data source: Please refer to 'Digital Data Sources' in the Product Guide

Subject area

Contaminated Legacy Areas

- Contaminated Legacy Areas
- Derelict Mines and Quarries
- Historical (Legacy) Landfills

Unexploded Ordnance (UXO) Areas

- Defence Controlled Area
- UXO Area: Substantial Occurence
- UXO Area: Slight Occurence
- UXO Area: Other

0 200 400 600 800m

FORMER POTENTIALLY CONTAMINATED LAND

LAND INSIGHT & RESOURCES

MAP 8c

Enviro-Screen *Premium*

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Subject area

Federal, State and Local Heritage

- Heritage conservation Area (LEP)
- Register of the National Estate (RNE)
- National Heritage List (NHL)
- Non-Aboriginal heritage item (Local)
- Non-Aboriginal heritage item (SHR)
- Commonwealth Heritage List (CHL)
- World Heritage Area (WHA)

0 100 200 300m

HERITAGE

LAND INSIGHT & RESOURCES

MAP 9

Enviro-Screen

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Subject area

Flood Prone Land (EPI)

SEPP Coastal Management

- Proximity Area for Coastal Wetlands
- Proximity Area for Littoral Rainforests
- Littoral Rainforests
- Coastal Wetlands
- Coastal Environment Area Map
- Coastal Use Area Map

0 200 400 600 800m

NATURAL HAZARDS

LAND INSIGHT & RESOURCES

MAP 10

Enviro-Screen

ATTACHMENT B

Historical Imagery

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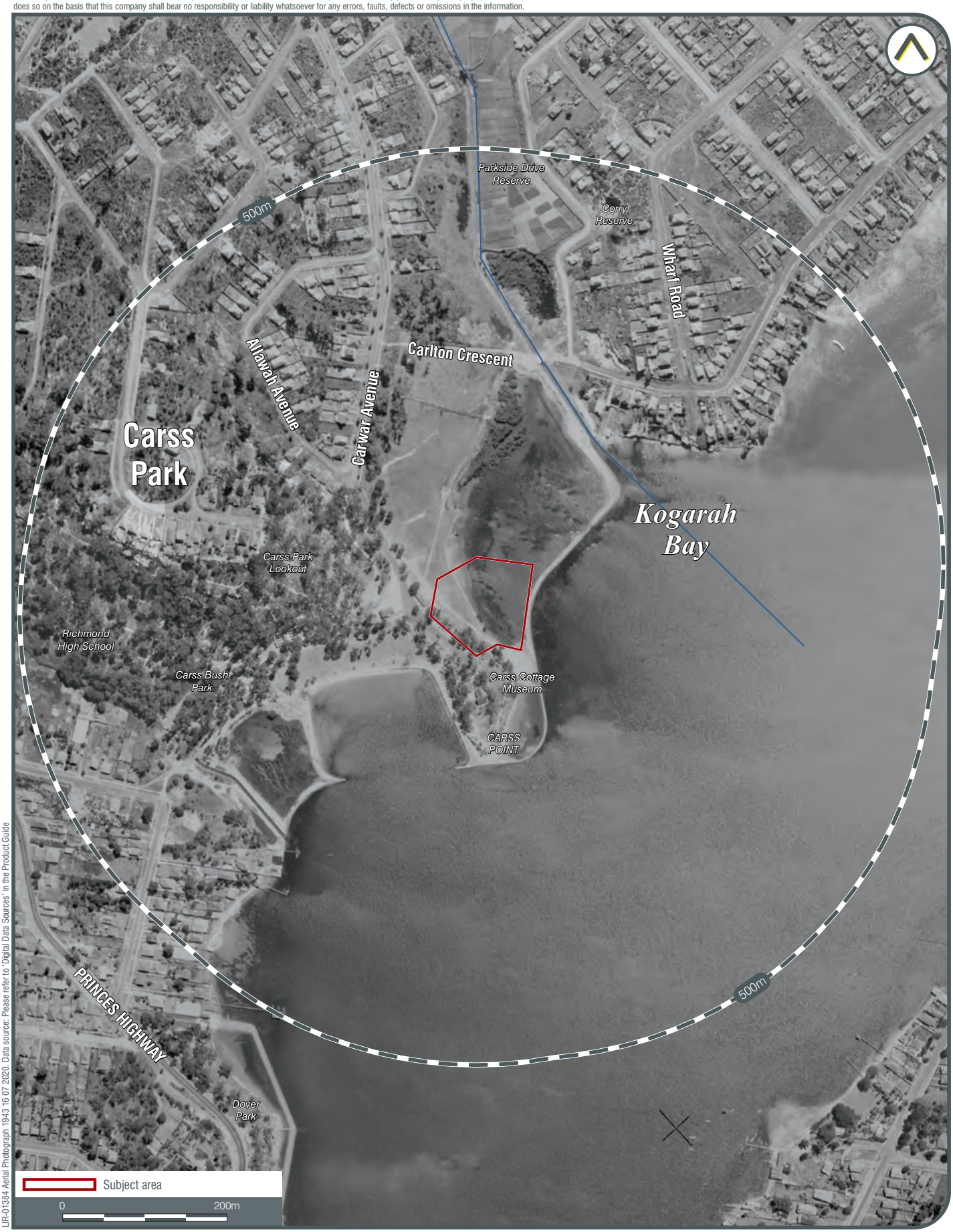

LIR-01384 Aerial Photograph 1943 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1943

LAND INSIGHT & RESOURCES

MAP 11

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LIR-01384 Aerial Photograph 1951 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1951

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MAP 12

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LIR-01384 Aerial Photograph 1953 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1953

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MAP 13

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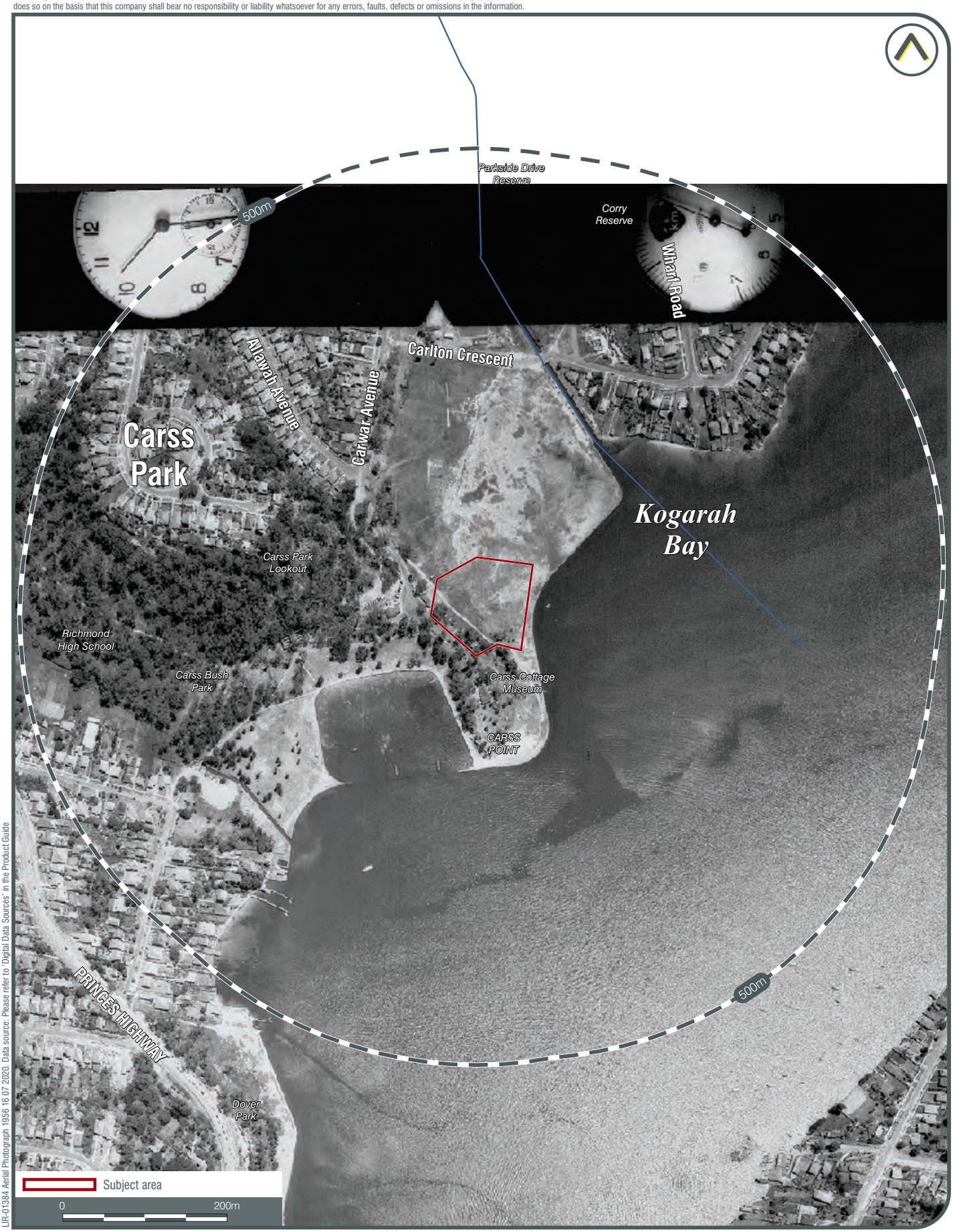

LIR-01384 Aerial Photograph 1956 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1956

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MAP 14

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HISTORIC AERIAL PHOTOGRAPH - 1961

LAND INSIGHT & RESOURCES

MAP 15

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LIR-01384 Aerial Photograph 1965 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1965

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MAP 16

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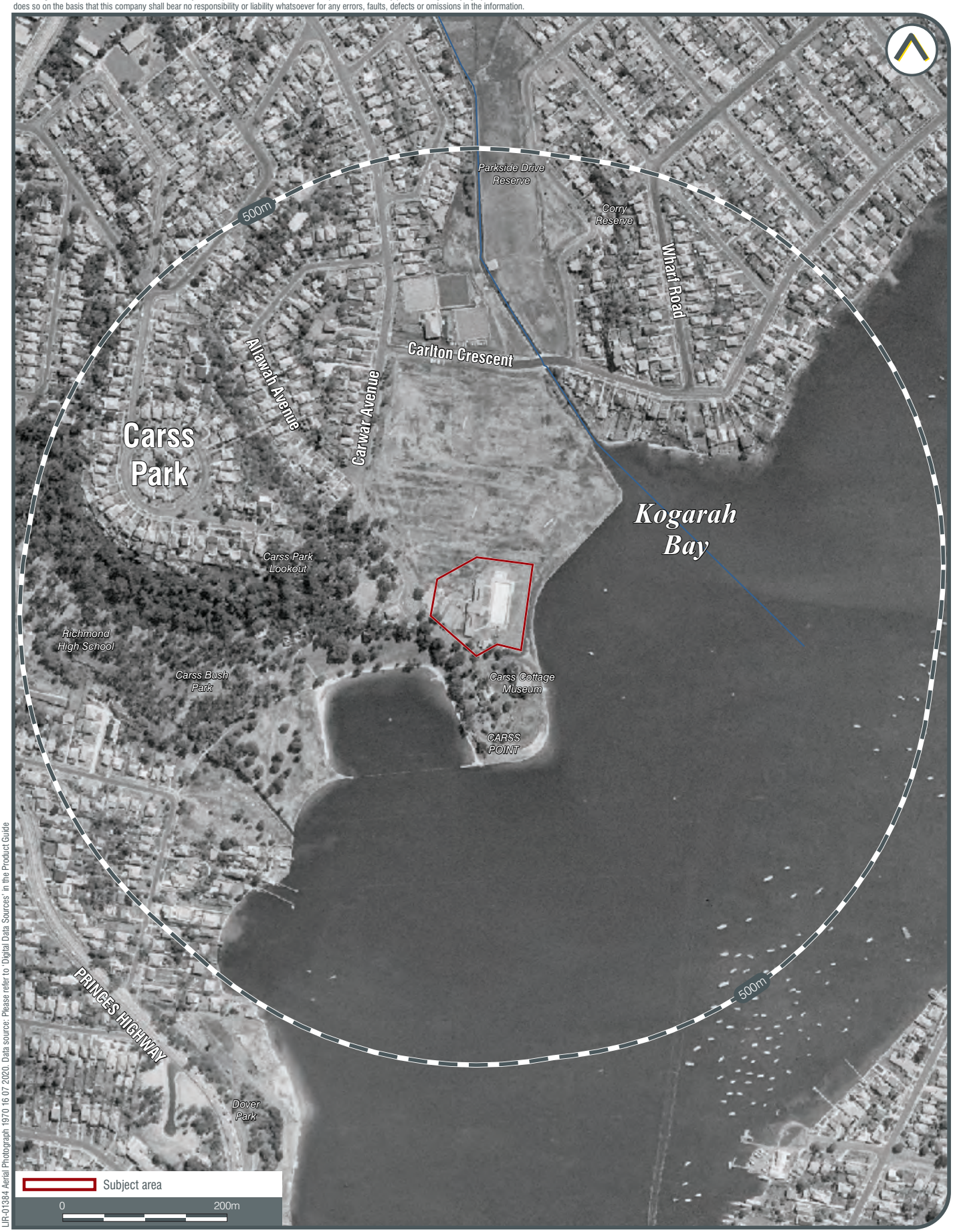

LIR-01384 Aerial Photograph 1970 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1970

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MAP 17

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LIR-01384 Aerial Photograph 1970 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1972

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MAP 18

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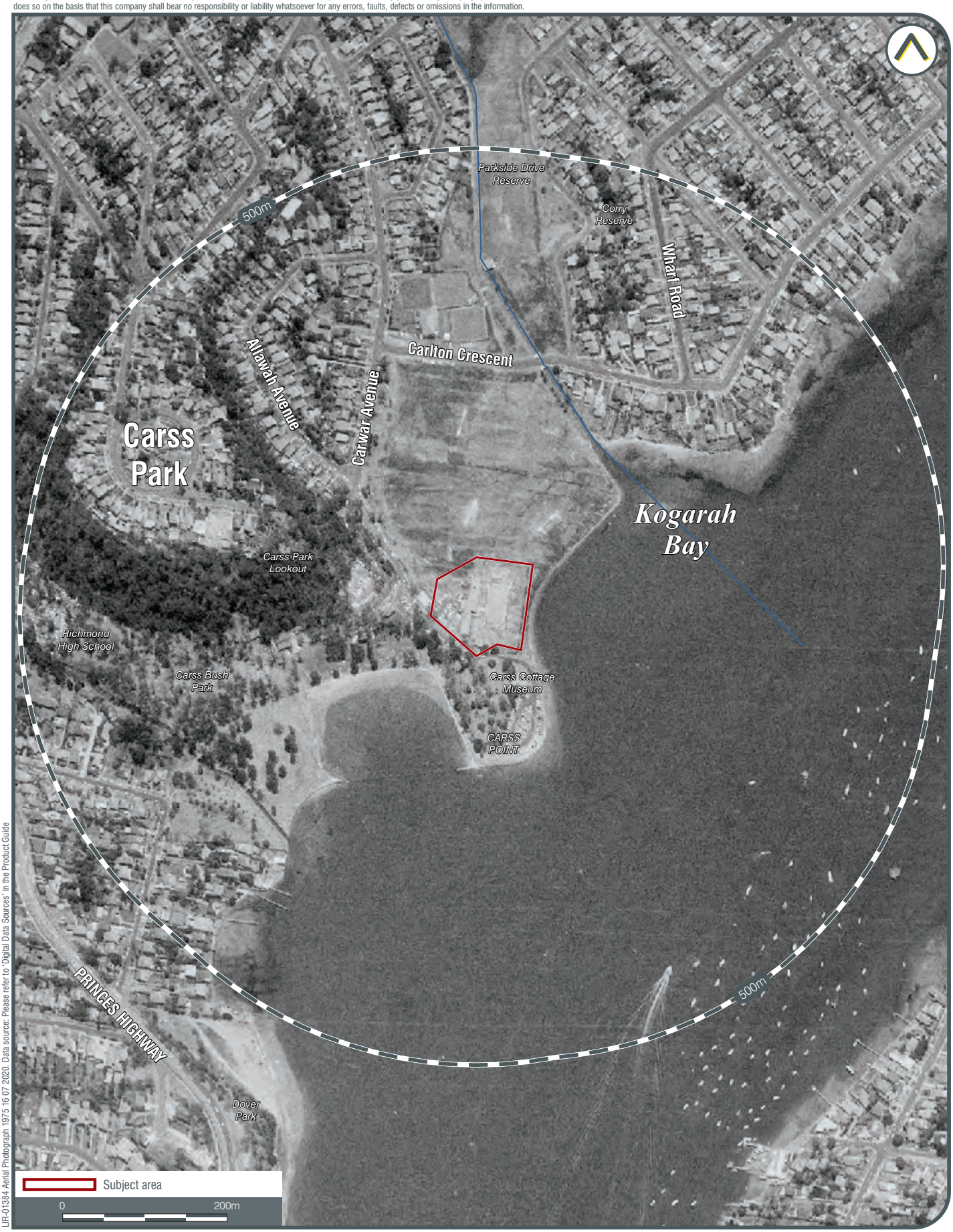

LIR-01384 Aerial Photograph 1975 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1975

LAND INSIGHT & RESOURCES

MAP 19

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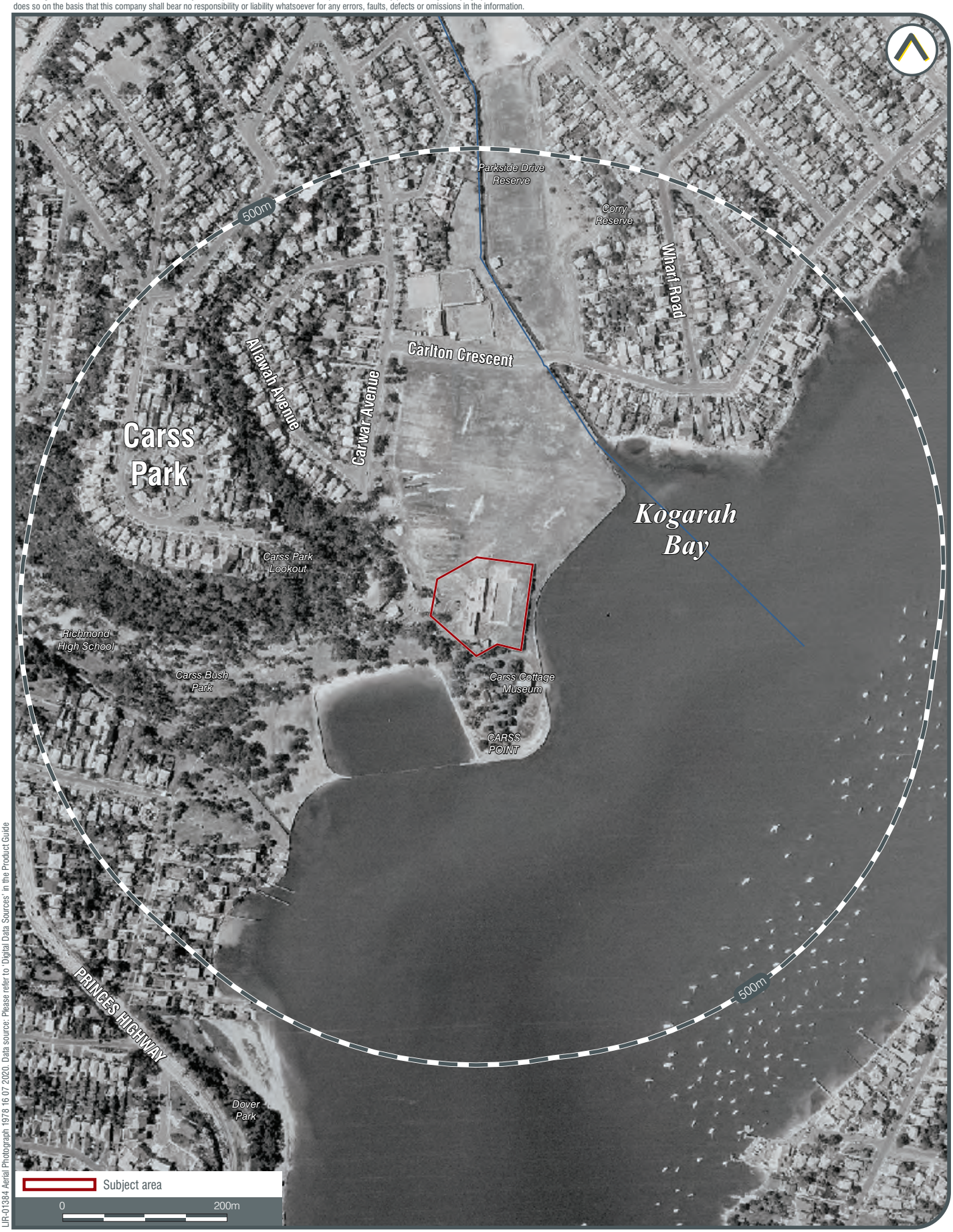

LIR-01384 Aerial Photograph 1978 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1978

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MAP 20

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LIR-01384 Aerial Photograph 1979 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1979

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MAP 21

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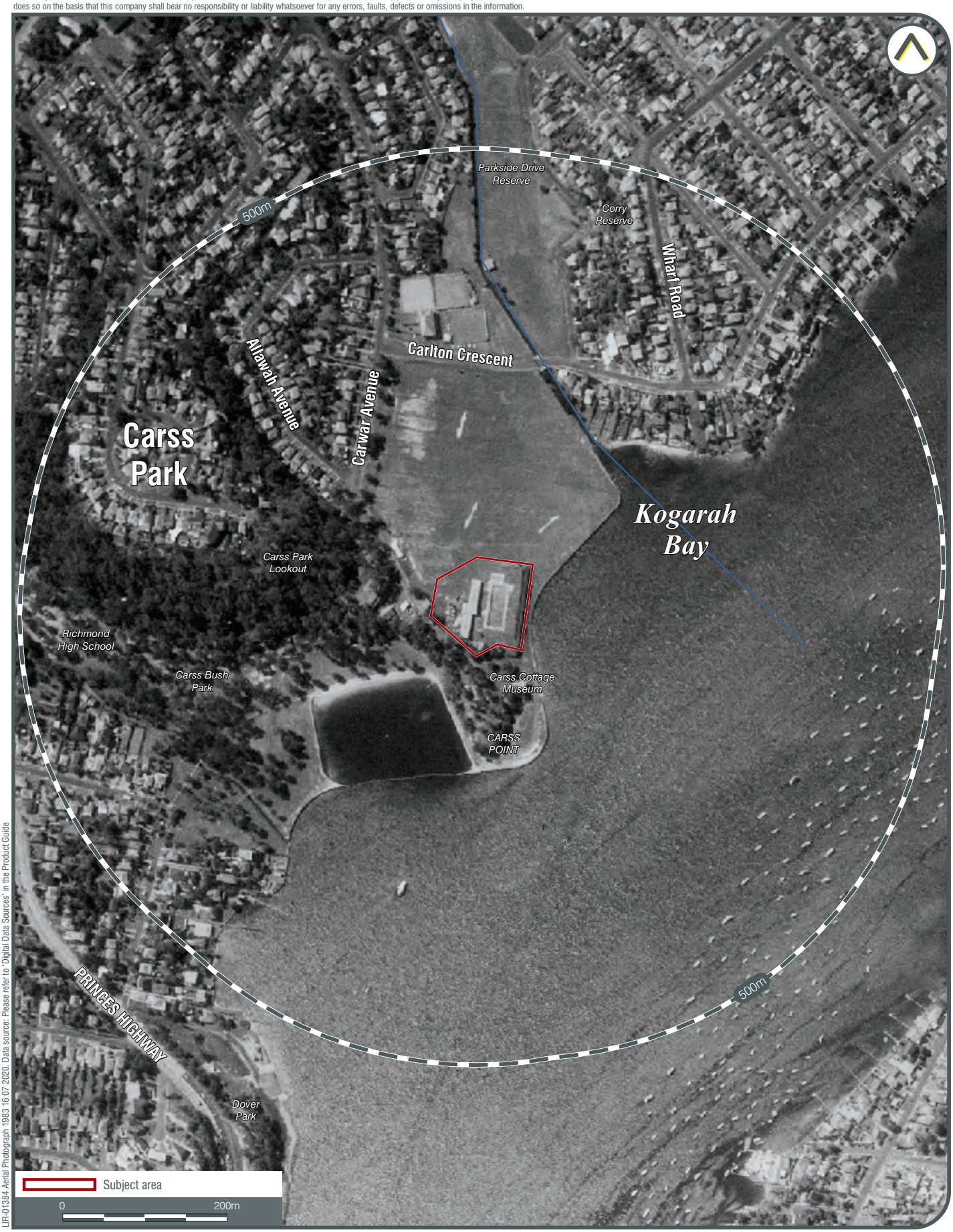

LIR-01384 Aerial Photograph 1983 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1983

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MAP 22

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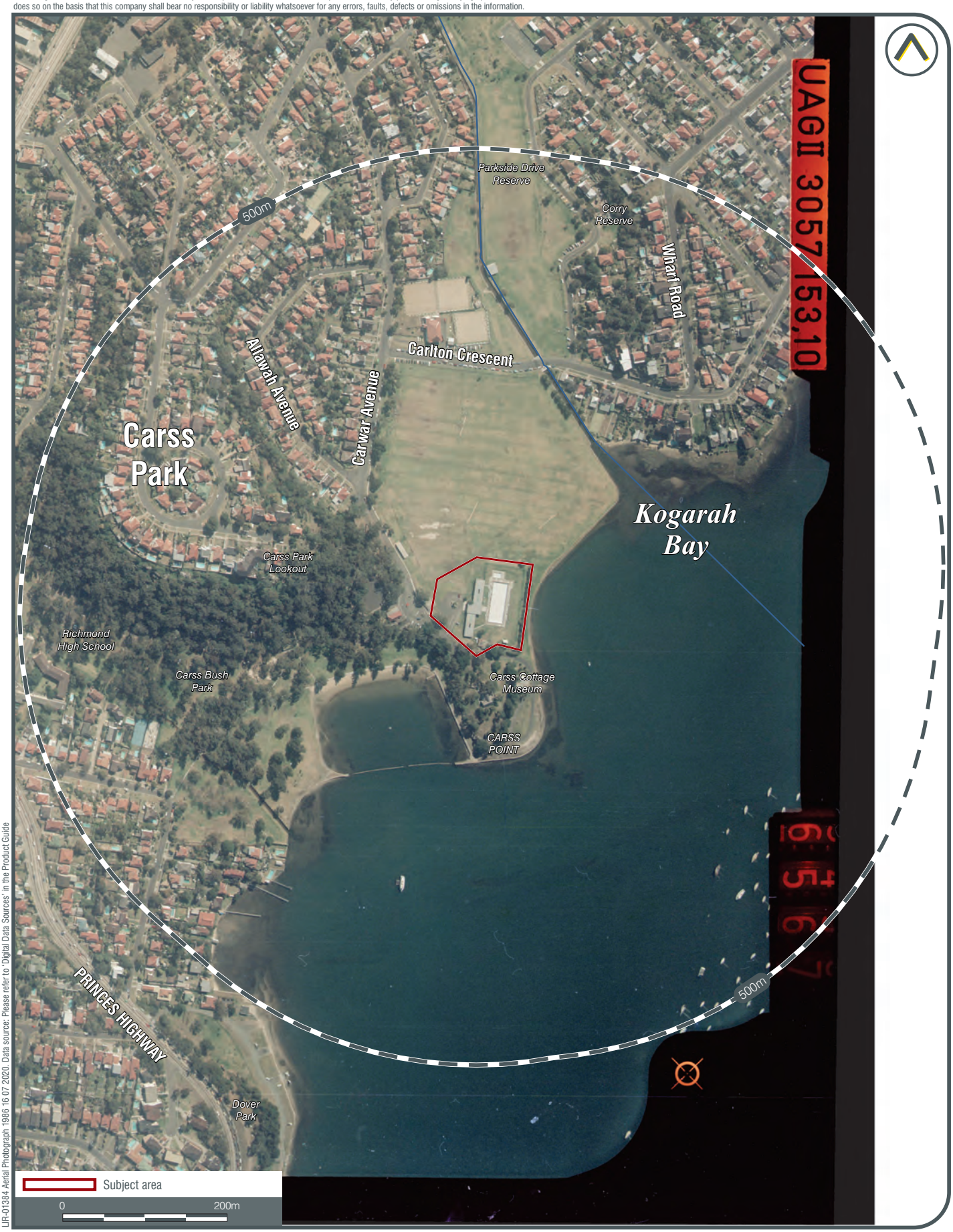

LIR-01384 Aerial Photograph 1986 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1986

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MAP 23

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LIR-01384 Aerial Photograph 1990 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1990

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MAP 24

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LIR-01384 Aerial Photograph 1994 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1994

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MAP 25

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LIR-01384 Aerial Photograph 1990 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1990

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MAP 26

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LIR-01384 Aerial Photograph 2004 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2004

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MAP 27

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LIR-01384 Aerial Photograph 2005 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2005

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MAP 28

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LIR-01384 Aerial Photograph 2007 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2007

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MAP 29

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LIR-01384 Aerial Photograph 2009 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2009

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MAP 30

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LIR-01384 Aerial Photograph 2011 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2011

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MAP 31

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LIR-01384 Aerial Photograph 2014 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2014

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MAP 32

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LIR-01384 Aerial Photograph 2017 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2017

LAND INSIGHT & RESOURCES

MAP 33

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LIR-01384 Aerial Photograph 2020 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2020

LAND INSIGHT & RESOURCES

MAP 34

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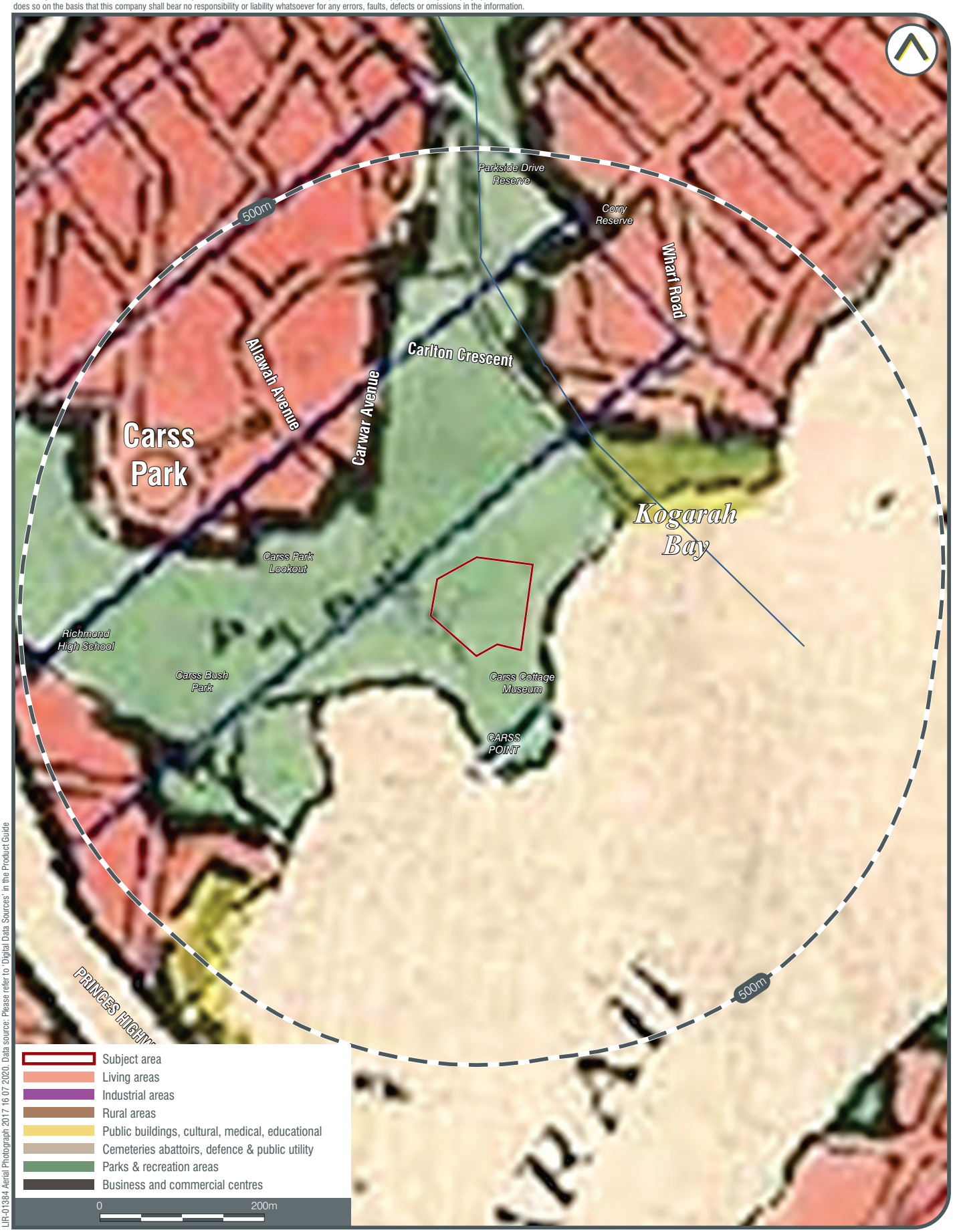

LIR-01384 Aerial Photograph 2017 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

COUNTY OF CUMBERLAND PLANNING SCHEME - 1951

LAND INSIGHT & RESOURCES

MAP 35

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LIR-01384 Pre-1991 Topographic Map 16 07 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

1969-1991 TOPOGRAPHIC MAP SERIES (BOTANY BAY 9130-3S)

LAND INSIGHT & RESOURCES

MAP 36

Appendix E

Historical Title Deeds

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

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

Summary of Owners Report

Address: - 78 Carwar Avenue, Carss Park

Description: - Part Lot 1 D.P. 125981, Part Lot 376 D.P. 1118749 and Lot 511 D.P. 752056
(also parcel labelled unidentified on the Cadastral Records Enquiry Report)

As regards Part Lot 1 D.P. 125981

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
22.03.1880 (1880 to 1917)	Mary Carss	Vol 493 Fol 238
23.11.1917 (1917 to 1923)	Charles Brian Pitt (Solicitor) Robert Carss Stewart (Clerk) (Transmission Application not investigated)	Vol 493 Fol 238
28.12.1923 (1923 to	# Council of the Municipality of Kogarah	Vol 493 Fol 238 Now 1/125981

# Denotes Current Registered Proprietor

Easements & Leases: - NIL

As regards Part Lot 376 D.P. 1118749

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
07.09.1923 (1923 to 1926)	Sydney Sailors Home	Vol 3501 Fol 126
1924	Defined on D.P. 12759 as Carss Bush Park (Lot 376)	
21.04.1926 (1926 to 2019)	Council of the Municipality of Kogarah	Vol 3501 Fol 126 Now 376/1118749
30.01.2019 (2019 to date)	# Georges River Council	376/1118749

# Denotes Current Registered Proprietor

Easements: - NIL

Leases, excluding premises: - NIL

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

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

As regards Lot 511 D.P. 752056

The early title to this land is Crown Land which was located below the original high water mark

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
19.05.1978	# Council of the Municipality of Kogarah (Vested as a Public Reserve) Now # Georges River Council	Gazette Now 511/752056

# Denotes Current Registered Proprietor

Easements & Leases: - NIL

As regards the part labelled unidentified on the Cadastral Records Enquiry Report

This parcel was found to be located below the original high water mark now reclaimed land

The title to this land remains Crown Land

Yours Sincerely
Mark Groll
16 July 2020

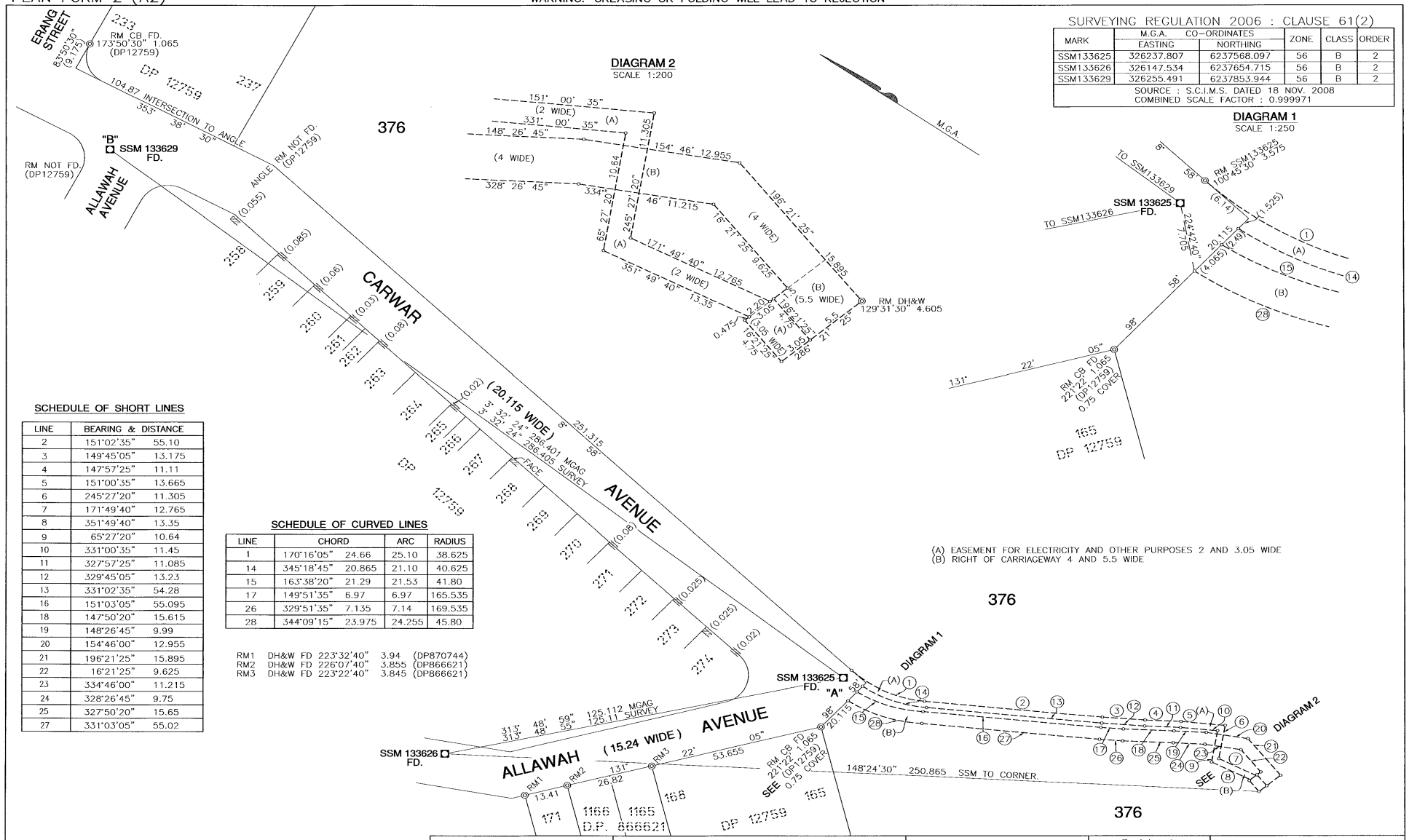
PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

SURVEYING REGULATION 2006 : CLAUSE 61(2)

MARK	M.G.A. CO-ORDINATES EASTING	NORTHING	ZONE	CLASS	ORDER
SSM133625	326237.807	6237568.097	56	B	2
SSM133626	326147.534	6237654.715	56	B	2
SSM133629	326255.491	6237853.944	56	B	2

SOURCE : S.C.I.M.S. DATED 18 NOV. 2008
COMBINED SCALE FACTOR : 0.999971



SCHEDULE OF SHORT LINES

LINE	BEARING & DISTANCE	
2	151°02'35"	55.10
3	149°45'05"	13.175
4	147°57'25"	11.11
5	151°00'35"	13.665
6	245°27'20"	11.305
7	171°49'40"	12.765
8	351°49'40"	13.35
9	65°27'20"	10.64
10	331°00'35"	11.45
11	327°57'25"	11.085
12	329°45'05"	13.23
13	331°02'35"	54.28
16	151°03'05"	55.095
18	147°50'20"	15.615
19	148°26'45"	9.99
20	154°46'00"	12.955
21	196°21'25"	15.895
22	16°21'25"	9.625
23	334°46'00"	11.215
24	328°26'45"	9.75
25	327°50'20"	15.65
27	331°03'05"	55.02

SCHEDULE OF CURVED LINES

LINE	CHORD		ARC	RADIUS
1	170°16'05"	24.66	25.10	38.625
14	345°18'45"	20.865	21.10	40.625
15	163°38'20"	21.29	21.53	41.80
17	149°51'35"	6.97	6.97	165.535
26	329°51'35"	7.135	7.14	169.535
28	344°09'15"	23.975	24.255	45.80

RM1	DH&W FD	223°32'40"	3.94	(DP870744)
RM2	DH&W FD	226°07'40"	3.855	(DP866621)
RM3	DH&W FD	223°22'40"	3.845	(DP866621)

Surveyor: JOHN A WATSON
Date of Survey: 2/12/2008
Surveyor's Ref: 08/542

PLAN OF EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 2 AND 3.05 WIDE AND RIGHT OF CARRIAGEWAY 4 AND 5.5 WIDE WITHIN LOT 376 IN DP1118749

L G A: KOGARAH
Locality: CARSS PARK
Subdivision No. ———
Lengths are in metres. Reduction Ratio 1:750

Registered
15-06-2009

DP1139519 P

Table of mm

Req:R349873 /Doc:DP 1139519 P /Rev:16-Jun-2009 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 11:13 /Seq:1 of 3
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park

Req:R349873 /Doc:DP 1139519 P /Rev:16-Jun-2009 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 11:13 /Seq:2 of 3
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park

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

DEPOSITED PLAN ADMINISTRATION SHEET

Sheet 1 of ~~1~~ 2 Sheet(s)

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

PURSUANT TO SEC. 88B OF THE CONVEYANCING ACT 1919 IT IS INTENDED TO CREATE:

1. EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 2 AND 3.05 WIDE.
2. RIGHT OF CARRIAGEWAY 4 AND 5.5 WIDE.

Signed for and on behalf of Kogarah Municipal Council by Paul Jeffrey Woods its duly constituted Attorney who hereby states that at the time of Executing this deed he has no Notice of Revocation of the Power of Attorney Registered No 264 Book 4495)

Paul Woods

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

Crown Lands NSW/Western Lands Office Approval

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

Signature: .....
Date: .....
File No.: .....
Office: .....

Subdivision Certificate

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

the proposed.....set out herein
* (Insert "subdivision" or "new road")

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

Consent Authority: .....

Date of endorsement : .....

Accreditation no : .....

Subdivision Certificate no : .....

File no. .....

*Delete whichever is inapplicable.

DP1139519 S

*OFFICE USE ONLY

Registered: 15-06-2009

Title System: TORRENS

Purpose: EASEMENT

PLAN OF EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 2 AND 3.05 WIDE AND RIGHT OF CARRIAGEWAY 4 AND 5.5 WIDE WITHIN LOT 376 IN DP1118749

LGA: KOGARAH

Locality: CARSS PARK

Parish: ST. GEORGE

County: CUMBERLAND

Surveying Regulation, 2006

I, JOHN ARTHUR WATSON

of WATSON BUCHAN SURVEYORS
DX 11063, CARINGBAH

a surveyor registered under the Surveying Act, 2002, certify that the survey represented in this plan is accurate, has been made in accordance with the Surveying Regulation, 2006 and was completed on 2 DECEMBER 2008

The survey relates to EASEMENTS

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

(Signature) ..... Dated: 2/12/08
Surveyor registered under the Surveying Act 2002

Datum Line: "A"–"B"

Type: ~~Urban/Rural~~

Plans used in preparation of survey/compilation.

D.P.12759
D.P.845247
D.P.866621
D.P.870744

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

SURVEYOR'S REFERENCE: 08/542

Req:R349873 /Doc:DP 1139519 P /Rev:16-Jun-2009 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 11:13 /Seq:3 of 3
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park **Creasing or folding will lead to rejection**

DEPOSITED PLAN ADMINISTRATION SHEET

PLAN OF EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 2 AND 3.05 WIDE AND RIGHT OF CARRIAGEWAY 4 AND 5.5 WIDE WITHIN LOT 376 IN DP 1118749

DP1139519 *

Registered: 15-06-2009 *

* OFFICE USE ONLY

Subdivision Certificate No: ———— Date of Endorsement: ————

SIGNED SEALED AND DELIVERED
for and on behalf of EnergyAustralia
by KATHERINE MARGARET GUNTON
its duly constituted Attorney pursuant
to Power of Attorney registered
Book 4528 No. 401

Attorney

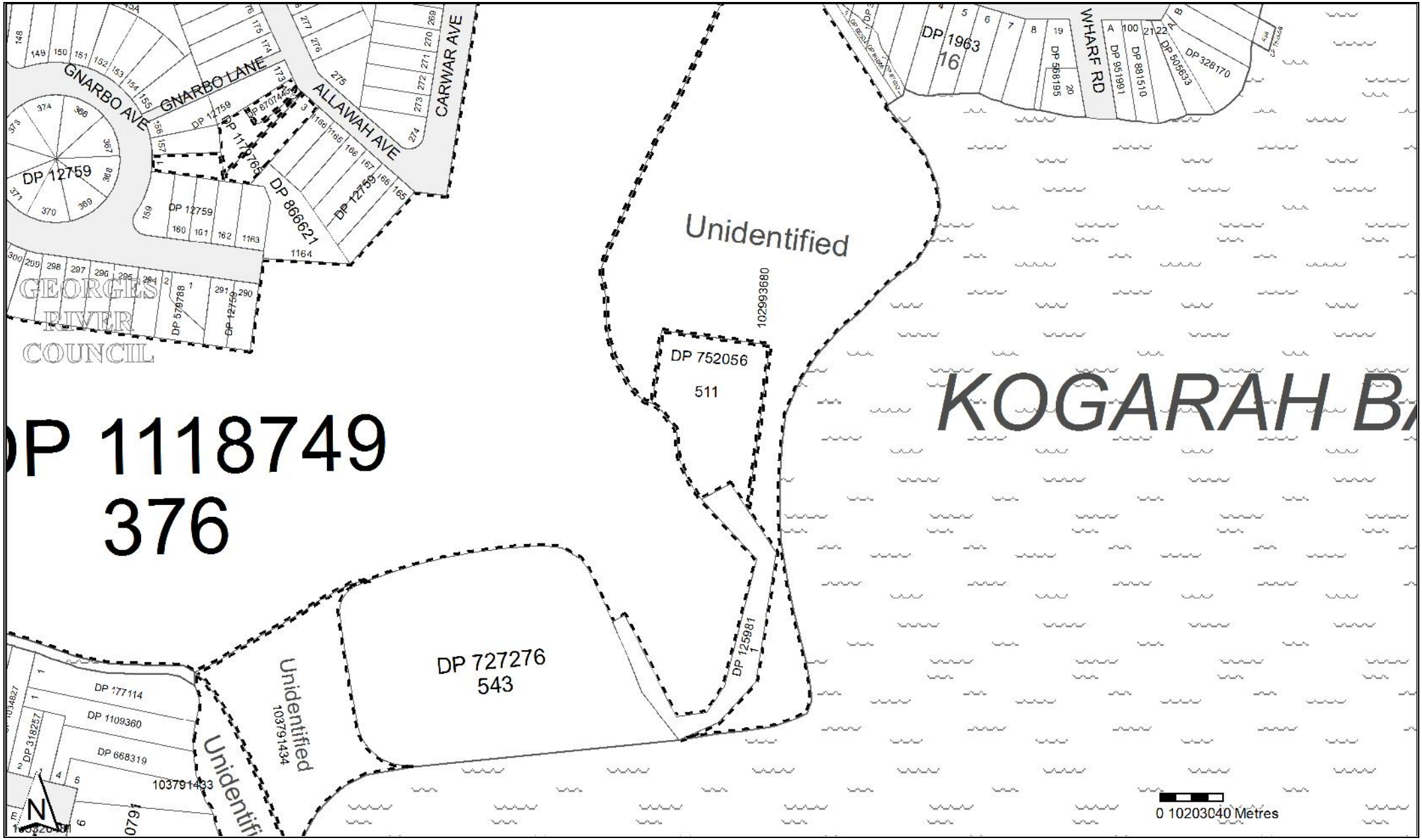
Witness

SURVEYOR'S REFERENCE: 08/542

DP 1118740
375
Identify Tool
Suburb
LGA
Lot (1)
Address (1)
Imagery
Lot
lot section plan
1 Null DP125981
611 Null DP792066
375 Null DP1118740
611
DP 792066
DP 125981
DP 727270
540

Cadastral Records Enquiry Report : Lot 511 DP 752056

Locality : CARSS PARK
Parish : ST GEORGE
LGA : GEORGES RIVER
County : CUMBERLAND



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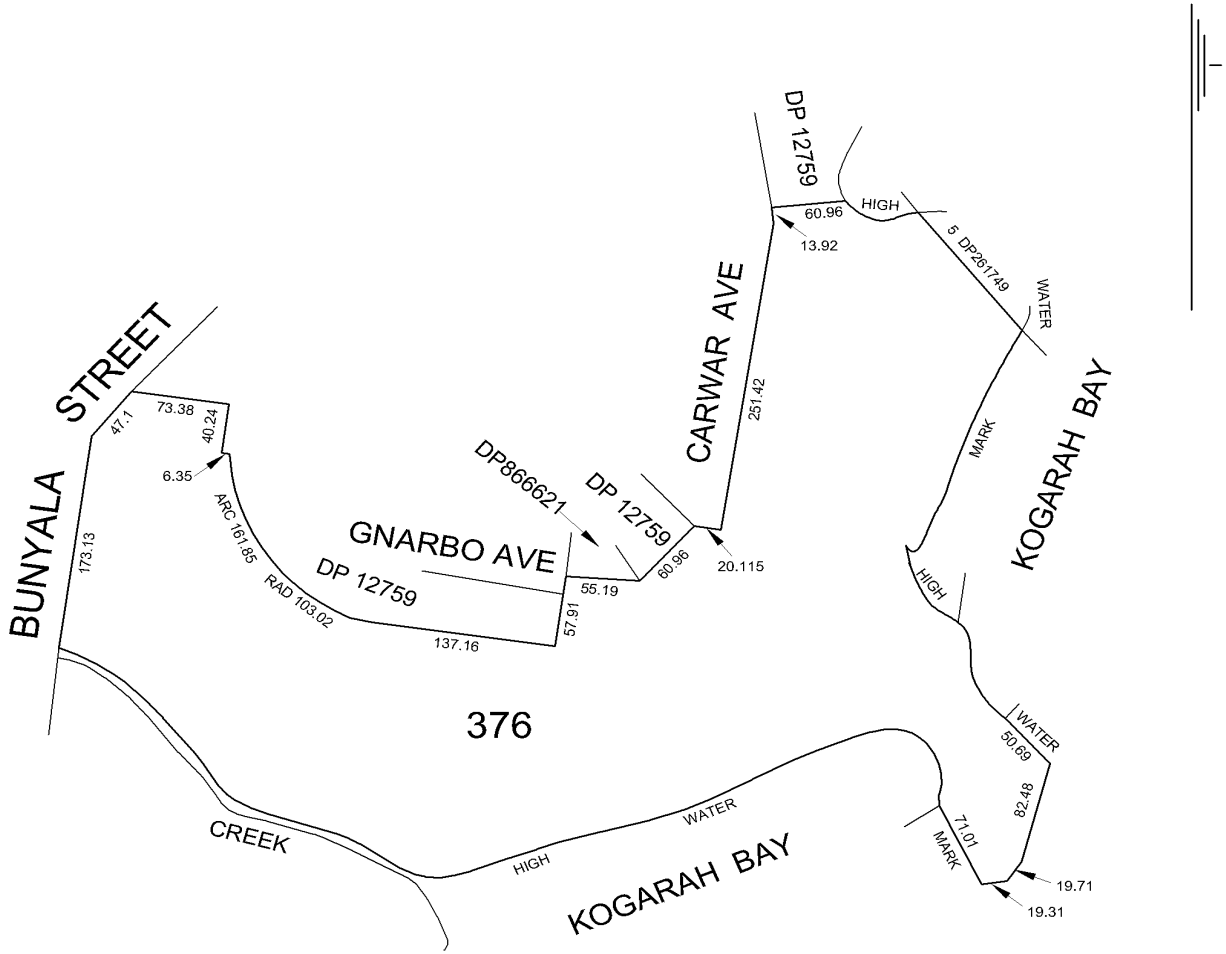
This information is provided as a searching aid only.Whilst every endeavour is made to ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For ALL ACTIVITY PRIOR TO SEPTEMBER 2002 you must refer to the RGs Charting and Reference Maps

InfoTrack

e-departmental

DP 1118749

Full dimensions and/or area(s) are not available for all lots. Any division of the land herein may necessitate the lodgement of a plan of survey.



Registered : 03/10/2007

Title System : TORRENS

Purpose : DEPARTMENTAL

Ref. Map : U0937-74

Last Plan : DP 12759

PLAN OF PART LOT 376 IN DP 12759 COMPRISED IN VOL. 5691 FOL. 171

Lengths are in metres. Reduction Ratio - NTS
LPI Ref. : SM15

L.G.A.: KOGARAH

LOCATITY: CARSS PARK

PARISH: ST GEORGE

COUNTY: CUMBERLAND

LOT	PRIOR IDENTITY

THIS PLAN HAS BEEN PREPARED TO PROVIDE AN UNIQUE IDENTITY FOR THE LAND IN THE CERTIFICATE OF TITLE REFERRED TO ABOVE.

IT IS NOT A CURRENT PLAN IN THE TERMS OF 7A OF THE CONVEYANCING ACT, 1919.

Req:R349142 /Doc:DP 1118749 P /Rev:03-Dec-2007 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 10:11 /Seq:1 of 1
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park

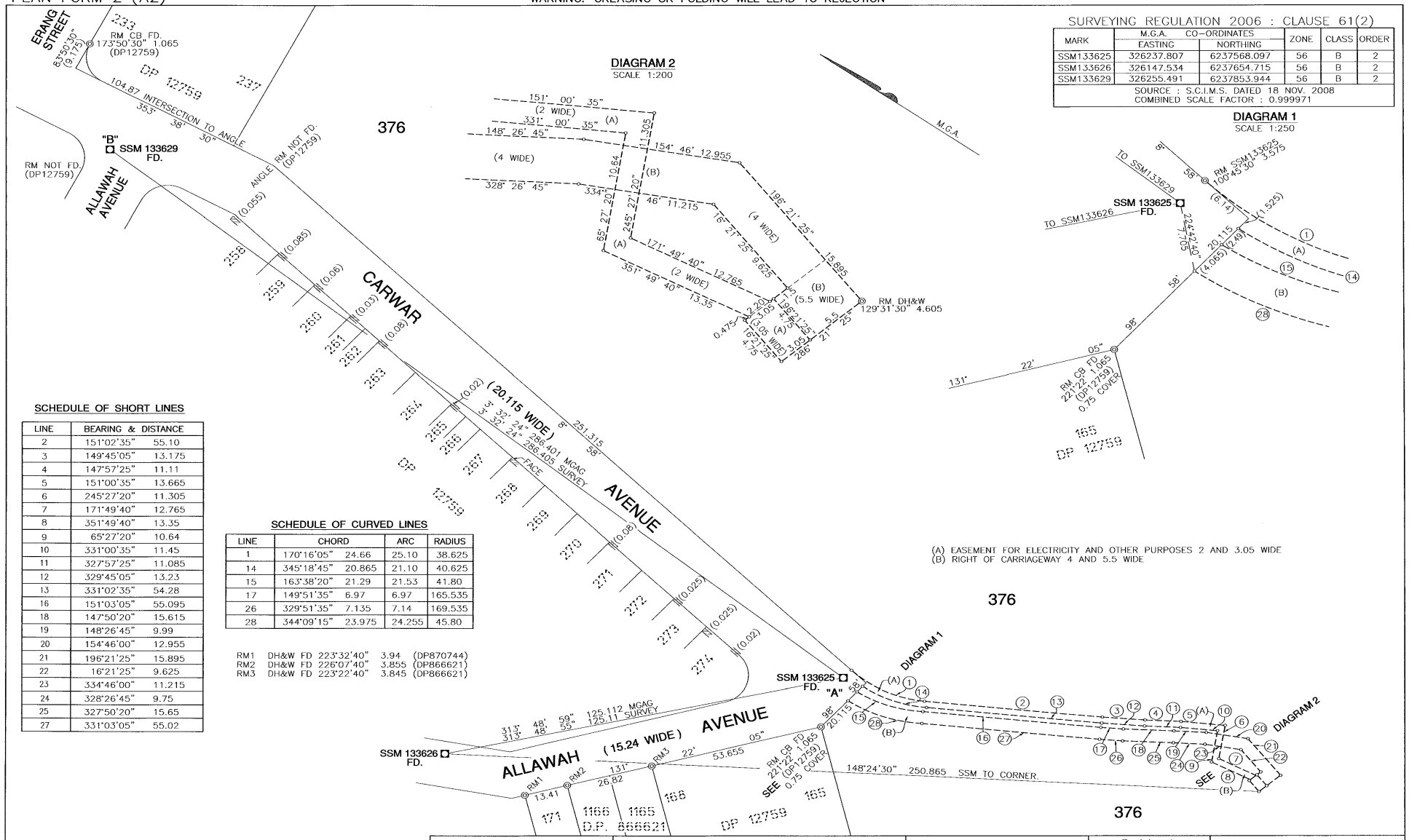
PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

SURVEYING REGULATION 2006 : CLAUSE 61(2)

MARK	M.G.A. CO-ORDINATES EASTING	NORTHING	ZONE	CLASS	ORDER
SSM133625	326237.807	6237568.097	56	B	2
SSM133626	326147.534	6237654.715	56	B	2
SSM133629	326255.491	6237853.944	56	B	2

SOURCE : S.C.I.M.S. DATED 18 NOV. 2008
COMBINED SCALE FACTOR : 0.999971



SCHEDULE OF SHORT LINES

LINE	BEARING & DISTANCE	
2	151°02'35"	55.10
3	149°45'05"	13.175
4	147°57'25"	11.11
5	151°00'35"	13.665
6	245°27'20"	11.305
7	171°49'40"	12.765
8	351°49'40"	13.35
9	65°27'20"	10.64
10	331°00'35"	11.45
11	327°57'25"	11.085
12	329°45'05"	13.23
13	331°02'35"	54.28
16	151°03'05"	55.095
18	147°50'20"	15.615
19	148°26'45"	9.99
20	154°46'00"	12.955
21	196°21'25"	15.895
22	16°21'25"	9.625
23	334°46'00"	11.215
24	328°26'45"	9.75
25	327°50'20"	15.65
27	331°03'05"	55.02

SCHEDULE OF CURVED LINES

LINE	CHORD		ARC	RADIUS
1	170°16'05"	24.66	25.10	38.625
14	345°18'45"	20.865	21.10	40.625
15	163°38'20"	21.29	21.53	41.80
17	149°51'35"	6.97	6.97	165.535
26	329°51'35"	7.135	7.14	169.535
28	344°09'15"	23.975	24.255	45.80

RM1	DH&W FD	223°32'40"	3.94	(DP870744)
RM2	DH&W FD	226°07'40"	3.855	(DP866621)
RM3	DH&W FD	223°22'40"	3.845	(DP866621)

Surveyor: JOHN A WATSON
Date of Survey: 2/12/2008
Surveyor's Ref: 08/542

PLAN OF EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 2 AND 3.05 WIDE AND RIGHT OF CARRIAGEWAY 4 AND 5.5 WIDE WITHIN LOT 376 IN DP1118749

L G A: KOGARAH
Locality: CARSS PARK
Subdivision No. ———
Lengths are in metres. Reduction Ratio 1:750

Registered
15-06-2009

DP1139519 P

Table of mm

Req:R349873 /Doc:DP 1139519 P /Rev:16-Jun-2009 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 11:13 /Seq:1 of 3
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park

Req:R349873 /Doc:DP 1139519 P /Rev:16-Jun-2009 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 11:13 /Seq:2 of 3
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park

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

DEPOSITED PLAN ADMINISTRATION SHEET

Sheet 1 of ~~1~~ 2 Sheet(s)

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

PURSUANT TO SEC. 88B OF THE CONVEYANCING ACT 1919 IT IS INTENDED TO CREATE:

1. EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 2 AND 3.05 WIDE.
2. RIGHT OF CARRIAGEWAY 4 AND 5.5 WIDE.

Signed for and on behalf of Kogarah Municipal Council by Paul Jeffrey Woods its duly constituted Attorney who hereby states that at the time of Executing this deed he has no Notice of Revocation of the Power of Attorney Registered No 264 Book 4495)

Paul Woods

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

Crown Lands NSW/Western Lands Office Approval

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

Signature: .....
Date: .....
File No.: .....
Office: .....

Subdivision Certificate

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

the proposed.....set out herein
* (Insert "subdivision" or "new road")

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

Consent Authority: .....

Date of endorsement : .....

Accreditation no : .....

Subdivision Certificate no : .....

File no. .....

*Delete whichever is inapplicable.

DP1139519 S

*OFFICE USE ONLY

Registered: 15-06-2009

Title System: TORRENS

Purpose: EASEMENT

PLAN OF EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 2 AND 3.05 WIDE AND RIGHT OF CARRIAGEWAY 4 AND 5.5 WIDE WITHIN LOT 376 IN DP1118749

LGA: KOGARAH

Locality: CARSS PARK

Parish: ST. GEORGE

County: CUMBERLAND

Surveying Regulation, 2006

I, JOHN ARTHUR WATSON

of WATSON BUCHAN SURVEYORS
DX 11063, CARINGBAH

a surveyor registered under the Surveying Act, 2002, certify that the survey represented in this plan is accurate, has been made in accordance with the Surveying Regulation, 2006 and was completed on 2 DECEMBER 2008

The survey relates to EASEMENTS

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

(Signature) ..... Dated: 2/12/08
Surveyor registered under the Surveying Act 2002

Datum Line: "A"–"B"

Type: ~~Urban/Rural~~

Plans used in preparation of survey/compilation.

D.P.12759
D.P.845247
D.P.866621
D.P.870744

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

SURVEYOR'S REFERENCE: 08/542

Req:R349873 /Doc:DP 1139519 P /Rev:16-Jun-2009 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 11:13 /Seq:3 of 3
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park **Creasing or folding will lead to rejection**

DEPOSITED PLAN ADMINISTRATION SHEET

PLAN OF EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 2 AND 3.05 WIDE AND RIGHT OF CARRIAGEWAY 4 AND 5.5 WIDE WITHIN LOT 376 IN DP 1118749

DP1139519 *

Registered: 15-06-2009 *

* OFFICE USE ONLY

Subdivision Certificate No: ———— Date of Endorsement: ————

SIGNED SEALED AND DELIVERED
for and on behalf of EnergyAustralia
by KATHERINE MARGARET GUNTON
its duly constituted Attorney pursuant
to Power of Attorney registered
Book 4528 No. 401

Attorney

Witness

SURVEYOR'S REFERENCE: 08/542

InfoTrack
Req:R349559 /Doc:DP 0012759 P /Rev:11-Mar-1997 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 10:50 /Seq:1 of 12
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park

Municipality of Kogarah

B.71619. 17.4.24

PLAN OF CARSS' BUSH PARK ESTATE

DP 12759

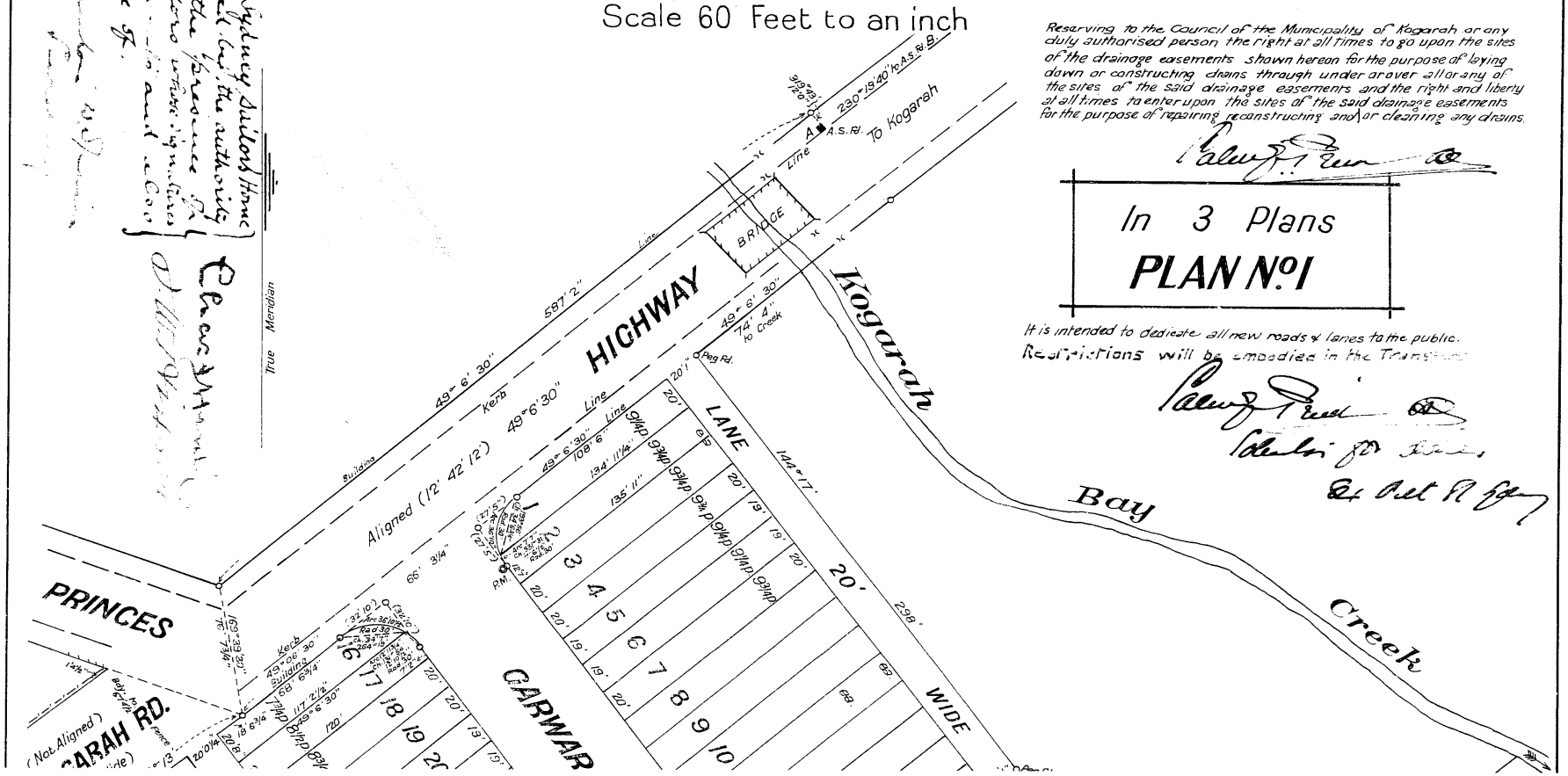
SH. 1/3 (E)

at Blakehurst

Being ~~part~~ the whole of the land comprised in Certificate of Title, Volume 3501 Folio 126 and the whole of land comprised in Crown Grant Volume 493 Folio 238

Parish of St. George — County of Cumberland

Scale 60 Feet to an inch



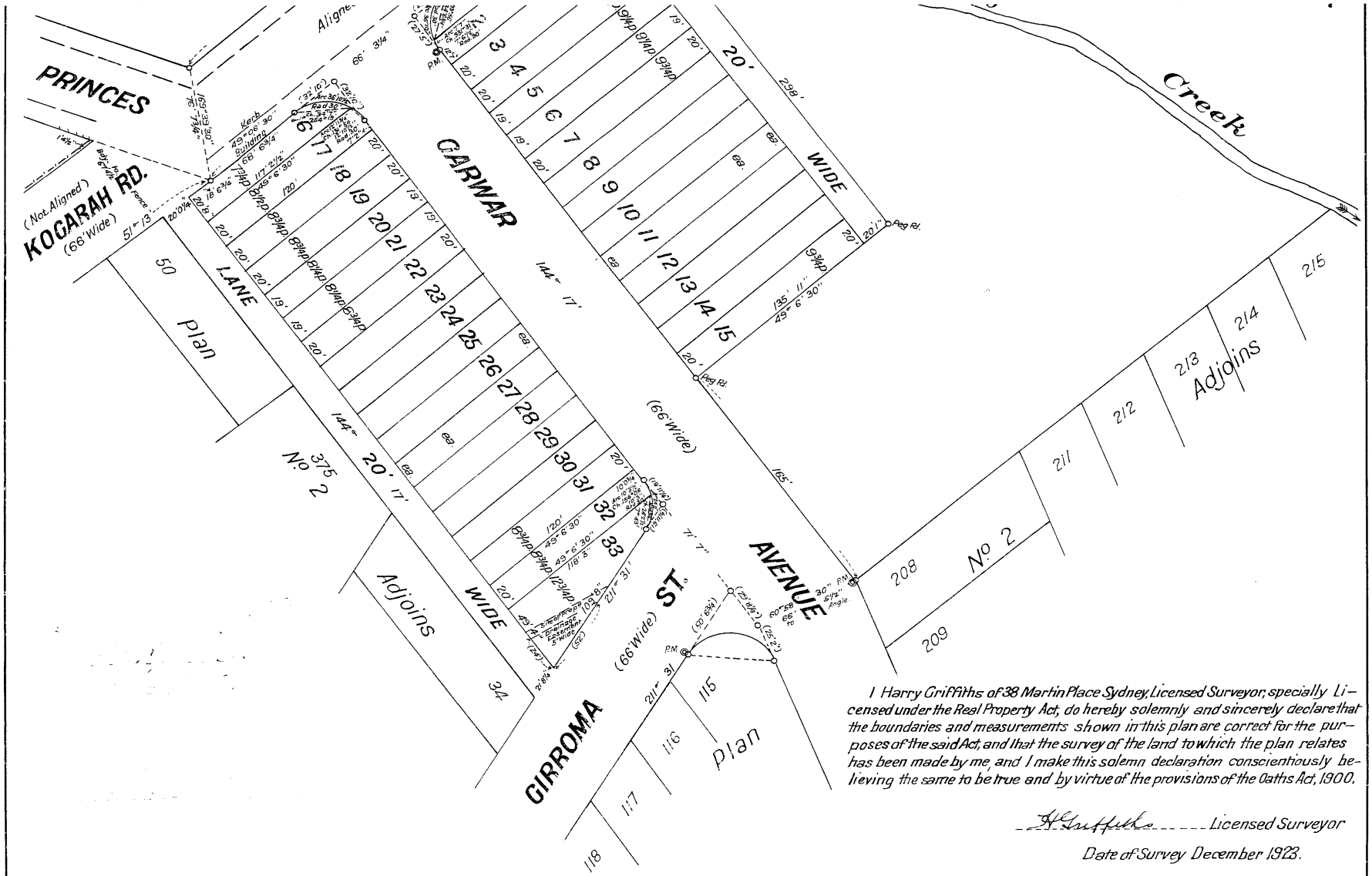
Reserving to the Council of the Municipality of Kogarah or any duly authorised person the right at all times to go upon the sites of the drainage easements shown hereon for the purpose of laying down or constructing drains through under or over all or any of the sites of the said drainage easements and the right and liberty at all times to enter upon the sites of the said drainage easements for the purpose of repairing reconstructing and/or cleaning any drains.

In 3 Plans

PLAN No. 1

It is intended to dedicate all new roads & lanes to the public.
Restrictions will be embodied in the Transfer.

Req:R349559 /Doc:DP 0012759 P /Rev:11-Mar-1997 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 10:50 /Seq:2 of 12
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park



I Harry Griffiths of 38 Martin Place Sydney, Licensed Surveyor, specially Licensed under the Real Property Act, do hereby solemnly and sincerely declare that the boundaries and measurements shown in this plan are correct for the purposes of the said Act, and that the survey of the land to which the plan relates has been made by me, and I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act, 1900.

H. Griffiths ..... Licensed Surveyor

Date of Survey December 1923.

Datum line of Azimuth Alignment Kogarah Road. A. B. (True Bearings)

Date of Survey : December 1923

Subscribed and declared before me at Sydney
this 11th day of February 1924

..... J.P.

DP 12759 (E) 1/3

Req:R349559 /Doc:DP 0012759 P /Rev:11-Mar-1997 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 10:50 /Seq:3 of 12
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park

DP12759
SH. 2/3

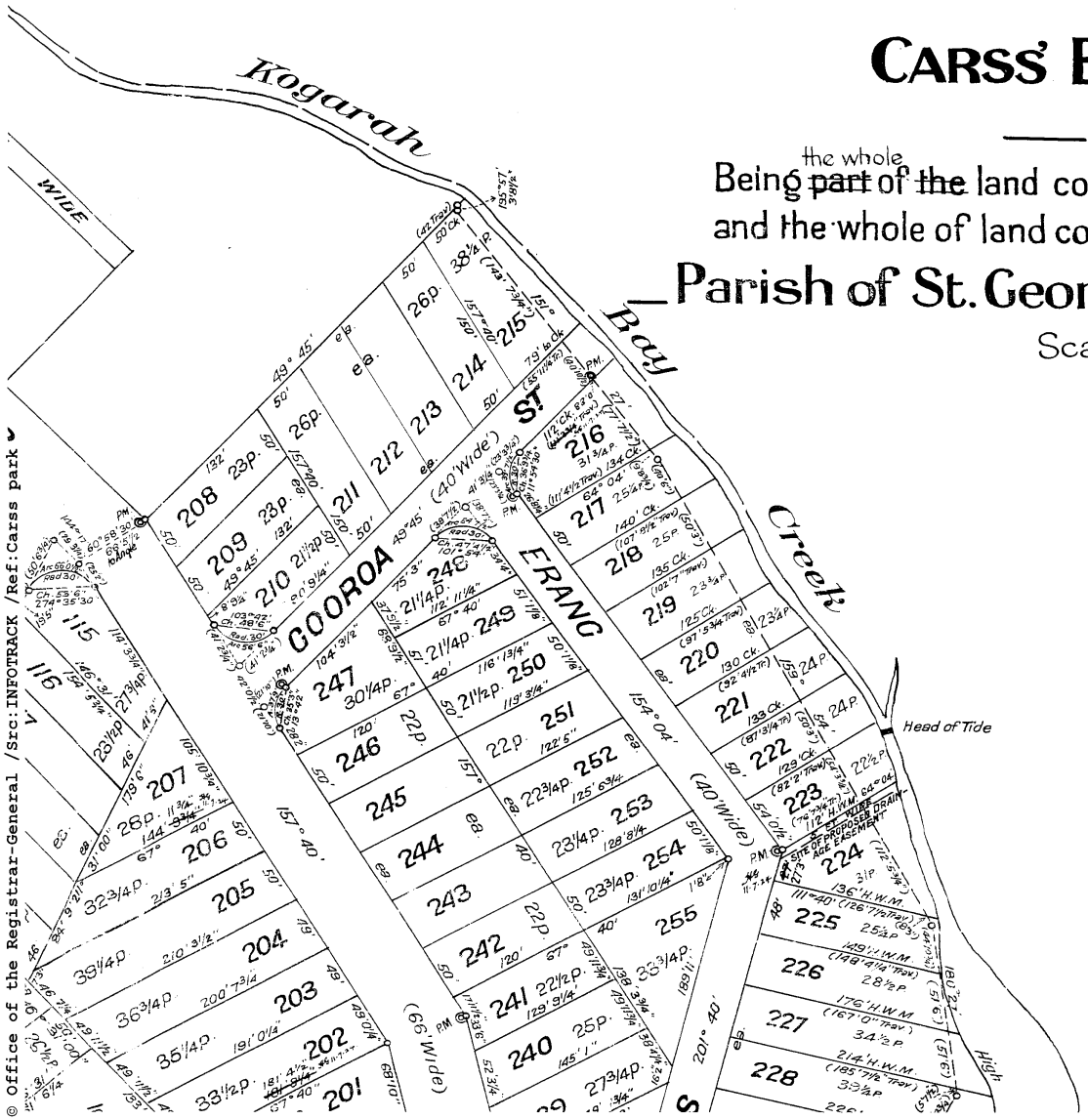
PLAN
OF
CARSS' BUSH PARK ESTATE

at Blakehurst

Being ~~part~~ the whole of ~~the~~ land comprised in Certificate of Title Volume 3501 Folio 126
and the whole of land comprised in Crown Grant Volume 493 Folio 238

Parish of St. George — County of Cumberland

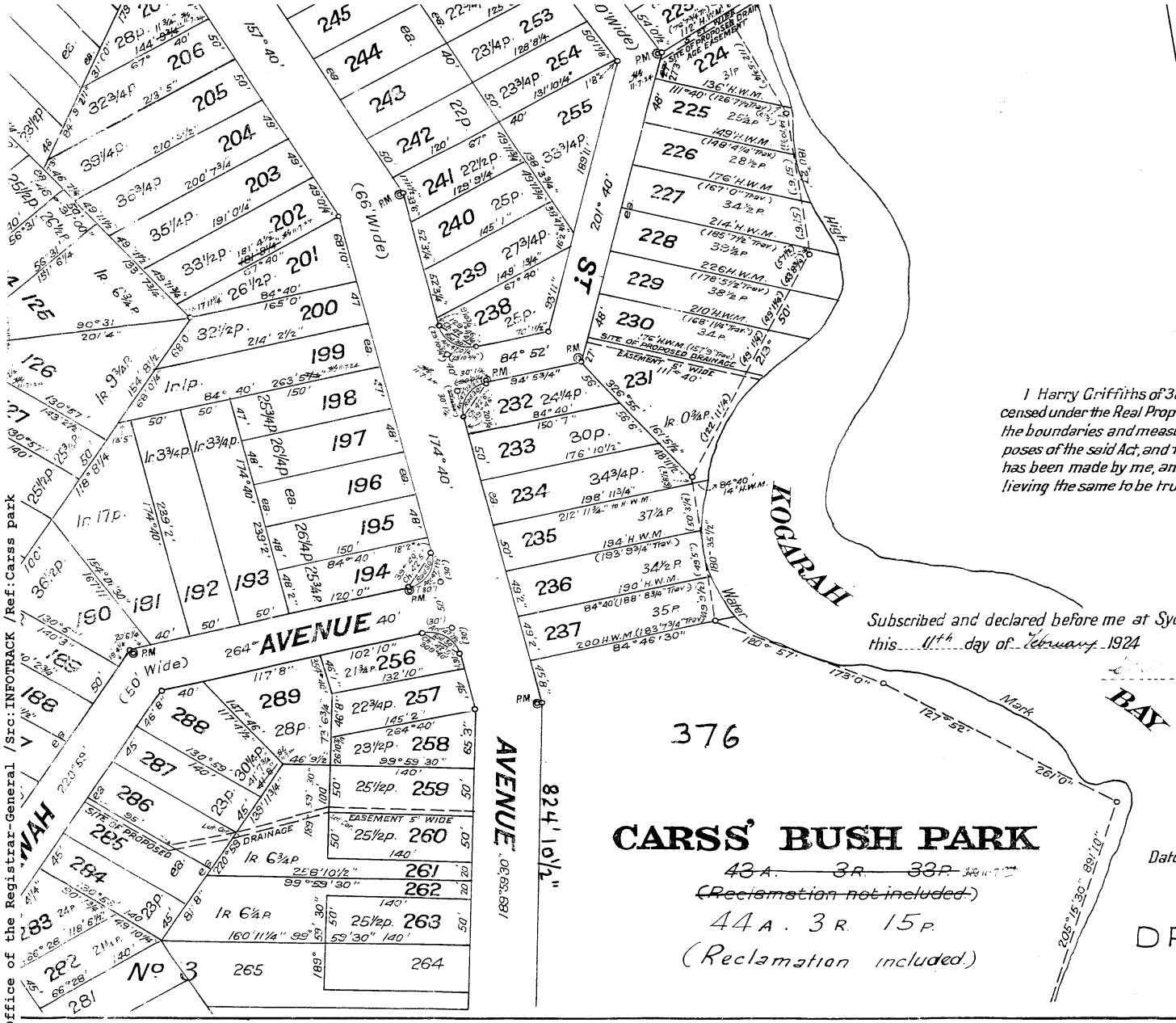
Scale 100 Feet to an inch



Offset Areas in Sq. Feet

Lot No.	Q. Area	Lot No.	Q. Area
215	+ 3456	226	+ 208
216	+ 1794	227	+ 936
217	+ 1400	228	+ 1900

Req:R349559 /Doc:DP 0012759 P /Rev:11-Mar-1997 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 10:50 /Seq:4 of 12
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park



Offset Areas in Sq Feet

Lot No	Area	Lot No	Area
215	+ 3456	226	− 208
216	+ 1794	227	+ 936
217	+ 1400	228	+ 1900
218	+ 1600	229	+ 2205
219	+ 1500	230	+ 1470
220	+ 1650	231	+ 1968
221	+ 2100	235	+ 350
222	+ 2350	236	+ 25
223	+ 2214	237	+ 400
224	+ 2464	Offset Bush Park	Area Carss Park
225	+ 265		+ 17.2126 Sq ft

Offset Area of Park + 104126 sq ft

I Harry Griffiths of 38 Martin Place, Sydney, Licensed Surveyor, specially Licensed under the Real Property Act, do hereby solemnly and sincerely declare that the boundaries and measurements shown in this plan are correct for the purposes of the said Act, and that the survey of the land to which the plan relates has been made by me, and I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act, 1900.

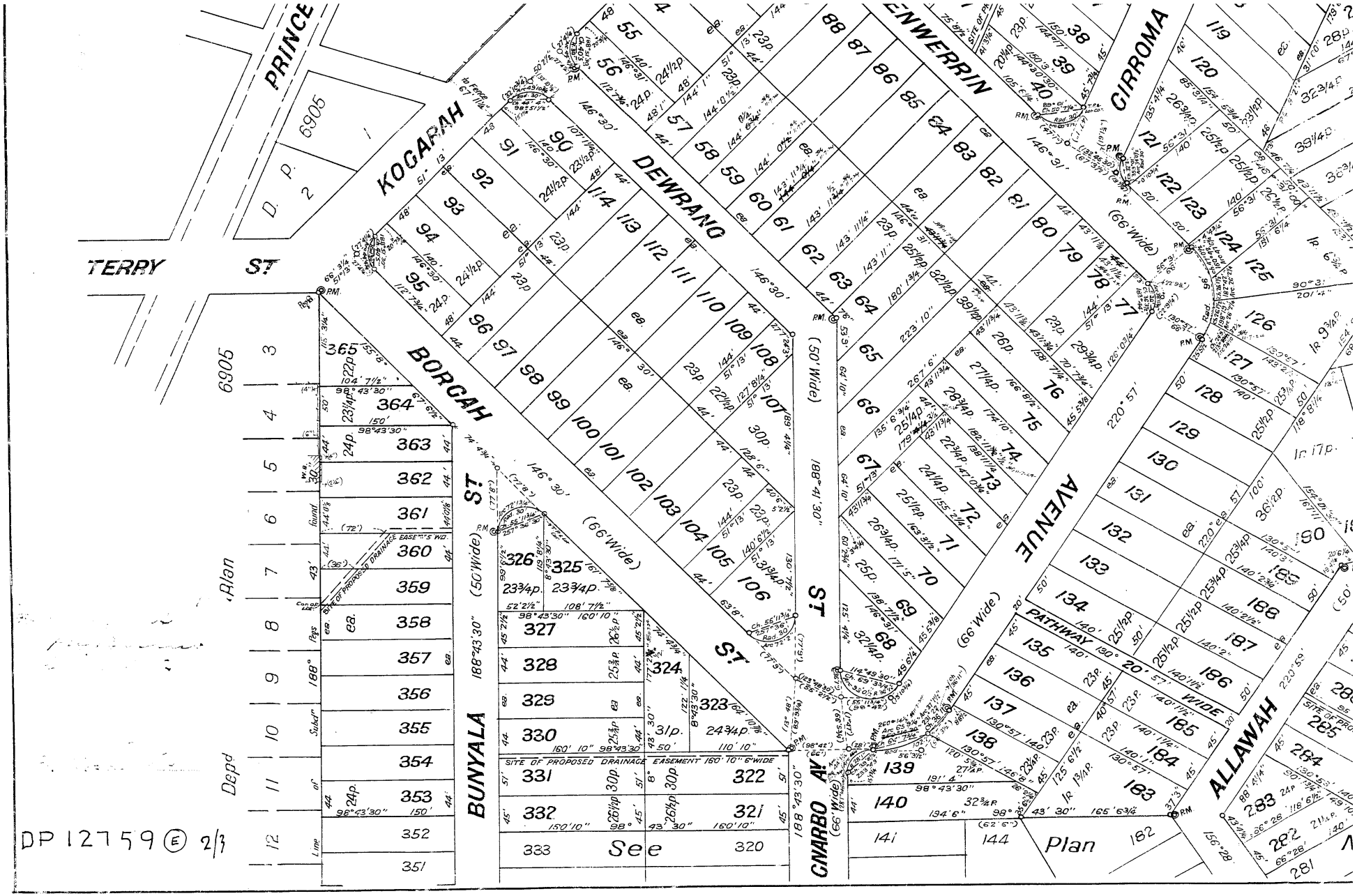
H Griffiths Licensed Surveyor.

Date of Survey, December 1923.

Subscribed and declared before me at Sydney this 11th day of February 1924

J.P.

Req:R349559 /Doc:DP 0012759 P /Rev:11-Mar-1997 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 10:50 /Seq:5 of 12
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park



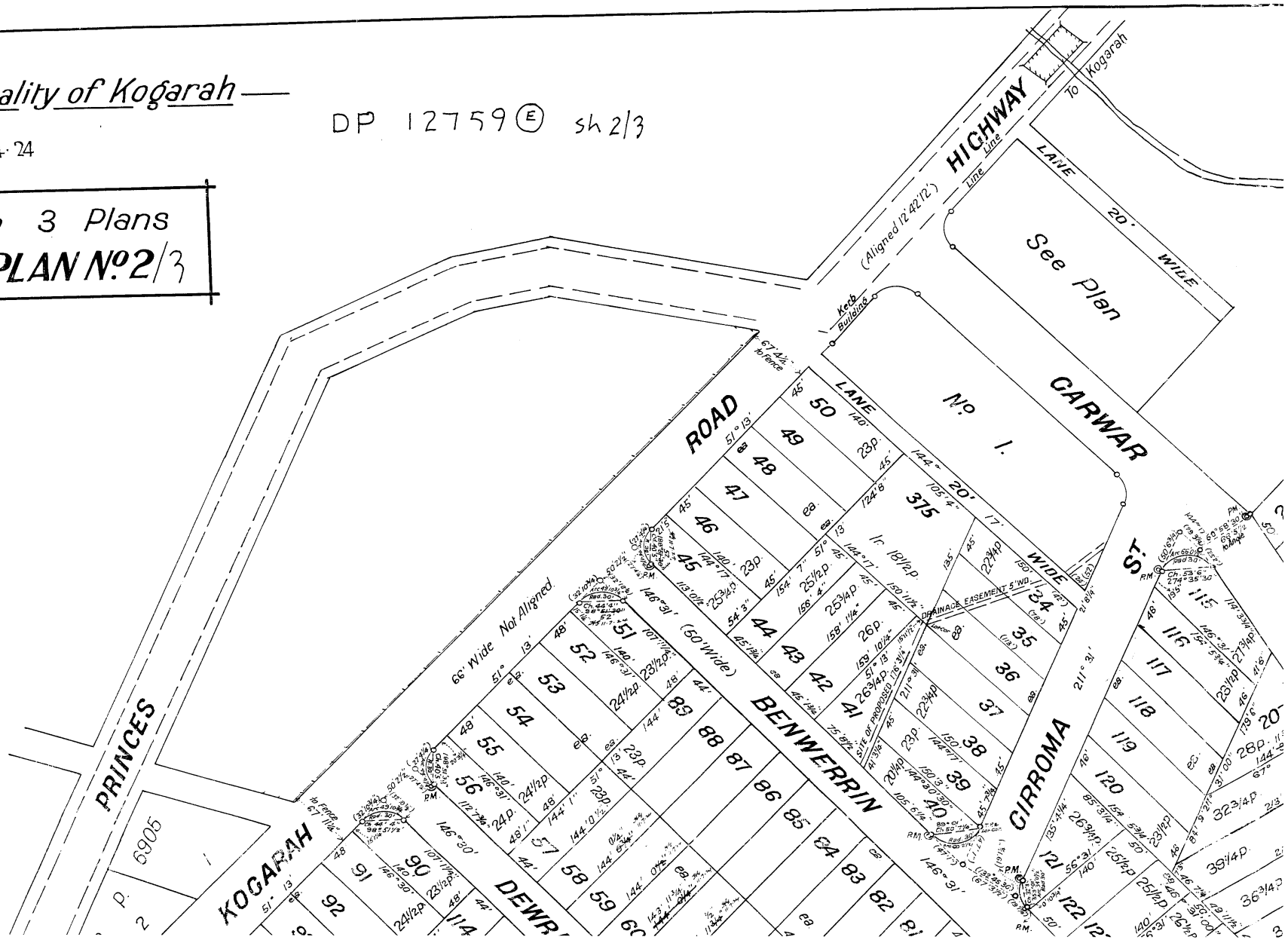
Req:R349559 /Doc:DP 0012759 P /Rev:11-Mar-1997 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 10:50 /Seq:6 of 12
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park

Municipality of Kogarah

B 71619. 17·4·24

DP 12759 (E) sh 2/3

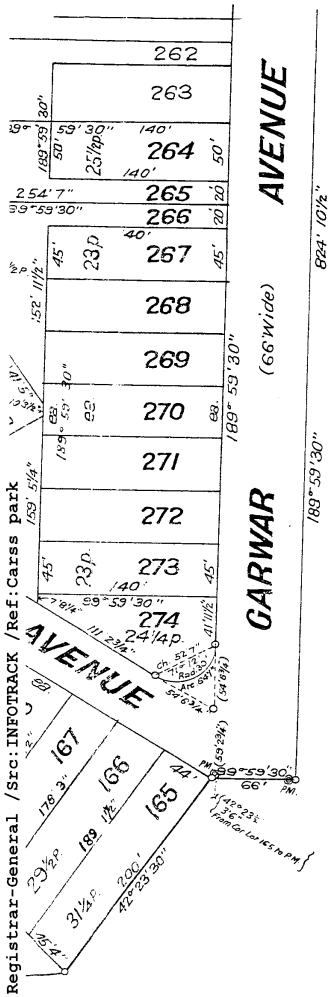
In 3 Plans
PLAN No. 2/3



Req:R349559 /Doc:DP 0012759 P /Rev:11-Mar-1997 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 10:50 /Seq:7 of 12
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park

DP 12759

SH. 3/3 (E)



In 3 Plans
PLAN No. 3/3

PLAN
OF
CARSS' BUSH PARK ESTATE
at Blakehurst

Being ~~part~~ the whole of ~~the~~ land comprised in Certificate of Title, Volume 3501 Folio 126
and the whole of land comprised in Crown Grant Volume 493 Folio 238

Parish of St. George — County of Cumberland

Scale 100 Feet to an inch

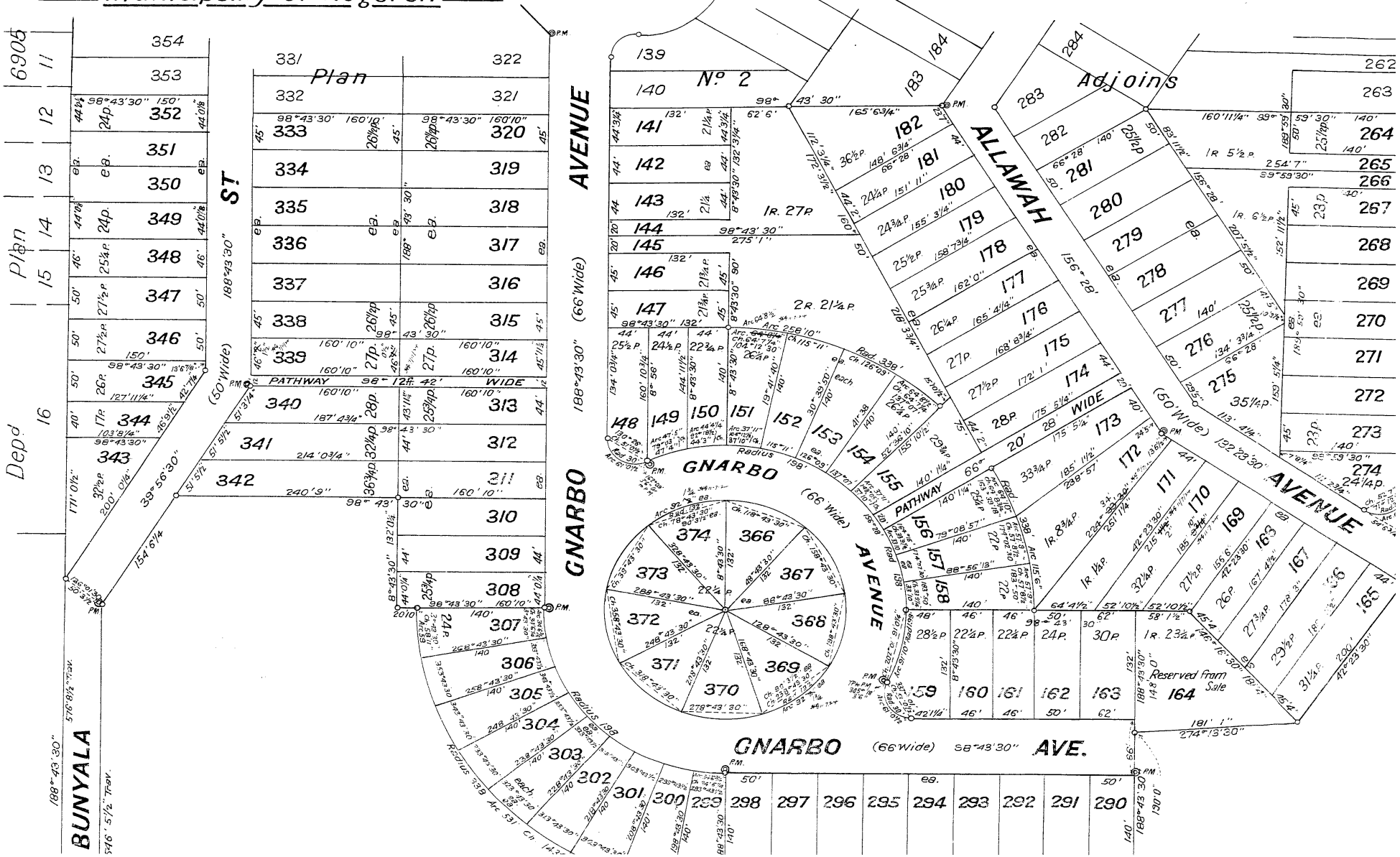
The Common Seal of Sydney Suburban Home Builders Ltd was affixed by the authority of the Council in the presence of the two Councillors

Req:R349559 /Doc:DP 0012759 P /Rev:11-Mar-1997 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 10:50 /Seq:8 of 12
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park

DP 12759 3/3 (E)

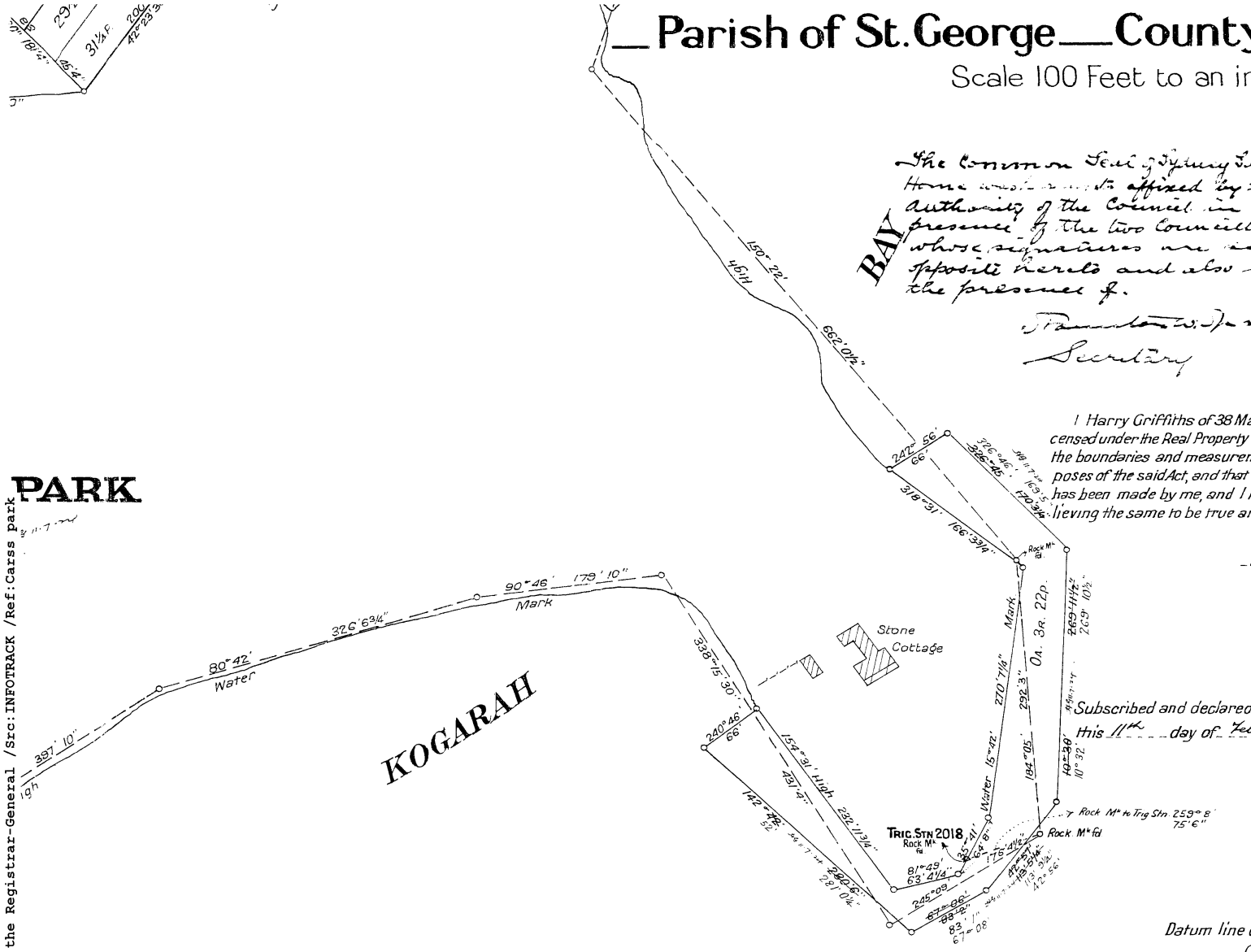
Municipality of Kogarah

B. 71619. 17·4·24.



Parish of St. George — County of Cumberland

Scale 100 Feet to an inch



The Common Seal of Sydney Suburban Home Unit Association affixed by the authority of the Council in the presence of the two Councillors whose signatures are set opposite hereto and also in the presence of.

Secretary

I Harry Griffiths of 38 Martin Place Sydney, Licensed Surveyor, specially Licensed under the Real Property Act, do hereby solemnly and sincerely declare that the boundaries and measurements shown in this plan are correct for the purposes of the said Act, and that the survey of the land to which the plan relates has been made by me, and I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act, 1900.

H. Griffiths ... Licensed Surveyor.

Date of Survey December 1923.

Subscribed and declared before me at Sydney this 11th day of February 1924

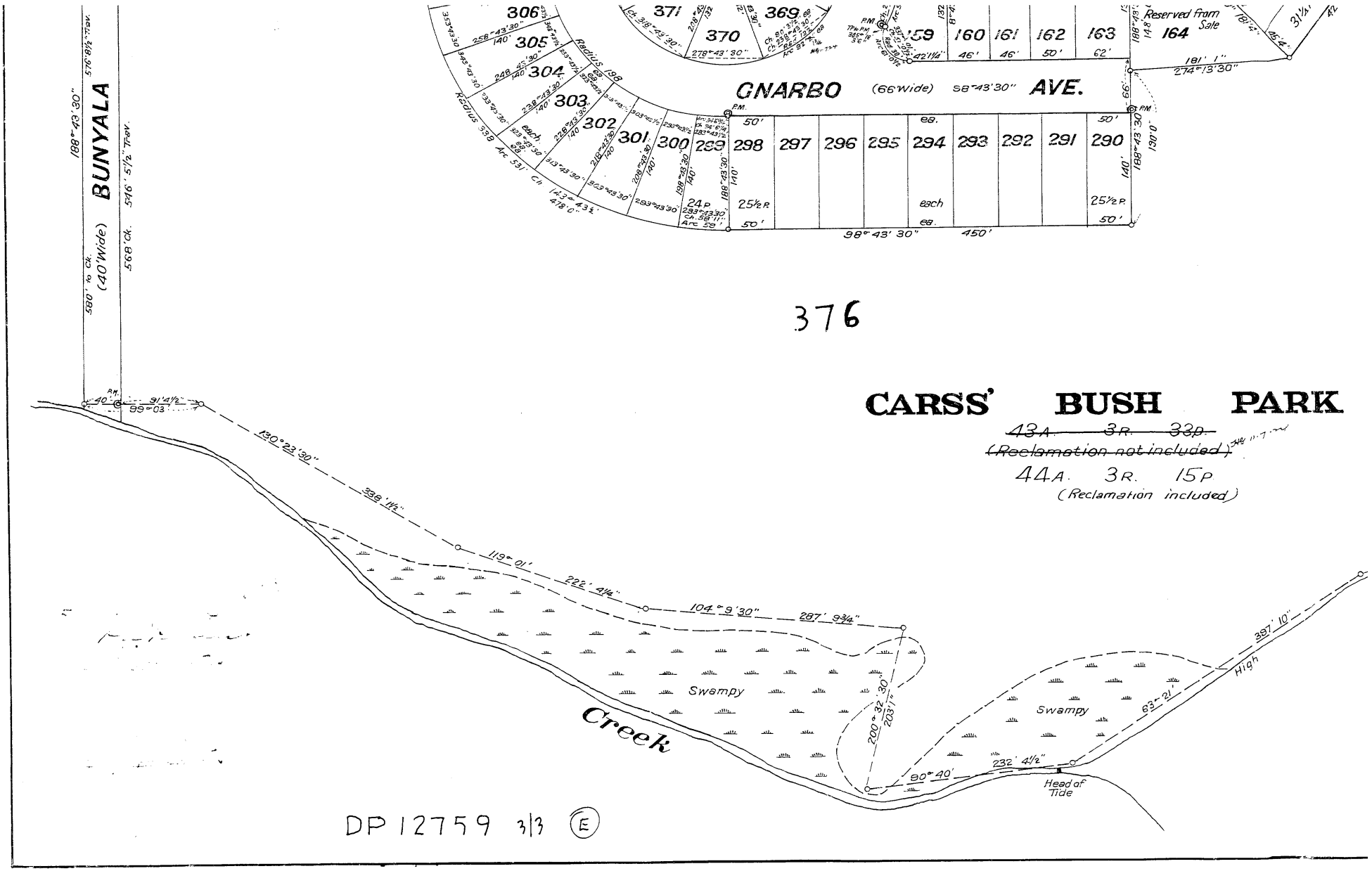
J. P.

Datum line of Azimuth Alignment Kogarah Road (True Bearings)
(See Plan No 1)

DP 12759 313 (E)

Req:R349559 /Doc:DP 0012759 P /Rev:11-Mar-1997 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 10:50 /Seq:9 of 12
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park

Req:R349559 /Doc:DP 0012759 P /Rev:11-Mar-1997 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 10:50 /Seq:10 of 12
© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park



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© Office of the Registrar-General /Src:INFOTRACK /Ref:Carss park

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 12759 SH 1/3

FEET	INCHES	METRES
1	4 1/2	0.42
5	-	1.525
7	2	2.185
7	6 1/2	2.3
7	7	2.31
10	0 3/4	3.065
10	3	3.125
10	3 1/2	3.135
12	-	3.66
12	7	3.835
12	10 1/2	3.925
12	11 3/4	3.955
18	6 3/4	5.66
18	11 1/4	5.77
19	-	5.79
19	11 1/4	6.075
20	-	6.095
20	0 1/4	6.1
20	1	6.12
20	8	6.3
21	8 1/4	6.61
24	-	7.315
25	2	7.67
27	5	8.355
29	8 1/4	9.05
30	-	9.145
32	10	10.01
34	6 3/4	10.535
34	7	10.54
35	10	10.92
36	10 1/2	11.24
42	-	12.8
49	4	15.035
50	6 3/4	15.41
52	-	15.85
66	-	20.115
66	3 1/4	20.2
66	5 1/2	20.255
67	4 1/2	20.535
68	6 3/4	20.9
71	7	21.82
74	4	22.655
76	7 3/4	23.36
96	10	29.515
108	6	33.07
109	8	33.425
117	2 1/2	35.725
118	3	36.045
120	-	36.575
134	11 1/4	41.13
135	11	41.425
165	-	50.29
298	-	90.83
587	2	178.97

AC	RD	P	SQ M
-	-	7 3/4	196
-	-	8 1/4	208.7
-	-	8 1/2	215
-	-	8 3/4	221.3
-	-	9 1/4	234
-	-	9 3/4	246.6
-	-	12 3/4	322.5

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 12759 SH 2/3

FEET	INCHES	METRES
-	1 7/8	0.05
-	2 1/4	0.055
-	4	0.1
-	6	0.15
-	8	0.205
-	10 3/4	0.275
1	8	0.51
2	2 1/2	0.675
2	3	0.685
2	7 3/8	0.795
3	2 1/2	0.98
3	4 1/4	1.02
4	-	1.22
4	4 3/4	1.34
5	-	1.525
5	2 1/2	1.585
5	7 1/2	1.715
6	-	1.83
6	6 7/8	2.005
6	8 1/2	2.045
7	3	2.21
7	6	2.285
8	3	2.515
8	8 1/2	2.655
8	9 1/4	2.675
9	8 3/4	2.965
9	10 3/4	3.015
10	-	3.05
11	8 3/4	3.575
11	9 1/8	3.585
12	-	3.66
13	5	4.09
14	-	4.265
15	1 1/4	4.605
15	1 3/4	4.615
15	7 3/4	4.77
15	11 1/2	4.865
16	1	4.9
16	1 3/4	4.92
16	2	4.93
16	6	5.03
17	11 1/4	5.465
17	11 1/2	5.475
18	2	5.535
18	3 1/2	5.575
18	4 3/8	5.595
19	1 1/4	5.825
19	4 1/4	5.9
19	5	5.92
19	10 3/4	6.065
20	-	6.095
20	1 1/4	6.13
20	6 1/4	6.255
20	7 3/4	6.295
21	5	6.53
21	10	6.655
22	-	6.705
22	9 1/4	6.94
23	3 3/4	7.105
24	-	7.315
24	3	7.39
24	9	7.545
24	10	7.57
25	3	7.695
25	5 1/2	7.76
26	1 1/2	7.965
26	2 1/4	7.98
26	8 1/4	8.135
26	10 3/4	8.2
27	-	8.23
27	3	8.305
27	4 1/4	8.335
27	7	8.405
28	1	8.56
28	2	8.585
29	8 1/4	9.05
29	10 3/4	9.11

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 12759 SH 2/3 CONTD

FEET	INCHES	METRES
30	-	9.145
30	1 1/4	9.175
32	3	9.83
32	10 1/4	10.015
32	10 3/4	10.025
33	6	10.21
34	0 1/2	10.375
34	0 3/4	10.38
34	4	10.465
35	3	10.745
35	6 1/2	10.835
36	-	10.975
36	1	11
36	3 1/2	11.06
36	9 3/4	11.22
36	11	11.25
37	1 1/2	11.315
37	3	11.355
37	9 1/2	11.52
38	4 1/4	11.69
38	7 1/4	11.765
38	7 1/2	11.775
39	8 1/2	12.105
40	-	12.19
40	5	12.32
40	6	12.345
40	10 1/2	12.46
41	2 3/4	12.565
41	3 1/4	12.58
41	6	12.65
41	7 3/4	12.695
42	-	12.8
42	0 1/2	12.815
42	4 1/4	12.91
42	5	12.93
42	6	12.955
43	1	13.13
43	4 1/4	13.215
43	8 3/4	13.33
43	11 3/4	13.405
44	-	13.41
44	0 1/8	13.415
44	1 1/4	13.445
44	4	13.515
44	4 1/4	13.52
44	10 3/4	13.685
45	-	13.715
45	1 3/4	13.76
45	2 1/2	13.78
45	4 3/8	13.825
45	5 3/8	13.85
45	7 3/4	13.915
45	8	13.92
46	-	14.02
46	1	14.045
46	7 1/4	14.205
46	8	14.225
46	9 1/2	14.25
47	-	14.325
47	0 1/4	14.33
47	0 1/2	14.34
47	1	14.35
47	1 1/2	14.365
47	4 1/2	14.44
47	5 1/4	14.485
48	-	14.63
48	1	14.655
48	2	14.68
48	5	14.785
48	11 1/2	14.92
49	-	14.935
49	0 1/4	14.94
49	1 1/4	14.965
49	2	14.985
49	5	15.06
49	5 1/4	15.095
49	9 1/2	15.175

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 12759 SH 2/3 CONTD

FEET	INCHES	METRES
49	10 1/4	15.195
49	10 3/4	15.21
49	11 1/4	15.22
49	11 1/2	15.225
49	11 3/4	15.235
50	-	15.24
50	1 1/8	15.27
50	2 1/2	15.305
50	3	15.315
50	3 1/4	15.32
50	6 3/4	15.41
50	7 1/4	15.425
51	-	15.545
51	1 1/8	15.575
51	6	15.695
52	-	15.85
52	2 1/2	15.915
52	3 1/4	15.93
53	3	16.23
53	6	16.305
53	9	16.385
54	0 1/2	16.47
54	3	16.535
54	3 3/4	16.555
54	7 1/2	16.65
55	2 1/2	16.825
55	11 1/4	17.05
55	11 3/4	17.06
56	-	17.07
56	3 1/2	17.16
56	6	17.22
57	-	17.375
60	2 1/2	18.35
60	2 3/4	18.36
62	5	19.025
63	8	19.405
64	7 3/4	19.705
64	10	19.76
65	3	19.89
65	7 3/4	20.01
65	9 1/4	20.045
66	-	20.115
66	0 1/2	20.13
66	3 1/4	20.2
66	5 1/2	20.255
66	5 3/4	20.265
67	3 1/2	20.51
67	4 1/4	20.53
67	6 1/2	20.585
67	11 1/4	20.705
68	-	20.725
68	0 1/4	20.735
68	10	20.98
69	3 3/4	21.125
70	1 1/2	21.375
70	7 3/4	21.535
72	-	21.945
72	1 3/4	21.99
72	2	21.995
73	6 3/4	22.42
74	4 3/4	22.675
75	3	22.935
75	8 1/2	23.075
76	7 3/4	23.36
77	7 1/2	23.66
77	8	23.675
77	9	23.7
78	-	23.775
79	-	24.08
81	8	24.89
82	2	25.045
85	3 1/4	25.99
87	3 1/4	26.6
88	-	26.82
88	4 1/4	26.93
88	9 1/2	27.065
89	9 3/4	27.375

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 12759 SH 2/3 CONTD

FEET	INCHES	METRES
90	-	27.43
90	1 3/4	27.475
90	9 1/4	27.665
92	4 1/2	28.155
93	0 1/2	28.36
93	11	28.625
94	5 3/4	28.795
95	-	28.955
97	5 3/4	29.71
99	6 1/2	30.34
100	-	30.48
102	1	31.115
102	7	31.265
102	10	31.345
104	3 1/2	31.79
104	7 1/2	31.89
105	4	32.105
105	6 1/4	32.165
105	10 3/4	32.275
107	1 1/4	32.645
107	8 1/2	32.83
107	11 1/4	32.9
108	7 1/2	33.11
110	10	33.78
111	4 1/2	33.945
112	-	34.14
112	5 3/4	34.285
112	7 3/4	34.335
112	11 1/4	34.425
113	-	34.44
113	0 1/2	34.455
114	3 3/4	34.84
115	3 1/4	35.135
116	1 3/4	35.4
117	4 1/2	35.775
117	8	35.865
118	6 1/2	36.13
119	3 1/4	36.355
119	8 1/4	36.48
120	-	36.575
120	5 3/4	36.72
122	1 1/4	37.215
122	5	37.315
122	11 1/4	37.47
124	8	38
125	-	38.1
125	4 1/4	38.21
125	6 1/2	38.265
125	6 3/4	38.27
126	0 3/4	38.425
126	7 1/2	38.595
127	8 1/4	38.92
128	6	39.165
128	8 1/4	39.225
129	-	39.32
129	9 1/4	39.555
130	-	39.625
130	7 1/2	39.815
131	10 1/4	40.19
132	-	40.235
132	10	40.49
133	-	40.54
133	7 3/4	40.735
134	-	40.845
135	-	41.15
135	4 1/4	41.255
135	6 3/4	41.32
136	-	41.455
138	3 3/4	42.16
138	7 1/2	42.255
138	11 1/4	42.35
139	11 3/4	42.665
140	-	42.67
140	1	42.695
140	1 1/4	42.705
140	1 1/2	42.71
140	2	42.725

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 12759 SH 2/3 CONTD

FEET	INCHES	METRES
140	2 1/2	42.735
140	2 3/4	42.74
140	3	42.75
140	6 1/2	42.835
140	11 1/2	42.965
143	2 1/2	43.65
143	7 3/4	43.785
143	11	43.865
143	11 1/4	43.87
143	11 1/2	43.88
143	11 3/4	43.885
144	-	43.89
144	0 1/4	43.895
144	0 1/2	43.905
144	1	43.915
145	1	44.22
145	2	44.245
146	8	44.705
147	0 3/4	44.825
148	4 1/4	45.22
149	-	45.415
149	1 3/4	45.46
150	-	45.72
150	3	45.795
150	7	45.9
150	11 1/2	46.01
151	6 1/4	46.185
154	5 3/4	47.085
154	7	47.115
154	8 1/2	47.155
155	2 1/4	47.3
155	8	47.445
156	4	47.65
157	9	48.08
158	1 1/4	48.19
158	7 1/4	48.34
159	10 1/4	48.725
160	10	49.02
160	11 1/4	49.055
161	5 1/2	49.21
161	7 5/8	49.265
161	8 7/8	49.3
163	3 1/2	49.77
164	10 3/8	50.25
164	10 7/8	50.26
165	-	50.29
165	6 3/4	50.46
166	8 1/2	50.81
167	-	50.9
167	11	51.18
168	1 1/4	51.24
169	3 1/2	51.6
171	5	52.25
173	-	52.73
174	10	53.29
176	-	53.64
176	3 1/4	53.73
176	10 1/2	53.91
177	2	54
177	2 1/2	54.01
178	5 1/2	54.39
179	3 1/4	54.64
179	6	54.71
180	1 3/4	54.91
181	4 1/2	55.28
182	11 1/4	55.76
183	7 3/4	55.98
185	7 1/2	56.58
188	8 3/4	57.52
188	9 3/4	57.55
189	4 1/4	57.72
189	11	57.89
190	-	57.91
191	0 1/4	58.22
191	4	58.32
193	9 3/4	59.07
194	-	59.13

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 12759 SH 2/3 CONTD

FEET	INCHES	METRES
194	6	59.28
198	11 3/4	60.65
200	-	60.96
200	7 3/4	61.16
201	4	61.37
210	-	64.01
210	3 1/2	64.1
212	11 3/4	64.92
213	5	65.05
214	-	65.23
214	2 1/2	65.29
223	10	68.22
226	-	68.88
239	2	72.9
258	10 1/2	78.91
261	-	79.55
263	5	80.29
267	6	81.53
334	4	101.9
449	11 3/4	137.15
667	11 1/4	203.59
891	10	271.83
930	4 1/8	283.57
2210	3 1/2	673.7

AC	RD	P	SQ M
-	-	2 1/2	63.2
-	-	20 1/4	512.2
-	-	21 1/4	537.5
-	-	21 1/2	543.8
-	-	21 3/4	550.1
-	-	22	556.4
-	-	22 1/2	569.1
-	-	22 3/4	575.4
-	-	23	581.7
-	-	23 1/4	588.1
-	-	23 1/2	594.4
-	-	23 3/4	600.7
-	-	24	607
-	-	24 1/4	613.4
-	-	24 1/2	619.7
-	-	24 3/4	626
-	-	25	632.3
-	-	25 1/4	638.6
-	-	25 1/2	645
-	-	25 3/4	651.3
-	-	26	657.6
-	-	26 1/4	663.9
-	-	26 1/2	670.3
-	-	26 3/4	676.6
-	-	27 1/4	689.2
-	-	27 3/4	701.9
-	-	28	708.2
-	-	28 1/2	720.8
-	-	28 3/4	727.2
-	-	29 3/4	752.5
-	-	30	758.8
-	-	30 1/4	765.1
-	-	31	784.1
-	-	31 3/4	803
-	-	32 1/4	815.7
-	-	32 1/2	822
-	-	32 3/4	828.3
-	-	33 1/2	847.3
-	-	33 3/4	853.6
-	-	34	860
-	-	34 1/2	872.6
-	-	34 3/4	878.9
-	-	35	885.2
-	-	35.2	890.3
-	-	35 1/4	891.6
-	-	36 1/2	923.2
-	-	36 3/4	929.5
-	-	37 1/4	942.2
-	-	38 1/4	967.5
-	-	38 1/2	973.8

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 12759 SH 2/3 CONTD

AC	RD	P	SQ M
-	-	39 1/4	992.7
-	-	39 1/2	999.1
-	1	3/4	1031
-	1	1	1037
-	1	1 3/4	1056
-	1	3 3/4	1107
-	1	6 1/4	1170
-	1	6 3/4	1182
-	1	9 3/4	1256
-	1	17	1442
-	1	18 1/2	1480

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 12759 SH 3/3

FEET	INCHES	METRES
3	6	1.065
5	-	1.525
6	7 1/4	2.015
7	8 1/4	2.345
9	2 1/2	2.805
10	3 1/2	3.135
12	-	3.66
13	6 1/2	4.125
13	6 7/8	4.135
15	10 1/2	4.84
18	1	5.51
20	-	6.095
20	10	6.35
23	7	7.19
24	5	7.44
29	5	8.965
30	-	9.145
33	9 1/4	10.295
33	10	10.31
34	6 1/4	10.52
34	6 3/4	10.535
37	10	11.53
37	11	11.555
40	-	12.19
41	5	12.625
41	11 1/2	12.79
42	1 1/4	12.835
42	7 1/4	12.985
43	11 1/4	13.39
44	-	13.41
44	0 1/8	13.415
44	0 1/4	13.415
44	2	13.46
44	3	13.485
44	3 1/4	13.495
44	4 1/4	13.52
45	-	13.715
45	4	13.82
46	-	14.02
46	1 1/2	14.06
46	9 1/2	14.26
47	4	14.425
47	5	14.455
48	-	14.63
50	-	15.24
50	3 1/2	15.33
51	0 1/2	15.555
51	3 1/4	15.625
51	5 1/2	15.685
52	7	16.025
52	10 1/2	16.115
53	-	16.155
54	0 3/4	16.48
54	6 3/4	16.63
54	8 3/4	16.68
56	-	17.07
57	8 1/2	17.59
57	9	17.6
58	1 1/2	17.715
58	11	17.96
59	-	17.985
59	2 3/4	18.055
61	0 1/2	18.605
62	-	18.9
62	6	19.05
63	4 1/4	19.31
64	4 1/2	19.62
64	7 1/4	19.69
64	8 1/2	19.725
64	8 3/4	19.73
64	10	19.76
66	-	20.115
75	-	22.86
75	6	23.01
82	1 3/4	25.04
83	1	25.325
83	11 1/2	25.59

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 12759 SH 3/3 CONTD

FEET	INCHES	METRES
90	-	27.43
90	3 1/2	27.52
91	0 1/4	27.745
91	4 1/2	27.85
91	10	27.99
92	1 3/4	28.085
98	-	29.87
103	8 1/4	31.605
111	2 3/4	33.905
112	3 1/4	34.22
113	4 1/4	34.55
113	9 1/4	34.675
115	6	35.205
127	11 1/4	38.995
132	-	40.235
132	0 1/4	40.24
132	3 1/4	40.315
134	0 3/4	40.86
134	3 3/4	40.94
137	-	41.76
140	-	42.67
140	1 1/4	42.705
144	11 1/2	44.185
148	6 3/4	45.28
150	-	45.72
151	11	46.305
152	11 1/2	46.62
154	6 1/4	47.1
155	3 1/4	47.325
155	10 1/2	47.51
156	6	47.7
158	7 3/4	48.355
159	5 1/4	48.595
160	10	49.02
160	10 3/4	49.04
160	11 1/4	49.055
162	-	49.38
165	4 1/4	50.4
165	6 3/4	50.46
166	3 3/4	50.69
167	4 1/2	51.02
168	8 3/4	51.43
169	5	51.64
171	0 1/2	52.13
172	1	52.45
172	3 1/2	52.51
175	5 1/4	53.47
176	4 1/2	53.76
178	3	54.33
179	10	54.81
181	1	55.19
181	4	55.27
185	1 1/2	56.43
185	10	56.64
187	4 3/4	57.12
189	1 1/2	57.65
190	-	57.91
198	-	60.35
200	-	60.96
200	0 1/4	60.97
203	1	61.9
207	5 1/2	63.23
214	0 3/4	65.25
215	2	65.58
218	3 3/4	66.54
222	4 1/4	67.77
232	4 1/2	70.83
232	11 3/4	71.01
240	9	73.38
251	1 1/4	76.54
254	7	77.6
258	10	78.89
269	10 1/2	82.26
270	7 1/4	82.48
275	1	83.85
281	0 1/4	85.66
287	9 3/4	87.73

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 12759 SH 3/3 CONTD

FEET	INCHES	METRES
292	3	89.08
326	6 3/4	99.54
338	-	103.02
338	1 1/2	103.06
397	10	121.26
431	4	131.47
478	-	145.69
531	-	161.85
546	5 1/2	166.56
568	-	173.13
576	8 1/2	175.78
580	-	176.78
662	0 1/2	201.79
824	10 1/2	251.42
891	10	271.83
1168	8 3/4	356.23
1564	6	476.86

AC	RD	P	SQ M
-	-	17	430
-	-	21 1/4	537.5
-	-	21 3/4	550.1
-	-	22	556.4
-	-	22 1/4	562.8
-	-	22 3/4	575.4
-	-	23	581.7
-	-	24	607
-	-	24 1/4	613.4
-	-	24 1/2	619.7
-	-	24 3/4	626
-	-	25 1/4	638.6
-	-	25 1/2	645
-	-	25 3/4	651.3
-	-	26	657.6
-	-	26 1/4	663.9
-	-	26 1/2	670.3
-	-	27	682.9
-	-	27 1/2	695.6
-	-	27 3/4	701.9
-	-	28	708.2
-	-	28 1/2	720.8
-	-	29 1/2	746.1
-	-	29 3/4	752.5
-	-	30	758.8
-	-	31 1/4	790.4
-	-	32 1/4	815.7
-	-	32 1/2	822
-	-	33 3/4	853.6
-	-	35 1/4	891.6
-	-	36 1/2	923.2
-	-	36 3/4	929.5
-	1	1 1/4	1043
-	1	2 3/4	1081
-	1	5 1/2	1151
-	1	6 1/2	1176
-	1	8 3/4	1233
-	1	23 1/4	1600
-	1	27	1695
-	2	21 1/4	2561
-	3	22	3592

AC	RD	P	HA
44	3	15	18.15

Req:R349559 /Doc:DP 0012759 P /Rev:11-Mar-1997 /NSW LRS /Pgs:ALL /Prt:16-Jul-2020 10:50 /Seq:12 of 12
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Req:R349143 /Doc:CP 10676-2030 P /Rev:29-Nov-2012 /NSW LRS /Prt:16-Jul-2020 10:12 /Seq:1 of 1
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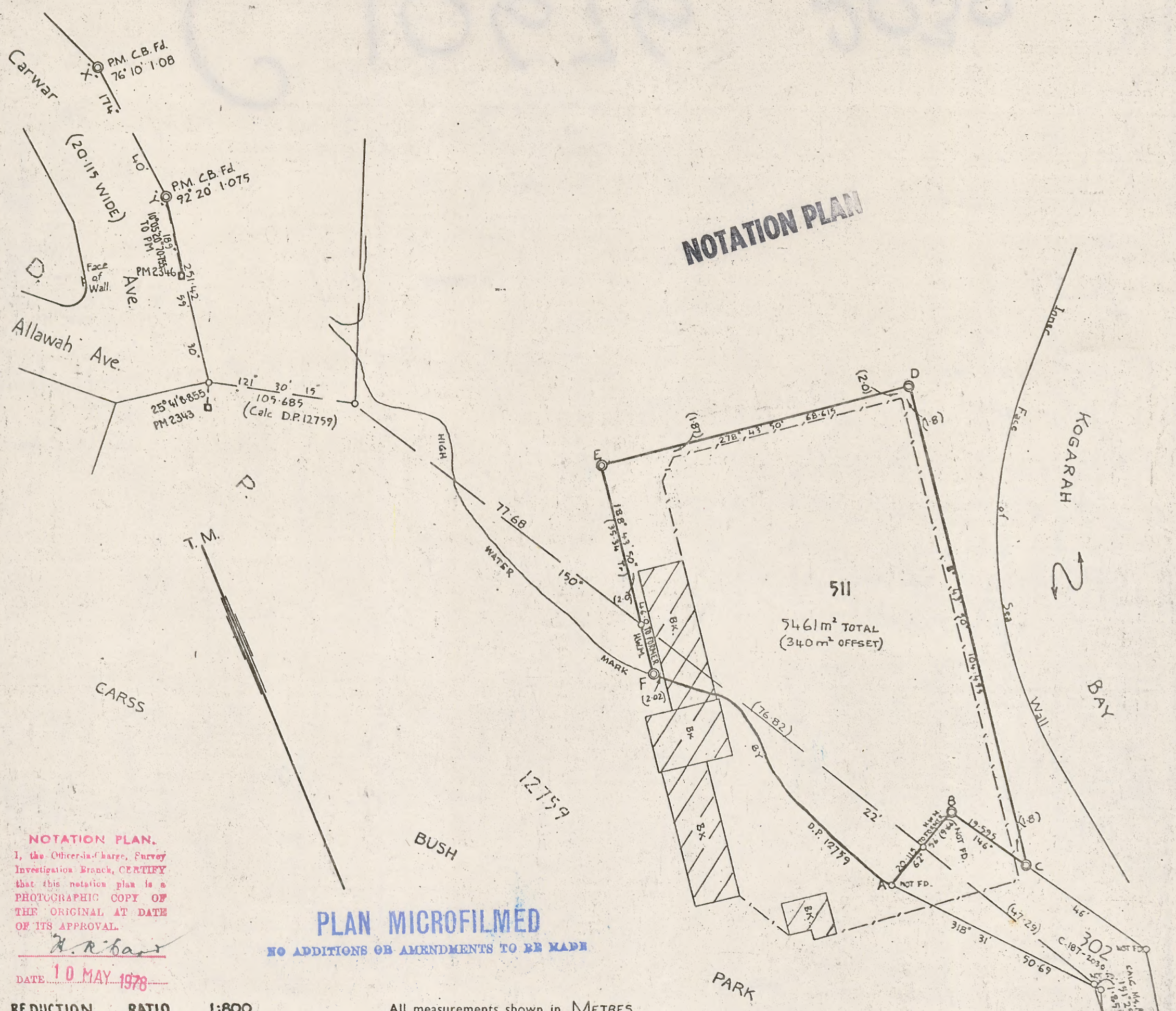
PLAN OF PORTION 511

PARISH ST GEORGE COUNTY CUMBERLAND
LAND DISTRICT METROPOLITAN ~~SHIRE~~ MUN. OF KOGARAH



NOTATION PLAN.
I, the Officer-in-Charge, Survey Investigation Branch, CERTIFY that this notation plan is a PHOTOGRAPHIC COPY OF THE ORIGINAL AT DATE OF ITS APPROVAL.
DATE 10 MAY 1978

PLAN MICROFILMED
NO ADDITIONS OR AMENDMENTS TO BE MADE

REDUCTION RATIO 1:800 All measurements shown in METRES

REFERENCE MARKS.

CORNER	BEARING	FROM	DISTANCE	NO. ON TREE
A	Peg at Corner			
B	62° 56'	G.I.P.	2·5	
C	278° 43' 50"	G.I.P.	1·5	
D	278° 43' 50"	G.I.P.	1·5	
E	98° 43' 50"	G.I.P.	1·5	
F	188° 43' 50"	G.I.P.	2·5	

AZIMUTH TAKEN FROM "X" "Y"
FIELD BOOK LD 78-26 PAGES 1-6

I Edwin Richard Lenty Steele of 46 Park Rd. Carlton a Surveyor registered under the Surveyors Act, 1929-1946, hereby certify that the survey represented in this plan is accurate and has been made ~~by me~~ under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and the special requirements of the Department of Lands and was completed on 12.12.1977

Signature Edwin R. Steele
Surveyor registered under the Surveyors Act, 1929-1946

CHECKED & CHARTED 24-2-78
PLAN APPROVED
Authorised Officer 14-3-1978

This space for office use only.

PAPER NO. PKS.76-713 CAT. NO. C.10676-2030

LANDS DEPARTMENT NOTICES

APPOINTMENT

Department of Lands

THE following appointment is hereby notified:

Mr John William Bunn, Jnr, Member of the Local Land Board for the Land District of Braidwood, to take effect from 20th April, 1978.

W. F. CRABTREE, Minister for Lands.

(5337) Sydney, 19th May, 1978.

APPOINTMENT OF TRUSTEES

IN pursuance of the provisions of section 37o Crown Lands Consolidation Act, 1913, the undermentioned persons are appointed to be trustees of the reserves particularized hereunder.

W. F. CRABTREE, Minister for Lands.

Sec. 37o:18.

Land District—Kempsey; Shire—Nambucca
Parish—Warrell; County—Raleigh

Reserve 65963 for Public Recreation and Resting Place at Scotts Head, notified 8th May, 1936: Kevin Bernard Spear, as an additional trustee. Pks 65-2502.

Land District—Bellingen; Shire—Coffs Harbour
Parish—Bonville; County—Raleigh

Reserve 74100 for Public Recreation and Public Hall at Boambee, notified 16th March, 1951: Desmond James Drury, as an additional trustee. Pks 72-1542.

Land District and Municipality—Inverell
Parish—Inverell; County—Gough

The area at Inverell dedicated for Showground on the 12th April, 1918: Athol Henry Caine, as an additional trustee. Pks 6182/B.

(5338) Sydney, 19th May, 1978.

APPOINTMENT OF TRUSTEES

IN pursuance of the provisions of section 37P, Crown Lands Consolidation Act, 1913, the undermentioned corporations are appointed to be sole trustees of the reserves particularized hereunder.

W. F. CRABTREE, Minister for Lands.

Land District—Metropolitan; Municipality—Ku-ring-gai
Parish—Gordon; County—Cumberland

Reserve 91141 for Public Recreation at North Wahroonga, notified this day: *The Council of the Municipality of Ku-ring-gai*. Pks 75-66.

Land District—Metropolitan; City—Sydney
Parish—St Philip; County—Cumberland

Reserve 91143 for Charitable Organisations at Sydney, notified this day: *The Foundation for Research and Treatment of Alcoholism and Drug Dependence of New South Wales*. Pks 77-671.

NOTIFICATION OF VESTING OF LANDS IN PURSUANCE OF THE PROVISIONS OF SECTION 37AAA, CROWN LANDS CONSOLIDATION ACT, 1913

IN pursuance of the subject provisions, I, WILLIAM FREDERICK CRABTREE, Minister for Lands, being of the opinion that—

(a) the lands described in the Schedule hereto are a public reserve within the meaning of the Local Government Act, 1919; and

(b) it is proper that, having regard to the purpose (if any) for which the lands described are used, those lands should be vested in a council,

do by this notification vest those lands in the Council of the Municipality of Kogarah for an estate in fee simple subject to the following reservations and exceptions unto Her Majesty, Elizabeth the Second, by the Grace of God Queen of Australia and Her Other Realms and Territories, Head of the Commonwealth, Her Heirs and Successors of—

(i) all minerals which those lands contain with full power and authority for Her Majesty, Her Heirs and Successors and such person or persons as shall from time to time be authorized by Her Majesty, Her Heirs or Successors to enter upon those lands and to search for mine dig and remove those minerals;

(ii) all such parts and so much of those lands as may hereafter be required for public ways in over and through the same to be set out by His Excellency, the Governor for the time being of the State of New South Wales or some person by him authorized in that respect with full power for Her Majesty, Her Heirs and Successors and for His Excellency, the Governor as aforesaid by such person or persons as shall be by Her Majesty, Her Heirs or Successors or His Excellency, the Governor as aforesaid authorized in that behalf to make and conduct all such public ways; and

(iii) the right of full and free ingress egress and regress into out of and upon those lands for the several purposes aforesaid or any of them.

The lands described in the Schedule hereto are declared to be a public reserve for the purposes of the Local Government Act, 1919.

This notification shall take effect on and from the date of publication of this Gazette.

Signed at Sydney this 15th day of May, 1978.

W. F. CRABTREE, Minister for Lands.

VS No. 65. Pks 77-713

SCHEDULE

Land District—Metropolitan; Municipality—Kogarah

Parish St George, County Cumberland, 5 461 square metres at Cairo Park, unreserved Crown land, being portion 511. The area of this land is limited to the surface and to a depth of 30 metres below the surface. Plan F 16676-2036. (5337)

National Library of Australia http://nla.gov.au/nla.news-page14434248

LAND REGISTRY SERVICES

Title Search

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/125981

SEARCH DATE	TIME	EDITION NO	DATE
16/7/2020	10:13 AM	-	-

VOL 493 FOL 238 IS THE CURRENT CERTIFICATE OF TITLE

LAND

LOT 1 IN DEPOSITED PLAN 125981
AT CARSS PARK
LOCAL GOVERNMENT AREA GEORGES RIVER
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP125981

FIRST SCHEDULE

THE COUNCIL OF THE MUNICIPALITY OF KOGARAH

SECOND SCHEDULE (1 NOTIFICATION)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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

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Received: 16/07/2020 10:13:36

Historical Title

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
16/7/2020 10:15AM

FOLIO: 376/1118749

First Title(s): OLD SYSTEM
Prior Title(s): VOL 5691 FOL 171

Recorded	Number	Type of Instrument	C.T. Issue
3/10/2007	DP1118749	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
3/10/2007	AD378735	REQUEST	EDITION 1
4/2/2009	AE479181	CAVEAT	
15/6/2009	DP1139519	DEPOSITED PLAN	
16/6/2009	AE717098	LEASE	EDITION 2
29/5/2013	AH765663	LEASE	EDITION 3
24/7/2014	AI567165	LEASE	EDITION 4
13/1/2015	AJ166463	TRANSFER OF LEASE	
25/5/2016	AK459626	LEASE	EDITION 5
30/1/2019	AN859398	APPLICATION TO RECORD A NEW REGISTERED PROPRIETOR	EDITION 6
1/11/2019	AP546109	LEASE	EDITION 7

*** END OF SEARCH ***

Carss park PRINTED ON 16/7/2020

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Received: 16/07/2020 10:15:01

LAND REGISTRY SERVICES Title Search InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 376/1118749

SEARCH DATE	TIME	EDITION NO	DATE
16/7/2020	10:13 AM	7	1/11/2019

LAND

LOT 376 IN DEPOSITED PLAN 1118749
AT CARRS PARK
LOCAL GOVERNMENT AREA GEORGES RIVER
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1118749

FIRST SCHEDULE

GEORGES RIVER COUNCIL (RP AN859398)

SECOND SCHEDULE (7 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 DP1139519 EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 2 AND 3.05 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1139519
3 DP1139519 RIGHT OF CARRIAGEWAY 4 AND 5.5 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1139519
4 AH765663 LEASE TO KEYSTONE COMMUNITY SOLUTIONS INCORPORATED OF 1ST FLOOR, CARSS PARK COMMUNITY CENTRE BUILDING, 1/72 CARWAR AVENUE, CARSS PARK. EXPIRES: 31/1/2024.
AJ166463 TRANSFER OF LEASE AH765663 LESSEE NOW 3BRIDGES COMMUNITY INCORPORATED
5 AI567165 LEASE TO KOGARAH HISTORICAL SOCIETY INCORPORATED OF THE PREMISES KNOWN AS CARSS COTTAGE MUSEUM, CARSS BUSH PARK, CARWAR AVENUE, CARSSPARK. EXPIRES: 31/10/2020.
6 AK459626 LEASE TO ST GEORGE MEN'S SHED INCORPORATED OF THE BUILDING KNOWN AS "THE MEN'S SHED", 76 CARWAR AVENUE, CARSS PARK. EXPIRES: 1/5/2021. OPTION OF RENEWAL: 5 YEARS.
7 AP546109 LEASE TO BEACHSIDE FOOD GROUP PTY LIMITED OF "CARSS PARK KIOSK". EXPIRES: 3/2/2024.

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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Historical Title

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
16/7/2020 10:15AM

FOLIO: 511/752056

First Title(s): OLD SYSTEM
Prior Title(s): GZ 19051978 FOL 1880

Recorded	Number	Type of Instrument	C.T. Issue
4/3/2009	CA140768	CONVERSION ACTION	FOLIO CREATED CT NOT ISSUED
22/11/2017	AM906702	DEPARTMENTAL DEALING	EDITION 1

*** END OF SEARCH ***

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Received: 16/07/2020 10:15:01

LAND REGISTRY SERVICES

Title Search

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 511/752056

SEARCH DATE	TIME	EDITION NO	DATE
16/7/2020	10:13 AM	1	22/11/2017

LAND

LOT 511 IN DEPOSITED PLAN 752056
AT CARSS PARK
LOCAL GOVERNMENT AREA GEORGES RIVER
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
(FORMERLY KNOWN AS PORTION 511)
TITLE DIAGRAM CROWN PLAN 10676.2030

FIRST SCHEDULE

GEORGES RIVER COUNCIL (CA140768)

SECOND SCHEDULE (4 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.
3 LAND EXCLUDES MINERALS AND IS SUBJECT TO RIGHTS TO MINE VIDE GOV. GAZ. DATED 19.5.1978 FOLIO 1880
4 THE LAND WITHIN DESCRIBED IS PUBLIC RESERVE

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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Appendix F

SafeWork NSW Search

NSW GOVERNMENT | SafeWork NSW

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

Our Ref: D20/162624

6 August 2020

Mr David Holden
Douglas Partners Pty Ltd
PO Box 472
WEST RYDE NSW 2114
david.holden@douglaspartners.com.au

Dear Mr Holden

RE SITE: 78 Carwar Ave, Carss Park NSW 2221

I refer to your site search request received by SafeWork NSW 23 July 2020 requesting information on Storage of Hazardous Chemicals for the above site.

Enclosed are copies of the documents that SafeWork NSW holds on record number 35/028871 relating to the storage of Hazardous Chemicals at the above-mentioned premises.

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

Yours sincerely

Customer Service Officer
Customer Experience - Operations
SafeWork NSW

EFTPOS FROM WESTPAC
SAFEWORK NSW
92 TO 100 DONNISON STRE
GOSFORD 2250
Australia

TIME 24JUL20 14:12
MID 25234691
TSP 100381916593
RRN 200724055530
Visa(M) CR
CARD.....4659
AUTH 045073

MOTO AUD316.39

(000) APPROVED

CUSTOMER COPY

SAFEWORK NSW
92 DONNISON STREET
GOSFORD NSW 2250

4/07/20 14:34
000030#7136 000
MARK

MARK $315.00
MARK $1.39
INV TIL $316.39
GST $28.76

UK DAKD
$316.39

* indicates taxable
TAX INVOICE
81 913 830 179

WorkCover New South Wales, 400 Kent Street, Sydney 2000. Tel: 9370 5000 Fax: 9370 5999 ALL MAIL TO G.P.O. BOX 5364 SYDNEY 2001

Licence No. 35/028871

APPLICATION FOR RENEWAL

OF LICENCE TO KEEP DANGEROUS GOODS

WORKCOVER NEW SOUTH WALES

ISSUED UNDER AND SUBJECT TO THE PROVISIONS OF THE DANGEROUS GOODS ACT, 1975 AND REGULATION THEREUNDER

DECLARATION: Please renew licence number 35/028871 to 3/07/2003 . I confirm that all the licence details shown below are correct (amend if necessary).

V.T. Thomas	V.T. THOMAS	30/5/02
(Signature)	*(Please print name)*	*(Date signed)*

for: KOGARAH MUNICIPAL COUNCIL

*THIS **SIGNED** DECLARATION SHOULD BE **RETURNED TO:** (please do not fax)*

WorkCover New South Wales
Dangerous Goods Licensing Section
GPO BOX 5364
SYDNEY 2001

Enquiries: ph (02) 9370 5187
fax (02) 9370 6104

Details of licence on 23 May 2002

Licence Number 35/028871 **Expiry Date** 3/07/2002

Licensee KOGARAH MUNICIPAL COUNCIL

RECEIVED
-4 JUN 2002
SCIENTIFIC SERVICES BRANCH

Postal Address: LOCKED BAG NO 8 POST OFFICE KOGARAH NSW 2217

Licensee Contact V T THOMAS Ph. 02 9330 9541 Fax. 02 9546 8560

Premises Licensed to Keep Dangerous Goods
KOGARAH MUNICIPAL COUNCIL
CARWAR AVE CARSS PARK 2221

Nature of Site SPORT

Major Supplier of Dangerous Goods ELITE CHEMICALS

Emergency Contact for this Site R CAINE ~~Ph. 540 4203~~ → 9546 4203

Site staffing 12 HRS 7 DAYS

Details of Depots

Depot No.	Depot Type	Goods Stored in Depot	Qty
S1	ABOVE-GROUND TANK	Class 8	2500 L
		UN 1791 HYPOCHLORITE SOLUTION	2500 L

D02/030070

8.6.95 SN

Reference

WORKCOVER AUTHORITY

RECEIVED MAIL ROOM 15 MAY 1995 WORKCOVER NEW SOUTH WALES

APPLICATION FOR RENEWAL OF LICENCE TO KEEP DANGEROUS GOODS

ISSUED UNDER AND SUBJECT TO THE PROVISIONS OF THE DANGEROUS GOODS ACT, 1975 AND REGULATION THEREUNDER

DECLARATION: *Please renew licence number 35/028871 to 1996. I confirm that all the licence details shown below are correct (amend if necessary).*

V. T. Thomas ..... V. T. Thomas ..... 29 May, 1995. .....

(Signature) *(Please print name)* *(Date signed)*

for: KOGARAH MUNICIPAL COUNCIL

*THIS **SIGNED** DECLARATION SHOULD BE **RETURNED TO:***

WorkCover Authority
Dangerous Goods Licensing Section (Level 3)
Locked Bag 10
P O CLARENCE STREET 2000

Details of licence on 26 May 1995

Licence Number 35/028871 **Expiry Date** 04/07/95

Licensee KOGARAH MUNICIPAL COUNCIL

Postal Address LOCKED BAG NO 8 POST OFFICE, KOGARAH 2217
Licensee Contact ~~M Lindley Ph. 588 0868 Fax. 588 0808~~ → V.T. Thomas Ph 5880875 Fax 5880864
Premises Licensed to Keep Dangerous Goods
S1 CARWAR AVE
CARSS PARK 2221

Nature of Site SPORT & RECREATION NEC **Major Supplier of Dangerous Goods** I C I

Emergency Contact for this Site R Caine ph. 540 4203

Site staffing 12 hrs 7 days

DATA ENTER 06 JUN 1995

Details of Depots

Depot No.	Depot Type	Goods Stored in Depot	Qty
S1	ABOVEGROUND TANK	Class 8	2500 L
		UN 1791 HYPOCHLORITE SOLUTIONS	2500 L

RECEIVED
1 - JUN 1995
SCIENTIFIC SERVICES BRANCH

RECEIVED IN
- 6 JAN 1999

WorkCover New South Wales, 400 Kent Street, Sydney 2000. Telephone 9370 5000 ALL MAIL TO G.P.O. BOX 5364 SYDNEY 2001

Licence No. 35/028871

WORKCOVER
NEW SOUTH WALES

** REMINDER NOTICE **

APPLICATION FOR RENEWAL

OF LICENCE TO KEEP DANGEROUS GOODS

ISSUED UNDER AND SUBJECT TO THE PROVISIONS OF THE DANGEROUS GOODS ACT, 1975 AND REGULATION THEREUNDER

DECLARATION: Please renew licence number 35/028871 to 1999/2000 . I confirm that all the licence details shown below are correct (amend if necessary).

V.T. Thomas ..... V.T. THOMAS 4/1/989

(Signature) *(Please print name)* *(Date signed)*

for: KOGARAH MUNICIPAL COUNCIL

*THIS **SIGNED** DECLARATION SHOULD BE **RETURNED TO:***

WorkCover New South Wales
Dangerous Goods Licensing Section
GPO BOX 5364
SYDNEY 2001

Enquiries: ph (02) 9370 5187
fax (02) 9370 6105

Details of licence on 19 December 1998

Licence Number 35/028871 **Expiry Date** 4/07/1997 **No. of Depots** 1

Licensee KOGARAH MUNICIPAL COUNCIL

Postal Address: LOCKED BAG NO 8 POST OFFICE KOGARAH NSW 2217

Licensee Contact V T THOMAS Ph. 588 0875 Fax. 588 0864

Premises Licensed to Keep Dangerous Goods
KOGARAH MUNICIPAL COUNCIL
CARWAR AVE CARSS PARK 2221

RECEIVED
6 JAN 1999
SCIENTIFIC SERVICES

Nature of Site SPORT

Major Supplier of Dangerous Goods ORICA

Emergency Contact for this Site R CAINE Ph. 540 4203

Site staffing 12 HRS 7 DAYS

DATA
- 8 JAN 1999
ENTERED

Details of Depots

Depot No.	Depot Type	Goods Stored in Depot	Qty
S1	ABOVE-GROUND TANK	Class 8	2500 L
		UN 1791 HYPOCHLORITE SOLUTION	2500 L

FORM DG10

THE NEW SOUTH WALES GOVERNMENT
Putting people first by managing better

PART A

WORKCOVER AUTHORITY

LICENCE TO KEEP DANGEROUS GOODS

Plan No 109

(Dangerous Goods Act 1975)

Application for new licence, amendment or transfer

Expiry: 4.7.95

Metro east

1. Name of applicant: KOGARAH MUNICIPAL COUNCIL — ACN:
2. Site to be licensed — No: 5 — Street: CARWAR AVENUE
   Suburb/Town: CARSS PARK — Postcode: 2221
3. Previous licence number (if known): 35/028871
4. Nature of site: OLYMPIC SWIMMING POOL * 9144 — class 8 no signage or spillage containment
5. Emergency contact on site:
   Phone: (546)4203 — Name: R CAINE
   546 4203
6. Site staffing: Hours per day: 12 — Days per week: 7
7. Major supplier of dangerous goods: * I.C.I.
8. If new site or significant modification
   Plan stamped by: — Accredited consultant's name: — Date stamped:
9. Number of dangerous goods depots at site: 1
10. Trading name or occupier's name: KOGARAH MUNICIPAL COUNCIL
11. Postal address of applicant * P O Post Office: LOCKED BAG NO. 8 — Suburb/Town: KOGARAH — Postcode: 2217
12. Contact for licence enquiries:
    Phone: 588 0868 — Fax: 588 0808 — Name: M LINDLEY

I certify that the details contained in this application (or the accompanying computer disk) are true and correct

13. Signature of applicant: W. L. Evans — Date: 21/5/93

Director of Works or Technical Services

DATA 12 JUL 1993 ENTERED

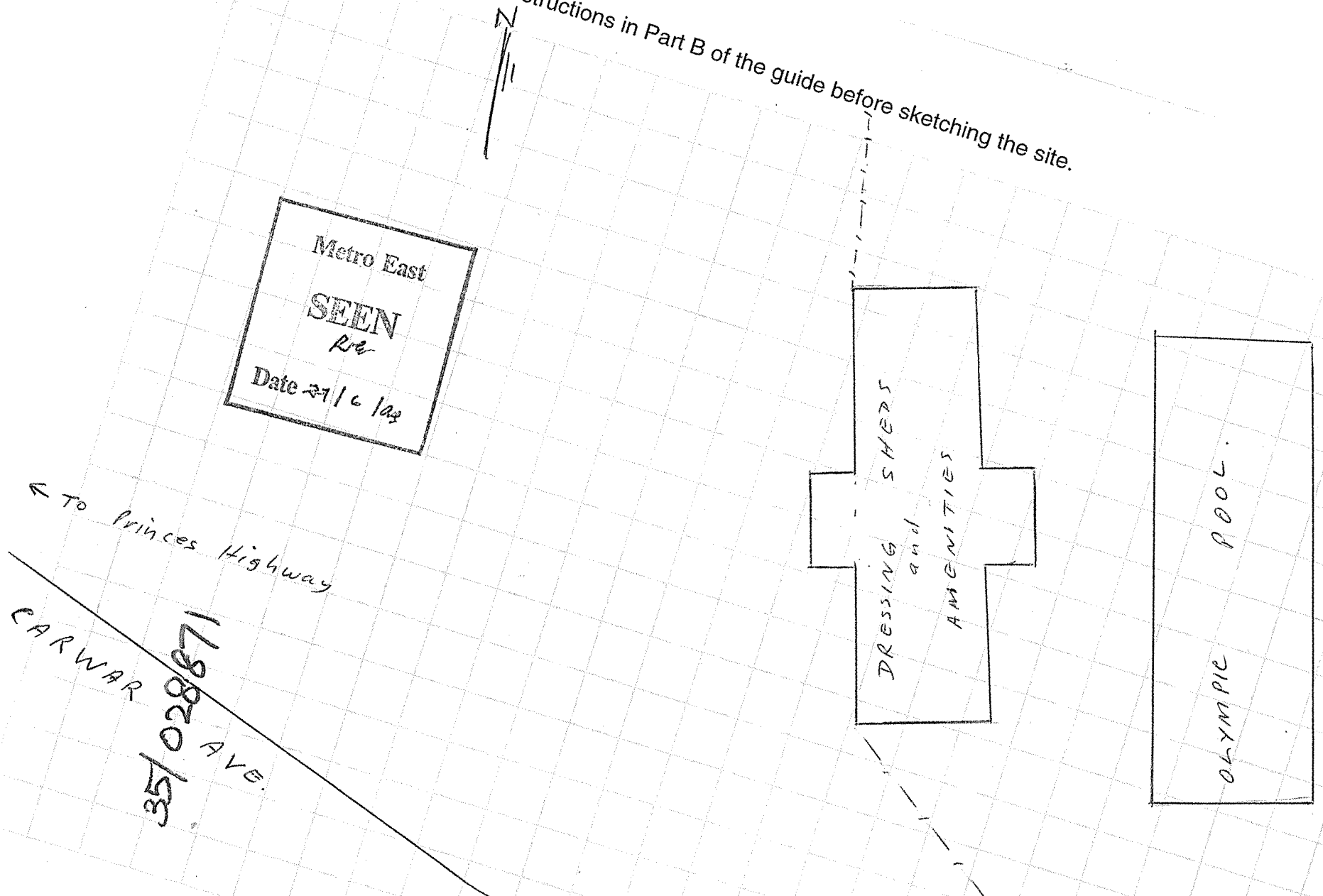
Please complete attached site sketch, depot listing and check sheet (if required) and return to WorkCover Authority in envelope provided.

Sent 12/7/93

Form DG1

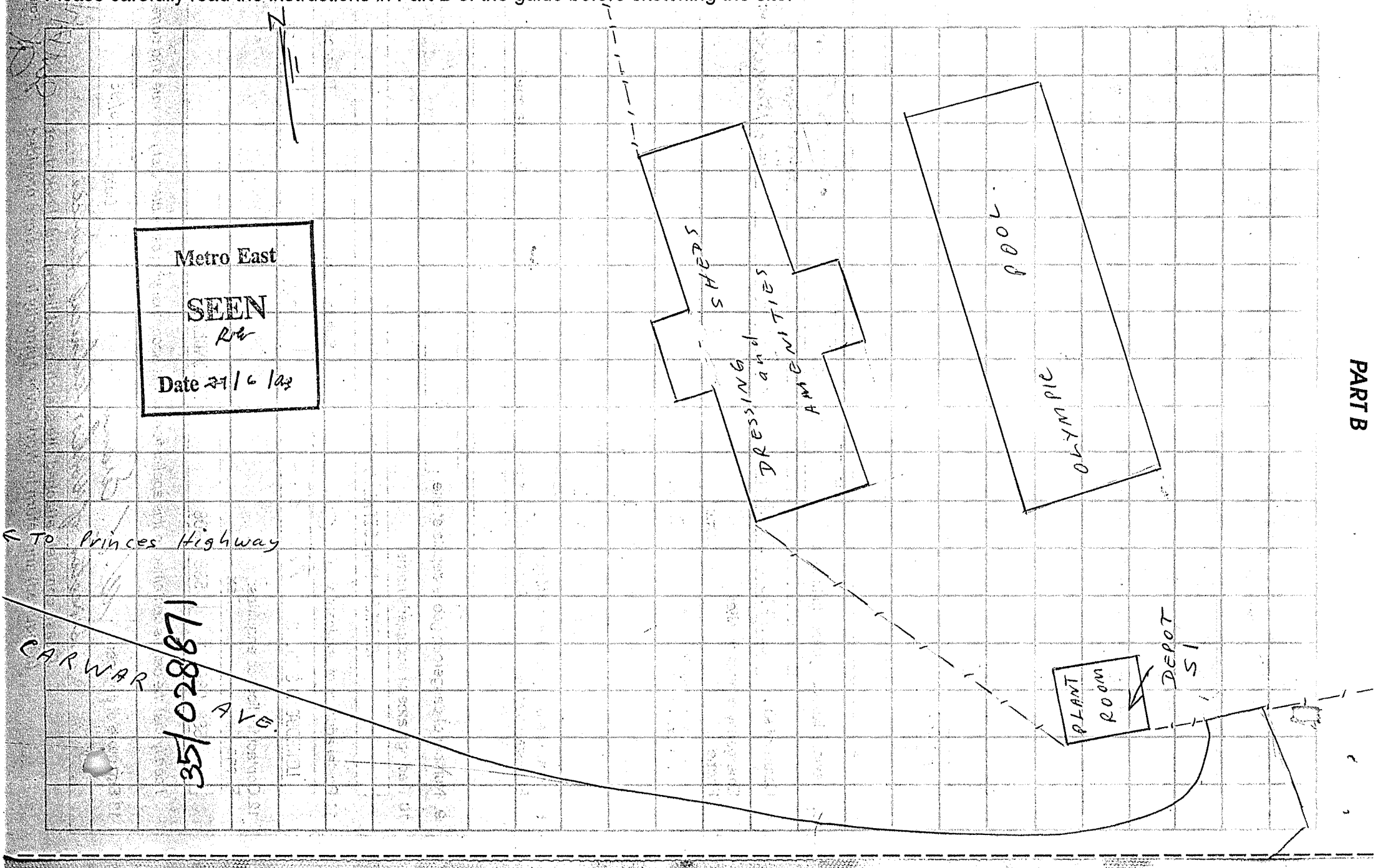
Site Sketch

Please carefully read the instructions in Part B of the guide before sketching the site.



Site Sketch

Please carefully read the instructions in Part B of the guide before sketching the site.



PART B

Complete 1 section per depot

If you have more depots than the space provided, photocopy sufficient sheets first.

Depot number	Type of depot	Class	Licensed maximum storage capacity
S1	SPECIAL COVERED TANK (INDOORS) A/a tank.	8	2500 LITRES

UN number	Shipping name	Pkg. Class	Pkg. Group	EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³
1791	SODIUM HYPOCHLORITE	8	2	8A1	SODIUM HYPOCHLORITE	2500	L

Depot number	Type of depot	Class	Licensed maximum storage capacity

UN number	Shipping name	Pkg. Class	Pkg. Group	EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³

Depot number	Type of depot	Class	Licensed maximum storage capacity

UN number	Shipping name	Pkg. Class	Pkg. Group	EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³

Depot number	Type of depot	Class	Licensed maximum storage capacity

UN number	Shipping name	Pkg. Class	Pkg. Group	EPG	Product or common name	Typical quantity	Unit eg. L, kg, m³

Appendix G

Council Information

Appendix G1

Section 10.7 Planning Certificates

GEORGES RIVER COUNCIL

PLANNING CERTIFICATE ISSUED UNDER SECTION 10.7(2) and 10.7(5)
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

Our Reference: **PL2020/2313**
Your Reference:
Date of Issue: **30/07/2020**

SJB Planning
Level 2
490 Crown Street
SURRY HILLS NSW 2010

Property Number:	**30441**
Property Address:	**Carss Park 78 Carwar Avenue CARSS PARK NSW 2221**
Legal Description:	**Part Lot 376 DP 1118749** **Lot 511 DP 752056** **Lot 1 DP 125981**

This planning certificate should be read in conjunction with the relevant Local Environmental Plan listed under Names of Relevant Planning Instruments and DCPs. This is available on the NSW legislation website at www.legislation.nsw.gov.au

The land to which this certificate relates, being the lot or one of the lots described in the corresponding application, is shown in Council's records as being situated at the street address described on page 1 of this certificate.

It is the applicant's responsibility to confirm that the legal description of the lot to which the application relates is accurate and current. Council does not check the accuracy or currency of the information; nor does Council have the copyright to this information.

The legal description of land is obtained from NSW Land and Property Information. Applicants must verify all property and lot information with NSW Land and Property Information.

The information contained in this certificate relates only to the lot described on page 1 of this certificate.

Where the street address comprises more than one lot in one or more deposited plans or strata plans, separate planning certificates can be obtained upon application for the other lots. Those certificates may contain different information than is contained in this certificate.

This certificate is provided pursuant to Section 10.7(2) and 10.7(5) of the Act. At the date of this certificate, the subject land may be affected by the following matters.

1. Names of relevant planning instruments and DCPs

(1) The name of each environmental planning instrument that applies to the carrying out of development on the land:

The following environmental planning instruments apply to the carrying out of development on the land:

Local Environmental Plans

Kogarah Local Environmental Plan 2012

State Environmental Planning Policies

The following State Environmental Planning Policies apply:

No. 19 - Bushland in Urban Areas
No. 21 - Caravan Parks
No. 30 - Intensive Agriculture
No. 33 - Hazardous and Offensive Development
No. 50 - Canal Estate Development
No. 55 - Remediation of Land
No. 62 - Sustainable Aquaculture
No. 64 - Advertising and Signage
No. 65 - Design Quality of Residential Apartment Development
No. 70 - Affordable Housing (Revised Schemes)
SEPP (Housing for Seniors or People with a Disability) 2004
SEPP (Building Sustainability Index: BASIX) 2004
SEPP (State Significant Precincts) 2005
SEPP (Mining, Petroleum Production and Extraction Industries) 2007
SEPP (Miscellaneous Consent Provisions) 2007
SEPP (Infrastructure) 2007
SEPP (Exempt and Complying Development Codes) 2008
SEPP (Affordable Rental Housing) 2009
SEPP (State and Regional Development) 2011
SEPP (Educational Establishments and Child Care Facilities) 2017
SEPP (Vegetation in Non-Rural Areas) 2017

SEPP (Coastal Management) 2018

Deemed State Environmental Planning Policies (Regional Environmental Plan)

The Greater Metropolitan Regional Environmental Plan 2 - Georges River Catchment.

(2) The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Secretary has notified the

council that the making of the proposed instrument has been deferred indefinitely or has not been approved):

The following proposed environmental planning instruments that have been the subject of community consultation or on public exhibition under the Act, apply to the carrying out of development on the land:

On 27 October 2017, the NSW Department of Planning and Environment placed the proposal to repeal State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007 on community consultation.

On 31 October 2017, the NSW Department of Planning and Environment placed the draft SEPP (Environment) on community consultation.

On 20 June 2018, the NSW Department of Planning and Environment placed an amendment to the SEPP (Exempt and Complying Development Codes) 2008 on community consultation.

On 5 October 2018, the NSW Department of Planning and Environment placed an amendment to SEPP (Exempt and Complying Development Codes) 2008 and Standard Instrument Order 2006 in order to provide for short-term rental accommodation in NSW.

On 30 November 2018, the NSW Department of Planning and Environment placed an amendment to SEPP 70 – Affordable Housing (Revised Schemes) on community consultation.

On 14 January 2019, the NSW Department of Planning and Environment placed on community consultation proposed amendments to a number of SEPPs that will replace the existing references to Planning for Bush Fire Protection (PBP) or associated publications with a reference to the new edition of PBP or the relevant publication. Additional amendments are also proposed in some cases to ensure that the relevant provisions are consistent with the new edition of PBP. The SEPPs to be amended are:

- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
- State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004
- State Environmental Planning Policy (Affordable Rental Housing) 2009
- State Environmental Planning Policy (Infrastructure) 2007
- State Environmental Planning Policy (Kurnell Peninsula) 1989
- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017
- Greater Metropolitan Regional Environmental Plan No 2 – Georges River Catchment

The Planning Proposal for the Georges River Local Environmental Plan 2020 was placed on community consultation from 1 April 2020 to 31 May 2020 (inclusive). The Planning Proposal seeks to harmonise the existing Hurstville Local Environmental Plan 1994, Hurstville Local Environmental Plan 2012 and Kogarah Local Environmental Plan 2012 through the preparation of a new principal Local Environmental Plan for the Georges River LGA. The proposed Georges River Local Environmental Plan 2020 comprises of amendments to the following planning controls:

- Aims of the Plan
- Land use zones
- Zone objectives
- Land use tables
- Temporary use of land
- Exempt and complying development
- Development standards
- Land acquisition
- Miscellaneous provisions
- Miscellaneous permissible uses
- Additional local provisions
- Schedules:
  - Schedule 1 Additional permitted uses
  - Schedule 2 Exempt development
  - Schedule 3 Complying development
  - Schedule 4 Classification and reclassification of public land
  - Schedule 5 Environmental heritage

The outcomes of community consultation and the amendments proposed to finalise the Planning Proposal were considered by the Georges River Local Planning Panel, as the delegate of the Georges River Council, at its meeting held on 25 and 26 June 2020. The Panel resolved to endorse a number of variations to the exhibited Planning Proposal and to forward the amended Planning Proposal to the Department of Planning, Industry and Environment for gazettal in accordance with Section 3.36 of the Environmental Planning and Assessment Act 1979. The resolution of the Panel is attached as **Appendix 1** to this certificate. It is also available on the Local Planning Panel webpage on Council's website: https://www.georgesriver.nsw.gov.au/Development/Development-Applications/Local-Planning-Panel-(LPP)

(3) The name of each development control plan that applies to the carrying out of development on the land:

The following development control plans apply to the carrying out of development on the land:

Kogarah Development Control Plan 2013.

NOTE: Council is currently preparing a new Development Control Plan to replace the development control plan listed above. The draft Georges River DCP will be placed on exhibition shortly.

(4) In this clause, proposed environmental planning instrument includes a planning proposal for a LEP or a draft environmental planning instrument

2. Zoning and land use under relevant LEPs

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a SEPP or proposed SEPP) that includes the land in any zone (however described).

(a) the identity of the zone, whether by reference to a name (such as "Residential Zone" or "Heritage Area") or by reference to a number (such as "Zone No 2 (a)"),

(b) the purposes for which the instrument provides that development may be carried out within the zone without the need for development consent,

(c) the purposes for which the instrument provides that development may not be carried out within the zone except with development consent,

(d) the purposes for which the instrument provides that development is prohibited within the zone,

Zone RE1 Public Recreation under Kogarah Local Environmental Plan 2012

2 Permitted without consent
Building identification signs; Business identification signs; Environmental protection works

3 Permitted with consent
Aquaculture; Boat launching ramps; Car parks; Centre-based child care facilities; Community facilities; Emergency services facilities; Environmental facilities; Flood mitigation works; Information and education facilities; Jetties; Kiosks; Markets; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Registered clubs; Respite day care centres; Restaurants or cafes; Roads; Signage; Water recreation structures

4 Prohibited
Any development not specified in item 2 or 3

Under the provisions of Clause 6.4 of Kogarah Local Environmental Plan 2012, the land is affected by a foreshore building line.

Zone and land uses under the draft Georges River LEP 2020

Zone RE1 Public Recreation

2 Permitted without consent

Environmental facilities, Environmental protection works.

3 Permitted with consent

Aquaculture; Boat launching ramps; Centre-based child care facilities; Emergency services facilities; Information and education facilities; Jetties; Kiosks; Markets; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Respite day care centres; Restaurants or cafes; Roads; Signage; Take away food and drink premises; Water recreation structures; Water storage facilities.

4 Prohibited

Any development not specified in item 2 or 3.

Foreshore Scenic Protection Area - The property is located within a Foreshore Scenic Protection Area pursuant to clause 6.7 of the Draft Georges River Local Environmental Plan 2020 and as shown on the Draft Georges River Local Environmental Plan 2020 Foreshore Scenic Protection Area Map.

Foreshore building line – The property is affected by a Foreshore Building Line pursuant to clause 6.5 of the draft Georges River Local Environmental Plan 2020 and as shown on the draft Georges River Local Environmental Plan 2020 Foreshore Building Line Map.

(e) whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed,

There are no development standards applying to the land which fix minimum land dimensions for the erection of a dwelling house under the Kogarah Local Environmental Plan 2012.

Draft Georges River Local Environmental Plan 2020

There are no development standards applying to the land which fix minimum land dimensions for the erection of a dwelling house under the Draft Georges River Local Environmental Plan 2020.

(f) whether the land includes or comprises critical habitat,

The land does not include or comprise critical habitat under any environmental planning instrument.

Draft Georges River Local Environmental Plan 2020

The land does not include or comprise critical habitat under the draft Georges River Local Environmental Plan 2020.

(g) whether the land is in a conservation area (however described),

The land is not located within a conservation area under the provisions of Kogarah Local

Environmental Plan 2012.

Draft Georges River Local Environmental Plan 2020

The land is not located within a conservation area under the provisions of the Draft Georges River Local Environmental Plan 2020.

(h) whether an item of environmental heritage (however described) is situated on the land.

The land contains a heritage item under the provisions of Kogarah Local Environmental Plan 2012.

Draft Georges River Local Environmental Plan 2020

The land contains a heritage item under the provisions of Draft Georges River Environmental Plan 2020.

2A Zoning and land use under State Environmental Planning Policy (Sydney Region Growth Centres) 2006

To the extent that the land is within any zone (however described) under:
(a) Part 3 of the State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (the 2006 SEPP), or

(b) a Precinct Plan (within the meaning of the 2006 SEPP), or

(c) a proposed Precinct Plan that is or has been the subject of community consultation or on public exhibition under the Act, the particulars referred to in clause 2(a)-(h) in relation to that land (with a reference to "the instrument" in any of those paragraphs being read as a reference to Part 3 of the 2006 SEPP, or the Precinct Plan or proposed Precinct Plan, as the case requires).

The State Environmental Planning Policy (Sydney Region Growth Centres) 2006 does not identify land within the Georges River Local Government Area as a growth centre and therefore the policy does not apply.

3. Complying Development

(1) The extent to which the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

(2) The extent to which complying development may not be carried out on that land because of the provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of that Policy and the reasons why it may not be carried out under those clauses.

(3) If the Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on that land, a statement that a restriction applies to the land, but it may not apply to all of the land, and that council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

Housing Code

Complying development under the Housing Code may not be carried out on the land. The land is either wholly or partially affected by specific land exemptions:

- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.
- The land is identified on an Acid Sulfate Soils Map as being Class 1 or Class 2. Please consult the Acid Sulfate Soils Map of the Hurstville Local Environmental Plan 2012 or the Acid Sulfate Soils Map of the Kogarah Local Environmental Plan 2012 to confirm the extent to which complying development may or may not be carried out on the land.
- The land is within a foreshore area. Please consult the Foreshore Building Line Map of the Hurstville Local Environmental Plan 2012 or the Foreshore Building Line Map of the Kogarah Local Environmental Plan 2012 to confirm the extent to which complying development may or may not be carried out on the land.
- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.
- The land is reserved for a public purpose in an environmental planning instrument. Please consult the Land Zoning Map and Land Reservation Acquisition Map of the Hurstville Local Environmental Plan 2012 or the Land Zoning Map and Land Reservation Acquisition Map of the Kogarah Local Environmental Plan 2012 to confirm the extent to which complying development may or may not be carried out on the land.

Note: The erection of a new dwelling house or an addition to a dwelling house on land in the 20-25 ANEF contours is complying development for this Policy, if the development is constructed in accordance with AS 2021—2000, Acoustics—Aircraft noise intrusion—Building siting and construction.

Please check ANEF contour the land is located within.

<u>Housing Code under Draft Georges River Local Environmental Plan 2020</u>

Complying development under the Housing Code may not be carried out on the land. The land is either wholly or partially affected by the following specific land exemptions:

- The land is identified on an Acid Sulfate Soils Map as being either Class 1 or Class 2. Please consult the Acid Sulfate Soils Map of the draft Georges River Local Environmental Plan 2020 to confirm the extent to which complying development may or may not be carried out on the land.
- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.

- The land is reserved for a public purpose in an environmental planning instrument. Please consult the Zoning Map of the Draft Georges River Local Environmental Plan 2020 to confirm the extent to which complying development may or may not be carried out on the land.
- The land is within a foreshore area. Please consult the Foreshore Building Line Map of the Draft Georges River Local Environmental Plan 2020 to confirm the extent to which complying development may or may not be carried out on the land.
- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.
- The land is identified as being part or wholly environmentally sensitive land by the Riparian Land and Watercourses Map under the draft Georges River Local Environmental Plan 2020.
- The land is identified as being part or wholly affected by a coastal hazard by the Coastal Hazard Map under the draft Georges River Local Environmental Plan 2020.

Note: The erection of a new dwelling house or an addition to a dwelling house on land in the 20-25 ANEF contours is complying development for this Policy, if the development is constructed in accordance with AS 2021—2000, Acoustics—Aircraft noise intrusion—Building siting and construction.

Please check ANEF contour the land is located within.

Rural Housing Code
Complying development under the Rural Housing Code does not apply as the land is not zoned RU1 Primary Production, RU2 Rural Landscape, RU3 Forestry, RU4 Primary Production Small Lots, RU6 Transition and R5 Large Lot Residential.

Low Rise Housing Diversity Code
Complying development under the Low Rise Housing Diversity Code may not be carried out on the land. The land is either wholly or partially affected by specific land exemptions:

- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.
- The land is reserved for a public purpose in an environmental planning instrument. Please consult the Land Reservation Acquisition Map of the Hurstville Local Environmental Plan 2012 or the Land Reservation Acquisition Map of the Kogarah Local Environmental Plan 2012 to confirm the extent to which complying development may or may not be carried out on the land.
- The land is identified on an Acid Sulfate Soils Map as being Class 1 or Class 2. Please consult the Acid Sulfate Soils Map of the Hurstville Local Environmental Plan 2012 or the Acid Sulfate Soils Map of the Kogarah Local Environmental Plan 2012 to confirm the extent to which complying development may or may not be carried out on the land.
- The land is within a foreshore area. Please consult the Foreshore Building Line Map of the Hurstville Local Environmental Plan 2012 or the Foreshore Building Line Map of the Kogarah Local Environmental Plan 2012 to confirm the extent to which complying development may or may not be carried out on the land.
- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.

Note: The erection of a new dwelling house or an addition to a dwelling house on land in the 20-25 ANEF contours is complying development for this Policy, if the development is constructed in accordance with AS 2021—2000, Acoustics—Aircraft noise intrusion—Building siting and construction.

Please check ANEF contour the land is located within.

Low Rise Housing Diversity Code under Draft Georges River Local Environmental Plan 2020

Complying development under the Low Rise Housing Diversity Code may not be carried out on the land. The land is either wholly or partially affected by the following specific land exemptions:

- The land is identified on an Acid Sulfate Soils Map as being either Class 1 or Class 2. Please consult the Acid Sulfate Soils Map of the draft Georges River Local Environmental Plan 2020 to confirm the extent to which complying development may or may not be carried out on the land.
- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.
- The land is reserved for a public purpose in an environmental planning instrument. Please consult the Zoning Map of the Draft Georges River Local Environmental Plan 2020 to confirm the extent to which complying development may or may not be carried out on the land.
- The land is within a foreshore area. Please consult the Foreshore Building Line Map of the Draft Georges River Local Environmental Plan 2020 to confirm the extent to which complying development may or may not be carried out on the land.
- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.
- The land is identified as being part or wholly environmentally sensitive land by the Riparian Land and Watercourses Map under the draft Georges River Local Environmental Plan 2020.
- The land is identified as being part or wholly affected by a coastal hazard by the Coastal Hazard Map under the draft Georges River Local Environmental Plan 2020.

Note: The erection of a new dwelling house or an addition to a dwelling house on land in the 20-25 ANEF contours is complying development for this Policy, if the development is constructed in accordance with AS 2021—2000, Acoustics—Aircraft noise intrusion—Building siting and construction.

Please check ANEF contour the land is located within.

Inland Code

Complying development under the Inland Code does not apply to Georges River Council Local Government Area.

Greenfield Housing Code

Complying development under the Greenfield Housing Code does not apply to Georges River Council Local Government Area.

Housing Alterations Code

Complying development under the Housing Alterations Code may not be carried out on the land. The land is either wholly or partially affected by specific land exemptions:

- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.
- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.

Note: The erection of a new dwelling house or an addition to a dwelling house on land in the 20-25 ANEF contours is complying development for this Policy, if the development is constructed in accordance with AS 2021—2000, Acoustics—Aircraft noise intrusion—Building siting and construction.

Please check ANEF contour the land is located within.

Housing Alterations Code under Draft Georges River Local Environmental Plan 2020

Complying development under the Housing Alterations Code may not be carried out on the land. The land is either wholly or partially affected by the following specific land exemptions:

- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.
- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.

Note: The erection of a new dwelling house or an addition to a dwelling house on land in the 20-25 ANEF contours is complying development for this Policy, if the development is constructed in accordance with AS 2021—2000, Acoustics—Aircraft noise intrusion—Building siting and construction.

Please check the ANEF contour the land is located within.

General Development Code

Complying development under the General Development Code may not be carried out on the land. The land is either wholly or partially affected by specific land exemptions:

- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.
- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.

Note: The erection of a new dwelling house or an addition to a dwelling house on land in the 20-25 ANEF contours is complying development for this Policy, if the development is constructed in accordance with AS 2021—2000, Acoustics—Aircraft noise intrusion—Building siting and construction.

Please check the ANEF contour the land is located within.

General Development Code under Draft Georges River Local Environmental Plan 2020

Complying development under the General Development Code may not be carried out on the land. The land is either wholly or partially affected by the following specific land exemptions:

- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.
- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.

Note: The erection of a new dwelling house or an addition to a dwelling house on land in the 20-25 ANEF contours is complying development for this Policy, if the development is constructed in accordance with AS 2021—2000, Acoustics—Aircraft noise intrusion—Building siting and construction.

Please check the ANEF contour the land is located within.

Commercial and Industrial Alterations Code

Complying development under the Commercial and Industrial Alterations Code may not be carried out on the land. The land is either wholly or partially affected by specific land exemptions:

- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.
- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.

Commercial and Industrial Alterations Code under Draft Georges River Local Environmental Plan 2020

Complying development under the Commercial and Industrial Alterations Code may not be carried out on the land. The land is either wholly or partially affected by the following specific land exemptions:

- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.
- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.

Commercial and Industrial (New Buildings and Additions) Code

Complying development under the Commercial and Industrial (New Buildings and Alterations) Code may not be carried out on the land. The land is either wholly or partially affected by specific land exemptions:

- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.
- The land is within a foreshore area. Please consult the Foreshore Building Line Map of the Hurstville Local Environmental Plan 2012 or the Foreshore Building Line Map of the Kogarah Local Environmental Plan 2012 to confirm the extent to which complying development may or may not be carried out on the land.
- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.
- The land is identified on an Acid Sulfate Soils Map as being Class 1 or Class 2. Please consult the Acid Sulfate Soils Map of the Hurstville Local Environmental Plan 2012 or the Acid Sulfate Soils Map of the Kogarah Local Environmental Plan 2012 to confirm the extent to which complying development may or may not be carried out on the land.

- The land is reserved for a public purpose in an environmental planning instrument. Please consult the Land Zoning Map and Land Reservation Acquisition Map of the Hurstville Local Environmental Plan 2012 or the Land Zoning Map and Land Reservation Acquisition Map of the Kogarah Local Environmental Plan 2012 to confirm the extent to which complying development may or may not be carried out on the land.

Commercial and Industrial (New Buildings and Additions) Code under Draft Georges River Local Environmental Plan 2020

Complying development under the Commercial and Industrial (New Buildings and Additions) Code may not be carried out on the land. The land is either wholly or partially affected by the following specific land exemptions:

- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.
- The land is identified on an Acid Sulfate Soils Map as being either Class 1 or Class 2. Please consult the Acid Sulfate Soils Map of the draft Georges River Local Environmental Plan 2020 to confirm the extent to which complying development may or may not be carried out on the land.
- The land is reserved for a public purpose in an environmental planning instrument. Please consult the Land Zoning Map of the Draft Georges River Local Environmental Plan 2020 to confirm the extent to which complying development may or may not be carried out on the land.
- The land is within a foreshore area. Please consult the Foreshore Building Line Map of the Draft Georges River Local Environmental Plan 2020 to confirm the extent to which complying development may or may not be carried out on the land.
- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.
- The land is identified as being part or wholly environmentally sensitive land by the Riparian Land and Watercourses Map under the draft Georges River Local Environmental Plan 2020.
- The land is identified as being part or wholly affected by a coastal hazard by the Coastal Hazard Map under the draft Georges River Local Environmental Plan 2020.

Container Recycling Facilities Code

Complying development under the Container Recycling Facilities Code may not be carried out on the land. The land is either wholly or partially affected by specific land exemptions:

-The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.
- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.

Container Recycling Facilities Code under Draft Georges River Local Environmental Plan 2020
Complying development under the Container Recycling Facilities Code may not be carried out on the land. The land is either wholly or partially affected by the following specific land exemptions:

- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.
- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.

Subdivision Code
Complying development under the Subdivision Code may not be carried out on the land. The land is either wholly or partially affected by specific land exemptions:

- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.
- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.

Subdivision Code under Draft Georges River Local Environmental Plan 2020
Complying development under the Subdivisions Code may not be carried out on the land. The land is either wholly or partially affected by the following specific land exemptions:

- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.
- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.

Demolition Code
Complying development under the Demolition Code may not be carried out on the land. The land is either wholly or partially affected by specific land exemptions:

- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.

- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.

Demolition Code under Draft Georges River Local Environmental Plan 2020
Complying development under the Demolition Code may not be carried out on the land. The land is either wholly or partially affected by the following specific land exemptions:

- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.
- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.

Fire Safety Code
Complying development under the Fire Safety Code may not be carried out on the land. The land is either wholly or partially affected by specific land exemptions:

- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.
- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.

Fire Safety Code under Draft Georges River Local Environmental Plan 2020
Complying development under the Fire Safety Code may not be carried out on the land. The land is either wholly or partially affected by the following specific land exemptions:

- The land comprises or contains an item of environmental heritage, a heritage item or a draft heritage item.
- The land comprises or contains an item that is listed on the State Heritage Register under the Heritage Act 1977 and has not been granted an exemption under s.57 of the Heritage Act 1977.

Disclaimer: The information above addresses matters raised in Clause 1.17A (1) (c) to (e), (2), (3), and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. It is your responsibility to ensure that you comply with any other requirements of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Failure to comply with these provisions may mean that a Complying Development Certificate issued under the provisions of the State Environment Planning Policy (Exempt and Complying Development Codes) 2008 is invalid.

NOTE: Council does not have sufficient information to ascertain the extent to which complying development under the Codes may be carried out on the land. A restriction to carrying out complying development applies to the land, but may not apply to all of the land.

4. Coastal Protection – Repealed (03/04/2018)

4A. Coastal Protection– Repealed (03/04/2018)

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

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

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

No, according to Council's records the owner (or previous owner) of the land has not consented in writing to the land being subject to annual charges for coastal protection services relating to existing coastal protection works (within the meaning of section 553B of the LG Act 1993).

5. Mine subsidence

Whether or not the land is proclaimed to be mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act, 1961

The land is not in an area proclaimed to be a mine subsidence district within the meaning of section 15 of the *Mine Subsidence Compensation Act 1961*.

6. Road widening and road realignment

Whether or not the land is affected by any road widening or road realignment under:

(a)Division 2 of Part 3 of the Roads Act 1993?

The land is not affected by road widening or road realignment under Division 2 of Part 3 of the Roads Act 1993.

(b) any environmental planning instrument?

The land is not affected by any road widening or road realignment under the provisions of any environmental planning instrument.

(c) any resolution of the Council?

The land is not affected by any road widening or road realignment under any resolution of the Council.

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

Whether or not the land is affected by a policy:
(a) adopted by the council that restricts the development of the land because of the likelihood of landslip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding)?

The property is affected by the following Council policies:

Airspace operations - The objective of this clause is to protect airspace around airports. (Refer Clause 6.9, Hurstville Local Environmental Plan 2012 or Clause 6.5, Kogarah Local Environmental Plan 2012).

Aircraft noise - the property is affected by Clause 6.6 Development in areas subject to aircraft noise of the Kogarah Local Environmental Plan 2012.
Water management - the property is affected by the Kogarah Water Management Policy 2006.
Contaminated land - the property is affected by the Kogarah Contaminated Land Policy 2009.
Flood Planning Area - This property has been identified as "Flood Planning Area" on the Flood Planning Map (Please refer to Clause 6.3, Kogarah Local Environmental Plan 2012).

Limited development of foreshore area - This property has been identified as part of the Foreshore Area, as identified on the Foreshore Building Map (Please refer to Clause 6.4, Kogarah Local Environmental Plan 2012).

Acid Sulfate Soils -This property has been identified as potentially containing acid sulfate soils, as identified on the Kogarah Local Environmental Plan 2012 Acid Sulfate Soils Map (Clause 6.1, Kogarah Local Environmental Plan 2012).

Draft Georges River Local Environmental Plan 2020

Airspace operations - The objective of this clause is to protect airspace around airports. (Refer Clause 6.8, Draft Georges River Local Environmental Plan 2020).

Acid Sulfate Soils - This property has been identified as potentially containing acid sulphate soils, as identified on the draft Georges River Local Environmental Plan 2020 Draft Acid Sulphate Soils Map (Please refer to Clause 6.1, draft Georges River Local Environmental Plan 2020).

Riparian Lands and Watercourses - This property has been identified as Sensitive Land on the Draft Riparian Lands and Watercourses Map in the draft Georges River Local Environmental Plan 2020. (Please refer to Clause 6.6, draft Georges River Local Environmental Plan 2020).

Foreshore area - This property has been identified as part of the Foreshore Area on the Draft Foreshore Building Map to the Draft Georges River Local Environmental Plan 2020 (Please refer to Clause 6.5, Georges River Local Environmental Plan 2020).

Coastal hazards and risks - This property has been identified as being affected by 2100

Projected Sea Level Rise on the Draft Coastal Hazard Map to the Draft Georges River Local Environmental Plan 2020 (Please refer to Clause 6.5, Georges River Local Environmental Plan 2020).

Flooding - This property has been identified within the "Flood Planning Area" on the draft Georges River Local Environmental Plan 2020 Draft Flood Planning Map (refer Clause 6.3 of the draft Georges River Local Environmental Plan 2020).

(b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council, that restricts the development of the land because of the likelihood of landslip, bushfire, tidal inundation, subsidence, acid sulphate or any other risk (other than flooding)?

Council has not been notified of any policies adopted by other public authorities that restricts development of this land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding).

7A. Flood related development controls information

(1) Whether or not development on that land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.

Yes - The land in question or part of the land in question has been identified in the Kogarah Bay Creek Stormwater Overland Flow Risk Management Plan to be below the flood planning level and therefore subject to stormwater flooding related development controls. Development Controls are contained in Kogarah Development Control Plan 2013, Councils Water Management Policy and the Kogarah Bay Creek Overland Flow Risk Management Study and Plan. For more information contact Councils Catchment and Waterways section on 9330 6400.

(2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.

Yes - The development of the land or part of the land for a purpose not referred to in Question 7A(1) may be subject to stormwater flooding related development controls. For more information please contact Council's Catchments & Waterways section on 9330 6400.

Note 1: Words and expressions in this clause have the same meanings as in the standard instrument set out in the Schedule to the Standard Instrument (Local Environmental Plans) Order 2006.

Note 2: The answers above do not imply that the development referred to is necessarily permissible on the land to which this certificate applies. Refer to the relevant local environmental plan, deemed environmental planning instrument or draft local environmental plan applying to the land to confirm this.

8. Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act?

No environmental planning instrument or proposed environmental planning instrument referred to in clause 1, makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act.

Draft Georges River Local Environmental Plan 2020

No environmental planning instrument or proposed environmental planning instrument referred to in clause 1, makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act.

9. Contributions plans

The name of each contribution plan applying to the land:

Section 94 Contribution Plan No. 1 - Road and Traffic Management.
Section 94 Contribution Plan No. 5 - Open Space.
Section 94 Contribution Plan No. 9 - Kogarah Libraries.

Georges River Council Section 94A Contributions Plan 2017.

9A Biodiversity certified land

If the land is biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016, a statement to that effect.

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

Council has not been notified by the NSW Office of Environment and Heritage, that the subject land is biodiversity certified land under Part 8 of the *Biodiversity Conservation Act 2016.*

10. Biodiversity stewardship sites

If the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act 2016, a statement to that effect (but only if the council has been notified of the existence of the agreement by the Chief Executive of the Office of Environment and Heritage).

Note. *Biodiversity stewardship agreements include biobanking agreements under Part*

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

Council has not been notified by the Chief Executive of the Office of Environment and Heritage, that the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the *Biodiversity Conservation Act 2016*.

10A. Native vegetation clearing set asides

If the land contains a set aside area under section 60ZC of the Local Land Services Act 2013, a statement to that effect (but only if the council has been notified of the existence of the set aside area by Local Land Services or it is registered in the public register under that section).

Council has not been notified by the Local Land Services that the land contains a set aside area nor is the land registered in the public register under section 60ZC of the Local Land Services Act 2013.

11. Bush fire prone land

If any of the land is bushfire prone land (as defined in the Act), a statement that all or, as the case may be, some of the land is bush fire prone land.
If none of the land is bush fire prone land, a statement to that effect.
The land is not shown to be bushfire prone land in Council records.

12. Property Vegetation Plans

If the land is land to which a property vegetation plan under the Native Vegetation Act 2003 applies, a statement to that effect (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

The provisions of the *Native Vegetation Act 2003*, do not apply to the Georges River Council area.

13. Orders Under Trees (Disputes Between Neighbours) Act 2006

Whether an order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land (but only if Council has been notified of the order).
The Council has not been notified of an order under the Act in respect of tree(s) on the land.
Council has not verified whether any order has been made of which it has not been notified. The applicant should make its own enquiries in this regard if this is a matter of concern.

14. Directions under Part 3A

If there is direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act that does not have effect, a statement to that effect identifying the provision that does not have effect.
There is no direction by the Minister in force under section 75P (2) (c1) of the *Environmental Planning and Assessment Act 1979.*.

15. Site compatibility certificates and conditions for seniors housing

If the land is land to which State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies:

(a) a statement of whether there is a current site compatibility certificate (seniors housing) of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

(i) the period for which the certificate is current, and
(ii) that a copy may be obtained from the head office of the Department, and

(b) a statement setting out any terms of a kind referred to in clause 18 (2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

(a) Council is not aware of the issue of any current Site Compatibility Certificate (Seniors Housing) in respect of proposed development on the land.

(b) No terms of a kind referred to in Clause 18(2) of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004, have been imposed as a condition of consent to a Development Application granted after 11 October 2007 in respect of the land.

16. Site compatibility certificates for infrastructure

A statement of whether there is a valid site compatibility certificate (infrastructure), of which the council is aware, in respect of proposed development on the land and, if there is a certificate is to include:

(a) The period for which the certificate is current, and
(b) That a copy may be obtained from the head office of the Department.

Council is not aware of the issue of any valid Site Compatibility Certificate (Infrastructure), in respect of proposed development on the land.

17. Site compatibility certificates and conditions for affordable rental housing

(1) A Statement of whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

(a) The period for which the certificate is current, and
(b) That a copy may be obtained from the head office of the Department of Planning.

(2) A statement setting out any terms of a kind referred to in Clause 17(1) or 37(1) of State Environmental Planning Policy (Affordable Rental Housing) 2009 that have been imposed as a condition of consent to a development application in respect of the land.
(1) Council is not aware of the issue of any current Site Compatibility Certificate (Affordable Rental Housing), in respect of proposed development on the land.

(2) No terms of a kind referred to in Clause 17(1) or 37(1) of State Environmental Planning Policy (Affordable Rental Housing) 2009, have been imposed as a condition of consent to a Development Application in respect of the land.

18. Paper subdivision information

(1) The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.

There is no development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.

(2) The date of any subdivision order that applies to the land.

There is no subdivision order applying to the land.

(3) Words and expressions used in this clause have the same meaning as they have in Part 16C of this Regulation.

19. Site Verification Certificates

A statement of whether there is a current site verification certificate, of which the council is aware, in respect of the land and, if there is a certificate, the statement is to include:

(a) the matter certified by the certificate, and

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

(b) The date on which the certificates ceases to be current (if any), and
(c) That a copy may be obtained from the head office of the Department of Planning and Infrastructure.

There are no current site verification certificates applying to the subject land.

20. Loose-fill asbestos insulation

A statement if the land includes any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the Loose-Fill Asbestos Insulation Register maintained by the Secretary of NSW Fair Trading.

The land to which this certificate relates has not been identified in the Loose-Fill Asbestos Insulation Register as containing loose-fill asbestos ceiling insulation. Contact NSW Fair Trading for more information.

21. Affected building notices and building product rectification orders

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

Council is not aware of any affected building notice in force in respect of the land

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

Council is not aware of any building product rectification order that is in force in respect of the land and has not been fully complied with.

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

Council is not aware of any notice of intention to make a building product rectification order that has been given in respect of the land and is outstanding.

(3) In this clause:
affected building notice has the same meaning as in Part 4 of the Building Products (Safety) Act 2017.
building product rectification order has the same meaning as in the Building Products (Safety) Act 2017.

Any Other Prescribed Matter

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

(a) that the land to which the certificate relates is significantly contaminated land within the meaning of that Act if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued?
The land has not been identified as significantly contaminated land within the meaning of the Contaminated Land Management Act 1997. (Enquiries should be directed to the NSW Environmental Protection Authority).

(b) that the land which the certificate is the subject to a management order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued?
The land is not subject to a management order within the meaning of the Act. (Enquiries

should be directed to the NSW Environmental Protection Authority).

(c) that the land which the certificate relates is subject of an approved voluntary management proposal within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued?

The land is not the subject of an approved voluntary management proposal within the meaning of the Act. (Enquiries should be directed to the NSW Environmental Protection Authority).

(d) that the land which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued?

The land is not the subject of an ongoing maintenance order within the meaning of the Act. (Enquiries should be directed to the NSW Environmental Protection Authority).

(e) that the land which the certificate relates is subject of a site audit statement within the meaning of that Act – if a copy of such a statement has been provided at any time to the local authority issuing the certificate?

Council has not been provided with a site audit statement, within the meaning of the Act, for this land.

NOTE

This information is provided pursuant to section 10.7 (2) of the Environmental Planning and Assessment (EPA) Act 1979 as prescribed by Schedule 4 of the EPA Regulations 2000 and is applicable as of the date of this certificate.

Additional matters pursuant to Section 10.7(5) of the Environmental Planning and Assessment Act 1979

As requested by you, the following additional information is provided pursuant to Section 10.7(5) of the *Environmental Planning and Assessment Act 1979*.

Additional Information Pursuant to Section 10.7(5)

As requested by you, the following additional information is provided pursuant to Section 10.7(5) of the Act:

1. Adjacent to a heritage item or heritage conservation area

Is the land within the vicinity of a heritage item or heritage conservation area?

The land is shown in Council's records as not being adjacent to a heritage item or heritage conservation area. However, the subject land may be contained within a Heritage Conservation Area or listed as a Heritage Item. Please refer to Questions 2(g) and 2(h) in Part 2 of the Planning Certificate for confirmation or otherwise.

2. State Heritage Item

Does the land contain a State heritage item under the Heritage Act 1977?

The land contains a State heritage item under the *Heritage Act 1977*.

3. Stormwater Drain

Is the land affected by a stormwater drain?

Yes. Council's Asset register indicates that the land may be affected by a Council stormwater drain. You are advised to contact Council's drainage engineers for further information.

4. Planning agreements

Is the land affected by a Planning Agreement?

The land is not subject to a Planning Agreement, which is a voluntary agreement providing for a public purpose through a monetary contribution or provision of works and pursuant to s7.4 to s7.10 of the Environmental Planning and Assessment Act 1979.

5. Georges River Council Studies, Polices and Plans

Are there any studies, policies or plans or drafts (which have been placed on public exhibition) which affect the land?

The following studies, policies or plans or draft studies, policies or plans (which have been placed on public exhibition) affect the land:

Information on the studies, policies or plans or draft studies, policies or plans is provided on the Georges River Council website www.georgesriver.nsw.gov.au

- Moore Reserve Catchment Overland Flow Study (2007)
- Hurstville Public Domain Plan (2007)

- Beverley Park Overland Flow Risk Management Study and Plan (2009)
- Kogarah Bay Creek Risk Management Study and Plan (2011)
- Poulton Park Overland Flow Risk Management Study and Plan (2011)
- Overland Flow Flood Study for Hurstville, Mortdale and Peakhurst Wards (2016)
- Hurstville City Centre Transport Management and Accessibility Plan (TMAP) 2018
- Hurstville City Centre Urban Design Strategy (May 2018)
- Kogarah North Urban Design Strategy (November 2017)
- Kogarah North Public Domain Plan (December 2018)
- Georges River Industrial Land Review (July 2018)
- Tidal Inundation Study (November 2018)
- Economic Development Strategy (December 2018)
- Foreshore Strategic Directions Paper (December 2018)
- Local Housing Strategy Evidence Base (January 2019)
- Inclusive Housing Strategy – Stage 1 – Assessment of Housing Needs (March 2019)
- Tree Management Policy (April 2019)
- Infrastructure Integration Advice Roadmap (September 2019)
- Georges River Local Strategic Planning Statement 2040 (February 2020)
- Commercial Centres Study – Part 1 Centres Analysis (February 2020)
- Heritage Review (March 2020)
- Housing Investigation Areas Paper (April 2020)
- Draft Car Parking Strategy
- Draft Local Housing Strategy
- Draft Inclusive Housing Strategy
- Draft Guidelines for Places of Public Worship
- Draft Stormwater Management Policy

6. Any Other Matters

Sea Level Rise

The property is affected by future tidal inundation incorporating sea level rise. Please refer to Georges River Tidal Inundation Study dated November 2018 prepared on behalf of Council by BMT. Before determining a development application for development on land to which this clause applies, Council will need to consider:

a) sea level rise and tidal inundation as a result of climate change.
b) maintenance of personal safety, including any increase in people ordinarily present on the site.
c) ability to locate development on parts of the site not exposed to coastal hazards.

Carss Park Swimming Pool

Council has found contamination, including asbestos contamination, at the Carss Park Swimming Pool site in Carss Park. Please contact Council's Property Section on Phone: 9330 6400 or Email: mail@georgesriver.nsw.gov.au if you require any further information on the extent of the contamination and the status of the matter.

Note: Please note that Council provides this information in good faith. Council does not

accept any liability in respect of such advice. The absence of any reference to any matter affecting the land shall not imply that the land is not affected by any matter not referred to in this planning certificate.

Meryl Bishop
Director - Environment and Planning

Appendix 1 – Minutes of the Georges River Local Planning Panel meeting dated 25 and 26 June 2020

Resolution

The Georges River Local Planning Panel as delegate of the Georges River Council resolves that:

1. (a) *That the Local Planning Panel notes the written and oral submissions received during the public exhibition and the public meeting held on 25 and 26 June 2020 of the Planning Proposal (PP2019/0004) for the Georges River Local Environmental Plan 2020.*

   (b) *That the Local Planning Panel endorses the following variations to the Planning Proposal in response to the issues raised by written and oral submissions received during public exhibition and the public meeting held on 25 and 26 June 2020 in accordance with Section 3.35 of the Environmental Planning and Assessment Act 1979:*

   a. *Additions to Clause 1.2 Aims of Plan to insert an aim relating to the protection, maintenance and improvement of waterway health;*

   b. *Amendments to the objectives of the R2 Low Density Residential zone to insert separate objectives relating to a landscaped setting and urban design and built form;*

   c. *Amendments to the objectives of the R3 Medium Density Residential zone to insert separate objectives relating a landscaped setting and urban design and built form;*

   d. *Addition to the objectives of the IN2 Light Industrial zone to insert an objective to encourage repair, reuse, recycling, remanufacturing and reprocessing of waste;*

   e. *Amendments to Clause 5.1 Relevant acquisition authority and the associated Land Reservation Acquisition Map which gives effect to the removal of the land identified as Lots 15, 16, 17, 18, 19 & 20, Section 4 in Deposited Plan 12082 known as Nos. 11 to 21 (inclusive) Monaro Avenue, Kingsgrove;*

f. Amendments to Clause 6.6 Riparian lands and waterways to replace references to watercourses with waterways and insert a clause – Aboriginal cultural heritage values of waterways;

g. Amendments to Clause 6.7 Foreshore Scenic Protection Area, including:

I. Insert the words avoids and minimises disturbances on flora and fauna and inserts the word enhancement of native vegetation and habitat;

II. Retention of the existing Foreshore Scenic Protection Area as identified by the Hurstville Local Environmental Plan 2012 Foreshore Scenic Protection Area Map; and

III. The addition of the proposed Foreshore Scenic Protection Area as exhibited by the Planning Proposal Map entitled "Foreshore Scenic Protection Area Map" and shown in pink shading.

h. Amendments to Clause 6.11 Design excellence to:

I. Amend the waste clause to encourage the management and minimisation of waste;

II. Delete sub clause 3(b) requiring the development to be reviewed by an urban designer or a registered architect appointed from an independent panel as nominated by Georges River Council.

i. Amendments to Clause 6.13 Landscaped areas in certain residential and environmental protection zones to increase the minimum landscaped area requirements for dual occupancies (non-FSPA) to 25% and dual occupancies (FSPA) to 30% and to ensure new developments are accompanied by increased planting and vegetation;

j. Addition of a new local provision – Clause 6.19 Tree protection and landscaping in Zones R2 and R3 subject to the following amendments:

Clause 6.19 Tree protection and landscaping in Zones R2 and R3

(1) The objective of this clause is to ensure any development undertaken on land in the R2 Low Density Residential and the R3 Medium Density Residential zones maintains and enhances the landscaped character of the neighbourhood and contributes to the tree canopy of the local government area.

(2) Before granting development consent to development on land to which this clause applies, the consent authority must consider the following —

(a) the extent to which the development integrates to protect existing trees, natural landscape feature (such as rock, outcrops, remnant

bushland and natural watercourses) and a well-designed landscaped setting (such as new trees, shrubs and lawns and usable open space areas); and

(b) an assessment of the current health, condition and structure of the tree(s) on the land; and

(c) an assessment of the contribution made by the existing tree(s) on the land to the natural landscape or local character of the locality including environmental, heritage, cultural and amenity factors; and

(d) the extent to which the design of the development minimises or avoids potential conflict between trees, landscape features and structures on site and on any neighbouring property, including the affectation on existing tree canopies and root systems; and

(e) the building construction methods will minimise the impact on trees and their root systems on site and on any neighbouring property; and

(f) existing trees on the site and any adjoining land can be retained with Tree Protection Zone (TPZ) being 12 x trunk diameter (DBH) when measured at 1.4 metres from ground level. (this is the calculation of the TPZ area),

(3) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied:

(a) where there are no trees on a site, one locally endemic tree reaching a mature height of 8 metres or greater is capable of being planted,

(b) when one tree is proposed to be removed, two or more advanced locally endemic species (45L pot size or greater) shall be planted or, the payment of an offset fee (per tree) calculated by an endorsed method of valuation (e.g. Thyer Method of Valuation),

(c) the site has deep soil planting areas and landscaped areas to allow for replanting of replacement trees and the creation of a landscape setting;

k. Additions to Schedule 1 Additional permitted uses comprising:

I. Insert the following allotments under Item 11 Use of certain land for a place of public worship:

a. 1142 Forest Road, Lugarno, being Lot 9, DP13473 (Lugarno Anglican Church);

b. 3A Old Forest Road, Lugarno, being Lot 18, DP13473 (Lugarno Anglican Church);

c. 3A Old Forest Road, Lugarno, being Lot 19, DP13473 (Lugarno Anglican Church); and

d. 20 River Road, Oatley, being Lot 2, Section 5, DP2297 (Oatley Gospel Church).

II. Delete the following allotments under Item 11 Use of certain land for a place of public worship and rezone to SP2 Educational Establishment and Place of Public Worship:

a. 19 Warrawee Place, Beverly Hills, being Lots 42, 43 and 44, DP13496; and

b. Addition of Item 13 Use of certain land for an office premise to ensure creative industries can be located within the industrial precincts at Penshurst Lane, Penshurst and Halstead Street, South Hurstville.

(c) That the Local Planning Panel endorses the following variations to the Planning Proposal in accordance with Section 3.35 of the Environmental Planning and Assessment Act 1979:

a. Amendment to the Land Zoning Map for 11-21 Monaro Avenue, Kingsgrove from RE1 Public Recreation to R2 Low Density Residential;

b. Amendment to the Lot Size Map for 11-21 Monaro Avenue, Kingsgrove to include a minimum lot size of 450sqm;

c. Amendment to the Height of Buildings Map for 11-21 Monaro Avenue, Kingsgrove to include a building height of 9 metres;

d. Amendment to the Floor Space Ratio Map for 11-21 Monaro Avenue, Kingsgrove to include a floor space ratio of 0.55:1 within Area 1;

e. Amendment to the Lot Size for Dual Occupancy Development Map for 11-21 Monaro Avenue, Kingsgrove to include a minimum lot size of 650sqm;

f. Amendment to the Height of Buildings Map for 33 Dora Street, Hurstville from 15 metres to 30 metres;

g. Amendment to the Floor Space Ratio Map for 360-362 Forest Road and 34 MacMahon Street, Hurstville from 3.5:1 to 6:1;

h. Amendment to the Floor Space Ratio Map for 12-16 and 26 Princes Highway, 60B Gray Street and 5 Rocky Point Road, Kogarah from no FSR to 2:1;

i. Amendment to the Lot Size for Dual Occupancy Development Map for 333-339 and 357-365 Stoney Creek Road, Kingsgrove from a 650sqm minimum lot size for dual occupancy development to no minimum lot size;

j. Amendment to the Lot Size Map for 2-16 Lime Kiln Road and 1041-1041C Forest Road, Lugarno from a 700sqm minimum lot size to no minimum lot size;

k. Amendment to the Lot Size for Dual Occupancy Development Map for 2-16 Lime Kiln Road and 1041-1041C Forest Road, Lugarno from a 1000sqm minimum lot size for dual occupancy development to no minimum lot size;

l. Amendment to the Lot Size Map for 29A Jacques Avenue, Peakhurst from an 800sqm minimum lot size to no minimum lot size;

m. Amendment to the Lot Size for Dual Occupancy Development Map for 29A Jacques Avenue, Peakhurst from a 650sqm minimum lot size for dual occupancy development to no minimum lot size;

n. Amendment to the Floor Space Ratio Map for 29A Jacques Avenue, Peakhurst from 0.7:1 to no maximum floor space ratio;

o. Amendment to the Height of Buildings Map for 29A Jacques Avenue, Peakhurst from 9 metres to no maximum height;

p. Amendment to the Height of Buildings Map for 199 Rocky Point Road, Ramsgate from 15 metres and 21 metres to 21 metres; and

q. Amendment to the Floor Space Ratio Map for 199 Rocky Point Road, Ramsgate from 2.5:1 and 1.5:1 to 2.5:1.

(d) That the Local Planning Panel endorses the amended Planning Proposal to be forwarded to the Department of Planning, Industry and Environment for gazettal in accordance with Section 3.36 of the Environmental Planning and Assessment Act 1979.

(e) That the Local Planning Panel endorses the General Manager or delegate to make minor modifications to any numerical, typographical, interpretation and formatting errors, if required, in the finalisation of the Planning Proposal to be forwarded in accordance with (d) above.

(f) That all persons who made a written and/or oral submission to the Planning Proposal and owners of the properties affected by the mapping errors in the Addendum report be advised of the Local Planning Panel's decision.

2. The Panel recommends that Council as part of the preparation of the draft Local Environmental Plan in 2021/2022, further define the role, mapped extent and zoning of Foreshore Scenic Protection Areas, in both the former Hurstville and Kogarah Local Government Areas, having regard to those properties and ridge lines visible to

and from the Georges River and its tributaries, and associated environmental protection applying to those areas in order to better reflect the objectives of Clause 6.7 of the Georges River Local Environmental Plan 2020. This may include the consideration of additional environmental protection zones or modifications of the Foreshore Scenic Protection Area.

3. *The Panel notes the existing need for additional open space in the northern portion of the Local Government Area and encourages the Council to continue to pursue and investigate all opportunities to provide such open space including the provision of additional land in the vicinity of Peter Low Reserve as part of the preparation of the draft Local Environmental Plan in 2021/2022.*

4. *The Panel also notes and duly acknowledges the high quality of the strategy research work by Council's staff to integrate (and harmonise) the controls set out in the environmental planning instruments of the former Kogarah and Hurstville Councils. This resulted in the comprehensive analysis and reporting across a range of diverse topics including a significant amount of assessment of the community comments and submissions through the challenges of the COVID-19 pandemic. Through these efforts, the Panel's task of having a full appreciation of the community's expectations was clear and concise. Moreover, the Panel's decision to retain (and expand) the Foreshore Scenic Protection Area (FSPA) boundaries was not due to draft Georges River Local Environmental Plan 2020's recommendation being unreasonable or unfounded, but rather the Panel's ultimate interpretation that the FSPA objectives which had broadened and which was a compelling factor to require a more comprehensive assessment of the landscape, vegetation and fauna habitats to address the broader objectives of FSPA in any future review of the area's boundaries.*

Appendix G2

Council Records

Our Reference: DOC19/586816

Ms. Gail Connolly
General Manager
Georges River Council
PO Box 205
HURSTVILLE NSW 1481

via email: [redacted]@georgesriver.nsw.gov.au

Dear Ms Connolly,

Discharge of Backwash Water from Carss Park Pool

The NSW Environment Protection Authority ("**EPA**") is writing to you about the release of backwash water from the Carss Park Pool that was notified to the EPA on 2 July 2019 ("**the incident**"). The EPA understands that an unknown quantity of backwash water was released from the Carss Park Pool on 2 July 2019 and potentially on multiple prior occassions, discharging via a terracotta pipe into the Georges River.

The EPA understands Georges River Council ("**Council**") operates the Carss Park Pool, located at 78 Carwar Avenue, Carss Park NSW. Under section 6 of the *Protection of the Environment Operations Act 1997* ("**the Act**"), the EPA is the appropriate regulatory authority for activities carried out by the State or a public authority. The EPA is therefore the appropriate regulatory authority for the incident.

The EPA considers that the discharge of backwash water from Carss Park Pool into the Georges River constitutes *pollution of waters* as defined in the Act:

water pollution *or* ***pollution of waters*** *means:*

(a) placing in or on, or otherwise introducing into or onto, waters (whether through an act or omission) any matter, whether solid, liquid or gaseous, so that the physical, chemical or biological condition of the waters is changed, or

(b) placing in or on, or otherwise introducing into or onto, the waters (whether through an act or omission) any refuse, litter, debris or other matter, whether solid or liquid or gaseous, so that the change in the condition of the waters or the refuse, litter, debris or other matter, either alone or together with any other refuse, litter, debris or matter present in the waters makes, or is likely to make, the waters unclean, noxious, poisonous or impure, detrimental to the health, safety, welfare or property of persons, undrinkable for farm animals, poisonous or harmful to aquatic life, animals, birds or fish in or around the waters or unsuitable for use in irrigation, or obstructs or interferes with, or is likely to obstruct or interfere with persons in the exercise or enjoyment of any right in relation to the waters, or

(c) placing in or on, or otherwise introducing into or onto, the waters (whether through an act or omission) any matter, whether solid, liquid or gaseous, that is of a prescribed nature, description or class or that does not comply with any standard prescribed in respect of that matter,

and, without affecting the generality of the foregoing, includes:

(d) placing any matter (whether solid, liquid or gaseous) in a position where:

(i) it falls, descends, is washed, is blown or percolates, or

(ii) it is likely to fall, descend, be washed, be blown or percolate, into any waters, onto the dry bed of any waters, or into any drain, channel or gutter used or designed to receive or pass rainwater, floodwater or any water that is not polluted, or

(e) placing any such matter on the dry bed of any waters, or in any drain, channel or gutter used or designed to receive or pass rainwater, floodwater or any water that is not polluted, if the matter would, had it been placed in any waters, have polluted or have been likely to pollute those waters.

It is an offence under section 120 of the Act to pollute waters in New South Wales. This offence carries a maximum penalty of $1,000,000 for a corporation and, in the case of a continuing offence, a further penalty of $120,000 for each day the offence continues.

The EPA requires that Council undertake immediate action to prevent the occurrence of any further backwash discharge events. Failure to do so will place Council in breach of section 120 of the Act.

Further, the EPA requires Council to prepare a management plan outlining proposed backwash management procedures for the Carss Park Pool. The plan should include the ongoing storage, handling and disposal techniques proposed for the backwash to ensure that waters are not polluted, and a timetable for implementation. The management plan is to be submitted to the EPA via the *Director, Sydney Industry* at metro.regulation@epa.nsw.gov.au by no later than **5pm on 31 July 2019.**

The EPA will contact Council in the near future to organise a meeting to discuss the incident and Council's proposed method of preventing further discharges.

If you have any questions or wish to discuss this matter, please contact me on [redacted]

Yours sincerely

[redacted]

A/Director, Sydney Industry
Environment Protection Authority

9 July 2019

From: [redacted]@epa.nsw.gov.au>

Sent: Monday, 22 July 2019 1:15 PM

Subject: Carss Park Pool Discharge

Hi [redacted]

As discussed, the EPA understands that damage to the structural integrity of the Carss Park Pool has resulted in an unknown quantity of chlorinated pool water leaking from the pool into the Georges River over an unknown period of time.

The EPA considers that the discharge of any waters from Carss Parks Pool into the Georges River constitutes *pollution of waters* as defined in the *Protection of the Environment Operations Act 1997* ("**the Act**").

The EPA requires that Council undertake immediate action to prevent pool water leaking from the Carss Park Pool into the Georges River. Failure to do so will place Council in breach of section 120 of the Act.

Kind regards,

[redacted]

Regional Operations Officer – Sydney Industry

Metropolitan Branch, NSW Environment Protection Authority

T +61 [redacted] | E [redacted]@epa.nsw.gov.au

Report pollution and environmental incidents 131 555 (NSW only) or +61 2 9995 5555

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PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING THIS EMAIL

GEORGES RIVER COUNCIL

OFFICE OF THE GENERAL MANAGER

Acting Executive Assistant: [redacted]
Direct Telephone: [redacted]
File Reference: D19/158813, D19/173842

30 July 2019

[redacted]
Director Sydney Industry
NSW Environment Protection Authority
PO Box 668
PARRAMATTA NSW 2124

Dear [redacted]

Pollution Incidents – Kogarah War Memorial Pool (Carss Park Swimming Pool) 74-78 Carwar Avenue, Carss Park

I refer to the above matter and previous correspondence from the EPA to Council specifically dated 9 and 22 July 2019.

As the EPA is aware Council identified two separate point source water pollution incidents associated with the Kogarah War Memorial Pool. The first incident occurred on 2 July due to a discharge from a backwash overflow pipe and the second on 22 July from a subsoil drainage system discharging warm chlorinated water collected from uncontrollable leaks due to the failure of the pool structure.

Whilst Council was able to put measures in place to prevent the water pollution from the first pollution incident, Council was unable to control the leaks in the pool structure which lead to the second incident. In addition to these discharges Council became aware of a third source of water pollution associated with the Pool. Leaks occurring below ground level directly attributed to the pool's age, deteriorated condition and ground subsidence (which were not collected by the subsoil drainage system) have also entered the Georges River via uncontrollable subsoil seepage.

Therefore, I made the decision on 22 July to drain and close the Kogarah War Memorial Pool as this was considered the only practical means available to prevent the continued water pollution of the Georges River.

Georges River Civic Centre Corner MacMahon and Dora Streets, Hurstville
Kogarah Library and Service Centre Kogarah Town Square, Belgrave Street, Kogarah
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I note that the EPA's correspondence specifically required Council to:

- prepare a management plan outlining proposed backwash management procedures for the Carss Park Pool to be submitted to the EPA by no later than 5pm on 31 July 2019 (EPA letter 9 July) and
- 22 July - undertake immediate action to prevent pool water leaking from the Carss Park Pool into the Georges River (EPA email 22 July).

Council submits that the closure and draining of the pool which was completed on 25 July has addressed both of the above EPA requirements. A follow-up inspection on 30 July confirmed that the subsoil drainage discharge has now ceased flowing.

I would also like to reaffirm that despite misrepresentation in the media and the community at large, Council has never stated that the EPA directed closure of the pool.

Should you require any further information please contact Andrew Spooner, Manager Environment, Health and Regulatory Services on 9330 6413.

Yours sincerely

Gail Connolly
General Manager

Georges River Civic Centre Corner MacMahon and Dora Streets, Hurstville
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GEORGES RIVER COUNCIL

OFFICE OF THE GENERAL MANAGER

Acting Executive Assistant: [redacted]
Direct Telephone: [redacted]
File Reference: D19/179920

5 August 2019

[redacted]
Director and Public Health Officer, Public Health Unit
Planning, Population Health and Equity
South Eastern Sydney Local Health District
Locked Bag 88
RANDWICK NSW 2031

[redacted]

Kogarah War Memorial Pool – Swimming Pool Inspection Report

I refer to the above report which was provided to Council following an inspection of the Kogarah War Memorial Pool on 2 July 2019 by an Environmental Health Officer from the South Eastern Sydney Public Health Unit.

Specifically the report recommended that Council address the following matters:

1. Maintenance works required including:

    - Clean or replace the tiles in the Olympic pool that are stained.
    - Remove sand from the toddler pool, repairs may be required to the filters to ensure that the sand does not enter the pools.
    - Repairing of walkways and surfaces around the pool to ensure that water can adequately drain from the pool and cleaning can be undertaken effectively.
    - Replace metal bases on the pillars around the pool which have rusted.
    - Replace or clean stained flooring, walls in the male and female facilities.
    - Replace missing tiles in both males and females facilities.
    - Repair the ceiling within both male and female facilities.
    - Repair the bunding around the liquid chlorine in the plant room to ensure that it can effectively contain any spills.

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2. Install hand drying facilities in the male and female toilets.

3. Install nappy change facilities in the toilets, as well as a dedicated waste bin for soiled nappies.

The Kogarah War Memorial Pool was initially closed on 22 July 2019 for two weeks of scheduled winter maintenance where Council also planned to commence works to address the above recommendations. However, the identification of two separate pollution incidents from subsoil discharges of warm chlorinated water into the Georges River (due to the failure of the pool structure) resulted in Council's decision on 22 July 2019 to drain and permanently close the pool.

As the pool will not be operating the only recommendation contained within the report that remains to be actioned is the requirement to repair the bunding around the liquid chlorine storage. As it is not practical to repair the bunding, arrangements have been made for a contractor to remove and appropriately dispose of the liquid chlorine. These works will be completed during the decommissioning of the facility this week.

Should you require any further information please contact Mr Andrew Spooner, Council's Manager Environment, Health and Regulatory Services on 9330 6413.

Yours faithfully

Gail Connolly
General Manager

Georges River Civic Centre Corner MacMahon and Dora Streets, Hurstville
Kogarah Library and Service Centre Kogarah Town Square, Belgrave Street, Kogarah
Phone: 9330 6400 | **Email:** mail@georgesriver.nsw.gov.au | **Postal address:** PO Box 205, Hurstville NSW 1481

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Appendix H

Field Sheets

Appendix H1

Descriptive Notes, Borehole Logs, Test Pit Logs

Symbols & Abbreviations

Douglas Partners

Introduction

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

Drilling or Excavation Methods

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

Water

▷	Water seep
▽	Water level

Sampling and Testing

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

Description of Defects in Rock

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

Defect Type

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

Orientation

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

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

Coating or Infilling Term

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

Coating Descriptor

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

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

Symbols & Abbreviations

Graphic Symbols for Soil and Rock

General

- Asphalt
- Road base
- Concrete
- Filling

Soils

- Topsoil
- Peat
- Clay
- Silty clay
- Sandy clay
- Gravelly clay
- Shaly clay
- Silt
- Clayey silt
- Sandy silt
- Sand
- Clayey sand
- Silty sand
- Gravel
- Sandy gravel
- Cobbles, boulders
- Talus

Sedimentary Rocks

- Boulder conglomerate
- Conglomerate
- Conglomeratic sandstone
- Sandstone
- Siltstone
- Laminite
- Mudstone, claystone, shale
- Coal
- Limestone

Metamorphic Rocks

- Slate, phyllite, schist
- Gneiss
- Quartzite

Igneous Rocks

- Granite
- Dolerite, basalt, andesite
- Dacite, epidote
- Tuff, breccia
- Porphyry

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.2 AHD
EASTING: 326369
NORTHING: 6237466
DIP/AZIMUTH: 90°/--

BORE No: BH101 (E)
PROJECT No: 99751.00
DATE: 23 - 24/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.06	ASPHALTIC CONCRETE							
	0.2	FILL/ROADBASE (Gravelly SAND): fine to medium, dark grey-brown, angular-subangular igneous gravel (20mm), dry, apparently well compacted		E	0.1 0.2		PID<1 ppm		
				E*	0.3 0.5		PID1.5 ppm		
	0.7	FILL/Gravelly SAND: fine to medium, brown, with pale grey and red brown clay clumps, trace fine to medium igneous gravel, rootlets, trace tile, pottery. brick and glass fragments, dry.		E	0.7 0.8		PID<1 ppm		
	1	FILL/Silty SAND: fine to medium, dark brown, with igneous gravel, trace clay, organic, matter, with brick fragments and rootlets, humid.							1
				E	1.4 1.6		PID<1 ppm		
		Slight hydrocarbon odour at 1.8m							
	2								2
		Wet at 2.2m		E	2.1 2.2		PID1.4 ppm	23-07-20	
				E			PID3.4 ppm		
	2.7	Bore discontinued at 2.7m - Refusal on Timber			2.7				
	3								3
	4								4
	5								5
	6								6

RIG: Geoprobe 7722DT **DRILLER:** Matrix **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Push tube to 2.2m, solid flight auger to 2.7m

WATER OBSERVATIONS: Groundwater observed at 2.2m

REMARKS: Location coordinates are in MGA94 Zone 56. *Replicate BD1/20200723 taken from 0.3-0.5m. Location within 1m of geotechnical borehole BH101(G).

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.6 AHD
EASTING: 326335
NORTHING: 6237443
DIP/AZIMUTH: 90°/--

BORE No: BH102 (E)
PROJECT No: 99751.00
DATE: 23/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.02	ASPHALTIC CONCRETE							
	0.2	FILL/ROADBASE (Gravelly SAND): fine to medium, dark grey-brown, angular-subangular igneous gravel (20mm), dry, apparently well compacted.		E	0.1		PID<1 ppm		
	0.3			E	0.2		PID<1 ppm		
	0.35	FILL/Sandy GRAVEL: fine to medium, grey, with igneous gravel and clay, humid.			0.3				
		FILL/SAND: fine to medium, grey, with trace igneous gravel, humid.		E	0.4		PID<1 ppm		
		FILL/Silty SAND: fine to medium, dark grey, brown and black, with igneous gravel and trace clay, some glass, brick, plastic, metal and rubber fragments, trace rootlets and organic matter, humid.			0.6				
		Crushed sandstone boulder at 0.6m			0.8				
		(Limited return in pushtube from 1.0-2.0m)		E*	1.0		PID<1 ppm		
					1.6				
				E			PID2.2 ppm		
	2.0	FILL/Clayey SAND: fine to medium, dark grey, with igneous gravel, organic matter, rootlets, plastic, rubber fragments, trace ash, humid to wet.			2.0				
		Wet at 2.2m						23-07-20	
					2.5				
		Slight hydrocarbon odour from 2.2m		E			PID14 ppm		
	3.0	Bore discontinued at 3.0m - Refusal on Concrete			3.0				

RIG: Geoprobe 7722DT **DRILLER:** Matrix **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Push tube to 3.0m

WATER OBSERVATIONS: Groundwater observed at 2.2m

REMARKS: Location coordinates are in MGA94 Zone 56. *Replicate BD2/20200723 taken from 0.8-1.0m. Location within 1m of geotechnical borehole BH102(G).

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 4.7 AHD
EASTING: 326331
NORTHING: 6237415
DIP/AZIMUTH: 90°/--

BORE No: BH103 (E)
PROJECT No: 99751.00
DATE: 23/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.03	ASPHALTIC CONCRETE							
		FILL/ROADBASE (Gravelly SAND): fine to medium, dark grey-brown, angular-subangular igneous gravel (20mm), dry, apparently well compacted.		E	0.1 0.2		PID<1 ppm		
	0.4	FILL/Gravelly SAND: fine to medium, brown, yellow and orange, with clay, sandstone and igneous gravel, timber, ironstone, brick and glass fragments, trace rootlets, dry to humid.		E	0.4 0.5		PID<1 ppm		
	1			E	0.9 1.0		PID1.2 ppm		1
				E	1.4		PID1.1 ppm		
	1.6	FILL/Silty SAND: fine to medium, brown and grey, with igneous and sandstone gravel, trace clay, wood and wood ash fragments, humid.		E*	1.6 1.8		PID<1 ppm		
	2								2
				E	2.3 2.5		PID2.5 ppm		
		Wood ash at 2.8m.		E	2.8		PID3.7 ppm		
	3 3.0	Bore discontinued at 3.0m - Refusal on Timber			3.0				3
	4								4
	5								5
	6								6

RIG: Geoprobe 7722DT **DRILLER:** Matrix **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Push tube to 3.0m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Location coordinates are in MGA94 Zone 56. *Replicate BD3/20200723 taken from 1.6-1.8m. Location within 1m of geotechnical borehole BH103(G).

SAMPLING & IN SITU TESTING LEGEND

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

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 4.8 AHD
EASTING: 326351
NORTHING: 6237391
DIP/AZIMUTH: 90°/--

BORE No: BH104 (E)
PROJECT No: 99751.00
DATE: 23 - 24/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.05	ASPHALTIC CONCRETE							
		FILL/ROADBASE (Gravelly SAND): fine to medium, dark grey-brown, angular-subangular igneous gravel (20mm), dry, apparently well compacted		E	0.1 0.2		PID<1 ppm		
	0.4	FILL/Gravelly SAND: fine to medium, brown, yellow and orange, with sandstone and igneous gravel, timber, ironstone and brick fragments, trace rootlets, dry to humid.		E	0.4 0.5		PID1.8 ppm		
4	0.8	Ironstone boulder at 0.7m							
	1	FILL/SAND: fine to medium, brown and grey, with igneous and sandstone gravel, clay, trace silt, wood and wood ash fragments, humid.		E	0.9 1.1		PID<1 ppm		1
3				E	1.5 1.7		PID4.1 ppm		
	2	(Limited pushtube return from 2.0-2.6m)		E	2.1		PID6.7 ppm		2
2				E	2.6		PID5.1 ppm		
	3								3
	3.1	Bore discontinued at 3.1m - Refusal on Timber			3.1				
1	4								4
0	5								5
-1	6								6

RIG: Geoprobe 7722DT **DRILLER:** Matrix **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Push tube to 2.6m, solid flight auger to 3.1m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Location coordinates are in MGA94 Zone 56. Location within 1m of geotechnical borehole BH104(G).

SAMPLING & IN SITU TESTING LEGEND

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

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 6.9 AHD
EASTING: 326365
NORTHING: 6237364
DIP/AZIMUTH: 90°/--

BORE No: BH105 (E)
PROJECT No: 99751.00
DATE: 23/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.2	FILL/Silty SAND: fine to medium, dark grey, with rootlets, trace organic matter and igneous gravel, humid.		E	0.1 0.2		PID7.4 ppm		
	0.7	FILL/SAND: fine to medium, yellow-brown, trace sandstone gravel, trace clay, rootlets and sandstone cobbles, dry.		E*	0.4 0.5		PID<1 ppm		
	1.2	FILL/ SAND: fine to medium, grey and red-brown, with sandstone and ironstone gravel, trace clay, sandstone cobbles and rootlets, dry.		E	0.7 0.8		PID<1 ppm		
	1.7	FILL/Gravelly SAND: fine to coarse, yellow, brown and orange, with sandstone gravel, trace clay, rootlets and sandstone cobbles, humid.		E E	1.2 1.3 1.6 1.7		PID<1 ppm PID<1 ppm		
		Bore discontinued at 1.7m - Refusal on inferred sandstone bedrock							

RIG: Geoprobe 7722DT **DRILLER:** Matrix **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Push tube to 1.7m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Location coordinates are in MGA94 Zone 56. *Replicate BD2/20200724 taken from 0.4-0.5m. Location within 1m of geotechnical borehole BH105(G).

SAMPLING & IN SITU TESTING LEGEND

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

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.6 AHD
EASTING: 326354
NORTHING: 6237412
DIP/AZIMUTH: 90°/--

BORE No: BH106 (E)
PROJECT No: 99751.00
DATE: 23 - 24/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.05	ASPHALTIC CONCRETE							Gatic Cover
	0.2	FILL/ROADBASE (Gravelly SAND): fine to medium, dark grey-brown, angular-subangular igneous gravel (20mm), dry, apparently well compacted.		E	0.1 / 0.19		PID4.9 ppm		Grout 0.0-0.3m
		FILL/Gravelly SAND: fine to medium, dark grey and brown, with igneous and sandstone gravel, trace silt and clay, rootlets and organic matter, with brick and ironstone fragments, humid.		E	0.21 / 0.4		PID3.1 ppm		Bentonite 0.3-1.0m
	1			E	0.8 / 1.0		PID12 ppm		
	1.3	FILL/Clayey SAND: fine to medium, dark grey, brown, black and red, with igneous and sandstone gravel, trace silt, with ash, wood ash, shells and organic matter, humid.		E	1.3 / 1.5		PID9.1 ppm		
	2			E	2.1		PID8.3 ppm		Sand 1.5-4.5m
	2.3	FILL/Gravelly Sand: fine to coarse, dark grey and brown, with trace silt and clay, igneous and sandstone gravel, shell, timber, plastic, metal and glass fragments, rootlets and organic matter, wet.			2.3 / 2.5			23-07-20	
		Slight hydrocarbon odour from 2.3m		E			PID8.7 ppm		
	3	(Limited pushtube return 2.3-4.0m)		E	3.0		PID4.2 ppm		Pre-packed machine slotted PVC screen 1.5-4.5m
				E	3.5		PID4.0 ppm		
	4			E	4.0		PID3.1 ppm		
	4.6	Bore discontinued at 4.6m - Refusal on unknown obstruction in fill		E	4.5 / 4.6		PID5.1 ppm		End Cap
	5								
	6								

RIG: Geoprobe 7722DT **DRILLER:** Matrix **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Push tube to 4.0m, solid flight auger to 4.5m

WATER OBSERVATIONS: Groundwater observed at 2.3m

REMARKS: Location coordinates are in MGA94 Zone 56. Location within 1m of geotechnical borehole BH106(G).

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.3 AHD
EASTING: 326349
NORTHING: 6237457
DIP/AZIMUTH: 90°/--

BORE No: BH107
PROJECT No: 99751.00
DATE: 23 - 24/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.05	ASPHALTIC CONCRETE							Gatic Cover
	0.1			E	0.1		PID<1 ppm		
	0.2	FILL/ROADBASE (Gravelly SAND): fine to medium, dark grey-brown, angular-subangular igneous gravel (20mm), dry, apparently well compacted.		E	0.2		PID<1 ppm		
		FILL/Silty SAND: fine to medium, dark grey and brown with rootlets, trace igneous gravel, humid.			0.3				Grout 0.0-0.9m
		FILL/Gravelly SAND: fine to medium, brown, grey and orange, with igneous and sandstone gravel, silt, trace clay, rootlets, brick and concrete fragments, humid.		E	0.7 0.8		PID<1 ppm		
	1								1
									Bentonite 0.9-1.5m
				E	1.3		PID1.3 ppm		
	1.4	FILL/Clayey SAND: fine to medium, dark grey and brown, with trace igneous gravel, sandstone cobbles, organic matter, rootlets and concrete fragments, humid.		E	1.4 1.5		PID6.2 ppm		
				E	1.8		PID4.9 ppm		
	2								2
	2.0	FILL/Gravelly SAND: fine to coarse, dark grey and brown, with trace silt and clay, igneous and sandstone gravel, shell, timber, plastic, metal and glass fragments, rootlets and organic matter, wet.		E	2.0		PID2.3 ppm	23-07-20	
					2.5				Sand 1.5 to 5.1m
		Slight hydrocarbon odour from 2.0 to 4.5m		E			PID5.0 ppm		
	3				3.0				3
				E			PID1.3 ppm		
		Becoming Silty SAND Fill at 3.5m			3.5				Pre-packed machine slotted PVC screen 2.0-5.0m
	4								4
	4.5	Sandy CLAY: medium plasticity, grey, pale brown and orange mottled, trace silt and organic matter, wet.			4.5				
				E			PID2.8 ppm		
	5				5.0				5 End Cap
	5.1	Bore discontinued at 5.1m - Target depth achieved							
	6								6

RIG: Geoprobe 7722DT **DRILLER:** Matrix **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Push tube to 5.0m, solid flight auger to 5.1m

WATER OBSERVATIONS: Groundwater observed at 2.1m

REMARKS: Location coordinates are in MGA94 Zone 56. Slight sulfur odour from 1.4m.

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.6 AHD
EASTING: 326419
NORTHING: 6237435
DIP/AZIMUTH: 90°/--

BORE No: BH108
PROJECT No: 99751.00
DATE: 23 - 24/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILL/Silty SAND: fine to medium, brown and grey, with trace igneous and sandstone gravel, rootlets, organic matter, with brick fragments and trace plastic fragments, humid.		E	0.1 0.2		PID<1ppm		Gatic Cover Grout 0.0-0.3m
	0.6	FILL/Sandy CLAY: low plasticity, brown, grey and yellow, with trace silt, igneous and sandstone gravel, with trace ironstone, plastic, timber and metal fragments, humid.		E E	0.6 0.8 0.9		PID<1ppm PID<1ppm		Bentonite 0.3-1.0m
	1.1	FILL/Clayey SAND: fine to medium, dark grey, brown, black and red, with igneous and sandstone gravel, trace silt, ash, wood ash, shells and organic matter, PACM, humid. Slight hydrocarbon odour from 1.1 to 4.7m			1.1				
		Sandstone boulder at 2.0m		E	2.0 2.9 3.0 3.5		PID<1ppm PID1.1 ppm	23-07-20	Sand 1.0-5.0m Pre-packed machine slotted PVC screen 2.0-5.0m
	4.0	FILL/Clayey SAND: fine to medium, dark grey with trace silt, igneous gravel and organic matter, wet.		E	4.0 4.5		PID1.2 ppm		
	4.7	Sandy CLAY: medium plasticity, grey, pale brown and orange mottled, trace silt and organic matter, apparently firm, wet.		E	4.7		PID1.1 ppm		End Cap
	5.0	Bore discontinued at 5.0m - Target depth achieved			5.0				

RIG: Geoprobe 7722DT **DRILLER:** Matrix **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Push tube to 4.2m, solid flight auger to 5.0m

WATER OBSERVATIONS: Groundwater observed at 2.1m

REMARKS: Location coordinates are in MGA94 Zone 56. Slight sulfur odour from 1.8m.

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.8 AHD
EASTING: 326418
NORTHING: 6237410
DIP/AZIMUTH: 90°/--

BORE No: BH109
PROJECT No: 99751.00
DATE: 23 - 24/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILL/Silty SAND: fine to medium, brown and grey, with trace igneous and sandstone gravel, rootlets, organic matter, brick fragments and trace plastic fragments, humid.		E	0.1 0.2		PID<1ppm		Gatic Cover
		Crushed sandstone layer 0.2-0.25							Grout 0.0-0.9m
				E	0.5 0.7		PID<1ppm		
	0.8	FILL/Sandy CLAY: low plasticity, brown, grey and yellow, with trace silt, igneous and sandstone gravel, ironstone, plastic, timber and metal fragments, humid.		E	0.8 1.0		PID1.5 ppm		
				E	1.5 1.6		PID<1ppm		Bentonite 0.9-2.4m
	1.8	FILL/Clayey SAND: fine to medium, dark grey, brown, black and red, with igneous and sandstone gravel, trace silt, ash, wood ash, shells and organic matter, humid.		E*	1.8 2.0		PID<1ppm	23-07-20	
		(Limited pushtube return 2.5-3.5m)			2.5				
		Slight hydrocarbon odour from 1.8m to 5.5m		E	3.0		PID2.5 ppm		
	3.5	FILL/Clayey SAND: fine to medium, dark grey with trace silt, igneous gravel and organic matter, wet.			3.5				Sand 2.4-6.0m
				E	4.5		PID1.3 ppm		Pre-packed machine slotted PVC screen 3.0-6.0m
				E	5.0		PID<1ppm		
	5.5	Sandy CLAY: medium plasticity, grey, pale brown and orange mottled, trace silt and organic matter, wet.		E	5.5		PID1.1 ppm		End Cap
	6.0	Bore discontinued at 6.0m - Target depth achieved			6.0				

RIG: Geoprobe 7722DT **DRILLER:** Matrix **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Push tube to 5.0m, solid flight auger to 6.0m

WATER OBSERVATIONS: Groundwater observed at 2.1m

REMARKS: Location coordinates are in MGA94 Zone 56. *Replicate BD1/20200724 taken from 1.8-2.0m. Slight sulfur odour from 1.8m.

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.8 AHD
EASTING: 326416
NORTHING: 6237381
DIP/AZIMUTH: 90°/--

BORE No: BH110
PROJECT No: 99751.00
DATE: 23 - 24/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILL/Silty SAND: fine to medium, brown and grey, with trace igneous and sandstone gravel, rootlets, organic matter, brick fragments and trace plastic fragments, humid.		E	0.1 0.2		PID<1ppm		Gatic Cover Grout 0.0-0.3m
	0.7			E*	0.6 0.7		PID<1ppm		Bentonite 0.3-1.0m
		FILL/Sandy CLAY: low plasticity, brown, grey and yellow, with trace silt, igneous and sandstone gravel, trace ironstone, plastic, timber and metal fragments, humid.		E	0.9		PID<1ppm		
		Slight hydrocarbon odour from 1.4m to 4.5m		E	1.6 1.8		PID<1ppm		
	2.2	FILL/Gravelly SAND: fine to coarse, dark grey and brown, with trace silt and clay, igneous and sandstone gravel, shell, timber, plastic, metal and glass fragments, rootlets and organic matter, wet.		E	2.2 2.7		PID2.1 ppm	23-07-20	Sand 1.0-5.0m
	3.0	FILL/Clayey SAND: fine to medium, dark grey with trace silt, igneous gravel and organic matter, wet.		E	3.0		PID2.9 ppm		
				E	3.5		PID4.3 ppm		Pre-packed machine slotted PVC screen 2.0-5.0m
				E	4.0		PID3.5 ppm		
	4.5	Sandy CLAY: medium plasticity, grey, pale brown and orange mottled, trace silt and organic matter, apparently firm, wet.		E	4.5		PID2.0 pm		End Cap
	5.0	Bore discontinued at 5.0m - Target depth achieved			5.0				

RIG: Geoprobe 7722DT **DRILLER:** Matrix **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Push tube to 4.5m, solid flight auger to 5.0m

WATER OBSERVATIONS: Groundwater observed at 2.1m

REMARKS: Location coordinates are in MGA94 Zone 56. *Replicate BD3/20200724 taken from 0.6-0.7m. Slight sulfur odour from 2.2m.

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.6 AHD
EASTING: 326346
NORTHING: 6237422
DIP/AZIMUTH: 90°/--

BORE No: BH111
PROJECT No: 99751.00
DATE: 23/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.05	ASPHALTIC CONCRETE							
	0.2	FILL/ROADBASE (Gravelly SAND): fine to medium, dark grey-brown, angular-subangular igneous gravel (20mm), dry, apparently well compacted.		E	0.1		PID<1ppm		
				E	0.2		PID<1ppm		
		FILL/Gravelly SAND: fine to medium, dark brown, yellow and grey, igneous and sandstone gravel, trace silt and clay, rootlets and organic matter, brick and ironstone fragments, humid.			0.4				
				E*	0.8		PID<1ppm		
	1.1				1.0				
	1.2	FILL/SAND: fine to medium, grey, with trace clay, dry.		E	1.1		PID<1ppm		
		FILL/Clayey SAND: fine to medium, dark grey, brown, black and red, with igneous and sandstone gravel, trace silt, ash, wood ash, shells and organic matter, humid.		E	1.2		PID1.9 ppm		
					1.4				
				E	1.7		PID11 ppm		
					1.8				
				E	2.2		PID7.4 ppm		
	2.4	FILL/Gravelly SAND: fine to coarse, dark grey and brown, with trace silt and clay, igneous and sandstone gravel, shell, timber, plastic, metal and glass fragments, rootlets and organic matter, wet.			2.4			23-07-20	
				E			PID9.1 ppm		
					2.8				
		Slight hydrocarbon odour from 2.4 to 5.0m							
		(Limited pushtube return 2.4-5.0m)			3.6				
				E			PID3.7 ppm		
					4.0				
					4.5				
				E			PID1.9 ppm		
	5.0	Bore discontinued at 5.0m - Target depth achieved			5.0				

RIG: Geoprobe 7722DT **DRILLER:** Matrix **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Push tube to 5.0m

WATER OBSERVATIONS: Groundwater observed at 2.4m

REMARKS: Location coordinates are in MGA94 Zone 56. *Replicate BD5/20200723 taken from 0.8-1.0m.

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.3 AHD
EASTING: 326362
NORTHING: 6237438
DIP/AZIMUTH: 90°/--

BORE No: BH112
PROJECT No: 99751.00
DATE: 23/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.05	ASPHALTIC CONCRETE							
	0.2	FILL/ROADBASE (Gravelly SAND): fine to medium, dark grey-brown, angular-subangular igneous gravel (20mm), dry, apparently well compacted.							
		FILL/Gravelly SAND: fine to medium, dark brown, yellow and grey, with igneous and sandstone gravel, trace silt and clay, rootlets and organic matter, brick and ironstone fragments, humid.		E	0.1		PID1.2 ppm		
				E*	0.2		PID<1ppm		
					0.4				
				E	0.8		PID<1ppm		
					0.9				
				E	1.1		PID<1ppm		
	1.3	FILL/Clayey SAND: fine to medium, dark grey, brown, black and red, with igneous and sandstone gravel, trace silt, ash, wood ash, shells and organic matter, humid.			1.3				
				E	1.4		PID<1ppm		
					1.6				
				E	1.9		PID1.3 ppm		
					2.1				
	2.2	FILL/Gravelly SAND: fine to coarse, dark grey and brown, with trace silt and clay, igneous and sandstone gravel, shell, timber, plastic, metal and glass fragments, rootlets and organic matter, wet.			2.2			23-07-20	
				E			PID1.2 ppm		
					2.6				
		Slight hydrocarbon odour from 2.2m							
		(Limited pushtube return 2.2-4.0m)							
					3.5				
				E			PID1.3 ppm		
	4.0	Bore discontinued at 4.0m - Refusal on Timber			4.0				

RIG: Geoprobe 7722DT **DRILLER:** Matrix **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Push tube to 4.0m

WATER OBSERVATIONS: Groundwater observed at 2.2m

REMARKS: Location coordinates are in MGA94 Zone 56. *Replicate BD4/20200723 taken from 0.2-0.4m.

SAMPLING & IN SITU TESTING LEGEND

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

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 4.2 AHD
EASTING: 326367
NORTHING: 6237399
DIP/AZIMUTH: 90°/--

BORE No: BH113
PROJECT No: 99751.00
DATE: 22/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		CONCRETE SLAB							
	0.2	VOID							
	0.8	FILL/SAND: fine to medium, yellow and pale brown, with trace clay organic matter and rootlets, dry.		E	0.9 1.0		PID<1 ppm		
	1.1	Bore discontinued at 1.1m - Collapse in sand							

RIG: Hand Tools **DRILLER:** TG **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Diacore to 0.2m, Hand Auger to 1.1m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 4.3 AHD
EASTING: 326375
NORTHING: 6237421
DIP/AZIMUTH: 90°/--

BORE No: BH114
PROJECT No: 99751.00
DATE: 22/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.2	CONCRETE SLAB							
		VOID							
	0.7	FILL/SAND: fine to medium, yellow and pale brown, with trace clay organic matter and rootlets, dry.		E	0.7 0.8		PID<1 ppm		
	1.1	Bore discontinued at 1.1m - Collapse in sand							

RIG: Hand Tools **DRILLER:** TG **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Diacore to 0.2m, Hand Auger to 1.1m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 4.2 AHD
EASTING: 326378
NORTHING: 6237445
DIP/AZIMUTH: 90°/--

BORE No: BH115
PROJECT No: 99751.00
DATE: 22/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		CONCRETE SLAB							
	0.2	VOID							
	1.4	FILL/SAND: fine to medium, yellow and pale brown, with trace clay organic matter and rootlets, dry.		E	1.5 1.6		PID<1ppm		
	1.7	Bore discontinued at 1.7m - Collapse in sand							

RIG: Hand Tools **DRILLER:** TG **LOGGED:** TG **CASING:** nil
TYPE OF BORING: Diacore to 0.2m, Hand Auger to 1.7m
WATER OBSERVATIONS: No free groundwater observed
REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

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

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 2.9 AHD
EASTING: 326410
NORTHING: 6237435
DIP/AZIMUTH: 90°/--

BORE No: BH116
PROJECT No: 99751.00
DATE: 22/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		CONCRETE SLAB							
	0.2	FILL/SAND: fine to medium, pale brown, with shell fragments and trace silt, humid to wet.		E*	0.2 0.3		PID<1ppm		
	1			E	0.9 1.0		PID<1ppm		1
		Wet at 1.5m		E	1.5 1.6		PID<1ppm	22-07-20	
	1.7	FILL/Clayey SAND: fine to medium, dark grey with trace shell fragments and igneous gravel, wet.		E	1.8 1.9		PID<1ppm		
	2 2.0	Bore discontinued at 2.0m - Target depth achieved							2
	3								3
	4								4
	5								5
	6								6

RIG: Hand Tools **DRILLER:** TG **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Diacore to 0.2m, Hand Auger to 2.0m

WATER OBSERVATIONS: Groundwater observed at 1.5m

REMARKS: Location coordinates are in MGA94 Zone 56. *Replicate BD1/20200722 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	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 2.3 AHD
EASTING: 326410
NORTHING: 6237435
DIP/AZIMUTH: 90°/--

BORE No: BH117
PROJECT No: 99751.00
DATE: 25/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.2	CONCRETE SLAB							
		FILL/SAND: fine to medium, dark grey and pale brown, with trace igneous gravel, clay, silt and shell fragments, humid to wet.		E	0.2		PID2.1 ppm		
				E	0.4		PID<1ppm		
				E	0.6		PID<1ppm		
	0.8	Bore discontinued at 0.8m - Refusal on sandstone boulder			0.8				
	1								1
	2								2
	3								3
	4								4
	5								5
	6								6

RIG: Hand Tools **DRILLER:** TG **LOGGED:** TG **CASING:** nil
TYPE OF BORING: Diacore to 0.2m, Hand Auger to 0.8m
WATER OBSERVATIONS: No free groundwater observed
REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

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

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 2.2 AHD
EASTING: 326396
NORTHING: 6237425
DIP/AZIMUTH: 90°/--

BORE No: BH118
PROJECT No: 99751.00
DATE: 22/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.2	CONCRETE SLAB							
		FILL/SAND: fine to medium, dark grey and pale brown, with trace igneous gravel, clay, silt and shell fragments, humid to wet.		E	0.2 0.3		PID<1ppm		
				E	0.4 0.5		PID1.8 ppm		
				E	0.7 0.8		PID<1ppm	22-07-20	
				E	0.9		PID<1ppm		
	0.9	FILL/Clayey SAND: fine to medium, dark grey and brown, with trace igneous gravel, rootlets, organic matter and shell fragments, wet.		E	1.0		PID<1ppm		
				E	1.2 1.3		PID1.1 ppm		
				E	1.4 1.5		PID1.4 ppm		
				E	1.7 1.8		PID<1ppm		
				E*	1.9 2.0		PID1.3 ppm		
	2.0	Bore discontinued at 2.0m - Target depth achieved							

RIG: Hand Tools **DRILLER:** TG **LOGGED:** TG **CASING:** nil

TYPE OF BORING: Diacore to 0.2m, Hand Auger to 2.0m

WATER OBSERVATIONS: Groundwater observed at 0.7m

REMARKS: Location coordinates are in MGA94 Zone 56. *Replicate BD2/20200722 taken from 1.9-2.0m.

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 2.0 AHD
EASTING: 326406
NORTHING: 6237414
DIP/AZIMUTH: 90°/--

BORE No: BH119
PROJECT No: 99751.00
DATE: 25/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		CONCRETE SLAB							
	0.2	FILL/SAND: fine to medium, dark grey and pale brown, with trace igneous gravel, clay, silt and shell fragments, ash and clinker, humid to wet.		E	0.2		PID<1ppm		
				E	0.4		PID<1ppm		
	0.6	Bore discontinued at 0.6m - Refusal on sandstone boulder			0.6				

RIG: Hand Tools **DRILLER:** TG **LOGGED:** TG **CASING:** nil
TYPE OF BORING: Diacore to 0.2m, Hand Auger to 0.6m
WATER OBSERVATIONS: No free groundwater observed
REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
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TEST PIT LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.5 AHD
EASTING: 326378
NORTHING: 6237402

PIT No: TP120
PROJECT No: 99751.00
DATE: 28/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL (Silty SAND): fine to medium, brown and yellow, with rootlets and organic matter, humid.		E	0.0 0.1		PID<1ppm		
	0.5	FILL/SAND: fine to medium, brown and pale grey, with trace silt and igneous gravel, humid to wet.		E	0.5 0.6		PID<1ppm		
	0.9	FILL/Clayey SAND: fine to medium, dark brown, with trace silt, igneous gravel, sandstone cobbles, trace brick, plastic, tile, timber, glass, metal and fabric fragments, humid.		E	1.0 1.1		PID1.9 ppm		
				E	1.5 1.6		PID2.7 ppm		
	2.0	FILL/Sandy SILT: low plasticity, dark grey and brown, with clay and igneous gravel, wood, plastic, glass (fragments and bottles), brick, shell, rubber (tyres and fragments), PACM and tile fragments, humid to wet. Slight hydrocarbon odour from 2.0m Wet at 2.6m		E	2.0 2.1		PID2.2 ppm		
				E	2.5 2.6		PID5.6 ppm	28-07-20	
				E	2.9		PID3.9 ppm		
	3.0	Pit discontinued at 3.0m - Collapse in groundwater			3.0				

RIG: Cat 432F Backhoe with 300mm bucket

LOGGED: TG

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Groundwater observed at 2.6m

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
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TEST PIT LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.6 AHD
EASTING: 326388
NORTHING: 6237446

PIT No: TP121
PROJECT No: 99751.00
DATE: 27/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.2	FILL/TOPSOIL (Silty SAND): fine to medium, brown and yellow, with rootlets and organic matter, humid.		E	0.1		PID<1ppm		
				E	0.2		PID<1ppm		
		FILL/SAND: fine to medium, brown and pale grey, with trace silt and igneous gravel, humid to wet.			0.3				
	0.6	Perched water at 0.5m							
		FILL/Clayey SAND: fine to medium, dark brown, with trace silt, igneous gravel, sandstone cobbles, trace brick, plastic, tile, timber, glass, metal, PACM and fabric fragments, humid.		E	0.6		PID<1ppm		
					0.7				
	1.2	FILL/Sandy SILT: low plasticity, dark grey and brown, with clay and igneous gravel, wood, plastic, glass, brick, shell, rubber, PACM and tile fragments, humid to wet.		E*	1.2		PID<1ppm		
					1.3				
		Strong hydrocarbon odour from 1.2m							
				E	1.9		PID2.1 ppm		
					2.0				
		Wet at 2.2m						27-07-20	
				E	2.4		PID5.5 ppm		
					2.5				
				E	2.9		PID13 ppm		
	3.0	Pit discontinued at 3.0m - Collapse in groundwater			3.0				

RIG: Cat 432F Backhoe with 300mm bucket

LOGGED: TG

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Groundwater observed at 2.2m

REMARKS: *Replicate BD1/20200727 taken from 1.2-1.3m.

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

SAMPLING & IN SITU TESTING LEGEND

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

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TEST PIT LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.8 AHD
EASTING: 326400
NORTHING: 6237464

PIT No: TP122
PROJECT No: 99751.00
DATE: 27/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.2	FILL/TOPSOIL (Silty SAND): fine to medium, brown and yellow, with rootlets and organic matter, humid.		E	0.0 0.1		PID<1ppm		
	0.8	FILL/Clayey SAND: fine to medium, dark brown and grey, with silt and igneous gravel, rootlets and organic matter, trace brick, metal and tile fragments, humid.		E	0.3 0.4		PID<1ppm		
	1.4	FILL/Silty SAND: fine to medium, pale brown, yellow and brown, with igneous gravel, trace clay and sandstone gravel, brick, plastic, metal, tile and glass fragments, humid.		E	0.8 0.9		PID1.2 ppm		
	1.8	FILL/Clayey SAND: fine to medium, brown, red and grey, with igneous and sandstone gravel, brick, metal, tile, plastic and glass fragments, humid.		E	1.4 1.5		PID<1ppm		
	3.0	FILL/Sandy SILT: low plasticity, dark grey and brown, with igneous gravel, shells, sandstone cobbles, brick, metal, plastic, fabric, wood, tile, concrete and glass fragments, humid to wet. Slight hydrocarbon odour from 2.2m Wet at 2.6m		E E E	1.8 1.9 2.4 2.5 2.9		PID<1ppm PID1.8 ppm PID1.5 ppm	27-07-20	
		Pit discontinued at 3.0m - Collapse in groundwater			3.0				

RIG: Cat 432F Backhoe with 300mm bucket

LOGGED: TG

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Groundwater observed at 2.6m

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

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TEST PIT LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.4 AHD
EASTING: 326416
NORTHING: 6237453

PIT No: TP123
PROJECT No: 99751.00
DATE: 27/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.2	FILL/TOPSOIL (Silty SAND): fine to medium, brown and yellow, with rootlets and organic matter, humid.		E	0.1 0.2		PID1.4 ppm		
	0.6	FILL/Clayey SAND: fine to medium, dark brown and grey, with silt and igneous gravel, rootlets and organic matter, trace brick, metal and tile fragments, humid.		E	0.3 0.4		PID<1ppm		
	1.8	FILL/Sandy CLAY: moderate plasticity, brown, grey, red and orange mottled, trace silt and igneous gravel, brick and metal fragments, humid.		E* E	0.6 0.7 1.3 1.4		PID<1ppm PID1.2 ppm		
	3.0	FILL/Sandy SILT: low plasticity, dark grey and brown, with igneous gravel, shells, sandstone cobbles, brick, metal, plastic, fabric, wood, tile, concrete, glass and PACM fragments, humid to wet. Slight hydrocarbon odour from 2.2m Wet at 2.6m		E E E	1.8 2.0 2.4 2.5 2.9		PID1.9 ppm PID4.1 ppm PID3.5 ppm	27-07-20	
		Pit discontinued at 3.0m - Collapse in groundwater			3.0				

RIG: Cat 432F Backhoe with 300mm bucket

LOGGED: TG

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Groundwater observed at 2.6m

REMARKS: *Replicate BD2/20200727 taken from 0.6-0.7m.

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

SAMPLING & IN SITU TESTING LEGEND

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

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TEST PIT LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 4.8 AHD
EASTING: 326431
NORTHING: 6237456

PIT No: TP124
PROJECT No: 99751.00
DATE: 27/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
	0.2	FILL/TOPSOIL (Silty SAND): fine to medium, brown and yellow, with rootlets and organic matter, humid.		E	0.1 0.2		PID<1ppm		
	0.7	FILL/Clayey SAND: fine to medium, dark brown and grey, with silt and igneous gravel, rootlets and organic matter, trace brick, metal, PACM and tile fragments, humid.		E	0.3 0.4		PID2.4 ppm		
	1.3	FILL/Silty SAND: fine to medium, pale brown, yellow and brown, with igneous gravel, trace clay and sandstone gravel, brick, plastic, metal, tile and glass fragments, humid.		E	0.8 0.9		PID16 ppm		
	1.9	FILL/Sandy SILT: low plasticity, dark grey and brown, with igneous gravel, shells, sandstone cobbles, brick, metal, plastic, fabric, wood, tile, concrete, glass and PACM fragments, humid to wet.		E	1.3 1.4		PID1.3 ppm		
	2.5	FILL/Clayey SAND: fine to medium, brown, red and grey, with igneous and sandstone gravel, brick, metal, tile, plastic and glass fragments, humid.		E	1.9 2.0		PID1.3 ppm		
	3.3	FILL/Clayey SAND: fine to medium, brown, red and grey, with igneous and sandstone gravel, brick, metal, tile, plastic, glass and PACM fragments, humid.		E	2.6 2.7		PID1.8 ppm		
	5.0	FILL/Sandy CLAY: low to medium plasticity, dark brown and grey, with trace silt and igneous gravel, brick, tile, metal, plastic, rubber, wood, glass, fabric and PACM fragments, humid. Slight hydrocarbon odour from 4.6m		E E	3.4 3.5 4.5 4.6		PID3.0 ppm PID4.4 ppm		
		Pit discontinued at 5.0m - Target depth achieved/limit of backhoe reach							

RIG: Cat 432F Backhoe with 300mm bucket

LOGGED: TG

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: No free groundwater observed

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

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TEST PIT LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 4.8 AHD
EASTING: 326426
NORTHING: 6237421

PIT No: TP125
PROJECT No: 99751.00
DATE: 28/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL (Silty SAND): fine to medium, brown and yellow, with rootlets and organic matter, humid.		E	0.0		PID1.3 ppm		
	0.2	FILL/Silty SAND: fine to medium, pale brown, yellow and brown, with igneous gravel, trace clay and sandstone gravel, brick, plastic, metal, tile, PACM and glass fragments, humid.		E	0.1		PID<1ppm		
				E	0.2		PID<1ppm		
				E	0.3				
		Slight hydrocarbon odour from 0.6m		E	0.8		PID<1ppm		
				E*	0.9		PID1.1 ppm		
				E	1.6		PID<1ppm		
					1.7				
				E	2.3		PID2.7 ppm		
					2.4				
	2.8	FILL/Clayey SAND: fine to medium, dark brown and grey, with silt, igneous and sandstone gravel, trace organic matter, brick, plastic, wood, concrete, tile, metal, PACM and shell fragments, humid		E	2.9		PID1.6 ppm		
					3.0				
				E	3.4		PID1.1 ppm		
					3.5				
				E	3.9		PID1.6 ppm		
	4.0	FILL/Sandy CLAY: low to medium plasticity, firm to stiff, grey and brown mottled, with trace silt and igneous gravel, brick, concrete, plastic, crushed sandstone, metal, tile and shell fragments, humid to wet.		E	4.0		PID1.1 ppm		
				E	4.1				
				E	4.4		PID2.1 ppm		
					4.5				
		Wet at 4.9m		E	4.9		PID1.9 ppm	28-07-20	
	5.0	Pit discontinued at 5.0m - Target depth achieved/limit of backhoe reach			5.0				

RIG: Cat 432F Backhoe with 300mm bucket

LOGGED: TG

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Groundwater observed at 4.8m

REMARKS: *Replicate BD1/20200728 taken from 1.6-1.7m.

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

SAMPLING & IN SITU TESTING LEGEND

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

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 4.8 AHD
EASTING: 326420
NORTHING: 6237393

PIT No: TP126
PROJECT No: 99751.00
DATE: 28/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL (Silty SAND): fine to medium, brown and yellow, with rootlets and organic matter, humid.		E	0.1 0.2		PID2.7 ppm		
	0.3	FILL/Silty SAND: fine to medium, pale brown, yellow and brown, with igneous gravel, trace clay and sandstone gravel, brick, plastic, metal, tile, PACM and glass fragments, humid.		E	0.4 0.5		PID<1ppm		
				E	0.9 1.0		PID<1ppm		
				E	1.5 1.6		PID3.9 ppm		
				E	2.0 2.1		PID1.7 ppm		
				E	2.5 2.6		PID1.5 ppm		
	2.6	FILL/Clayey SAND: fine to medium, dark brown and grey, with silt, igneous and sandstone gravel, trace organic matter, brick, plastic, wood, concrete, tile, metal, PACM and shell fragments, humid Slight hydrocarbon odour from 2.6m		E*	2.7 2.8		PID2.0 ppm		
				E	3.4 3.5		PID2.1 ppm		
				E	4.0 4.1		PID1.8 ppm		
				E	4.5 4.6		PID1.3 ppm		
	4.8	FILL/Clayey SAND: fine to medium, dark grey with trace silt, igneous gravel and organic matter, wet.		E	4.9 5.0		PID1.5 ppm	28-07-20	
	5.0	Pit discontinued at 5.0m - Target depth achieved/limit of backhoe reach							

RIG: Cat 432F Backhoe with 300mm bucket

LOGGED: TG

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Groundwater observed at 4.8m

REMARKS: *Replicate BD2/20200728 taken from 2.7-2.8m.

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

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.6 AHD
EASTING: 326415
NORTHING: 6237367

PIT No: TP127
PROJECT No: 99751.00
DATE: 28/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL (Silty SAND): fine to medium, brown and yellow, with rootlets and organic matter, humid.		E	0.0 0.1		PID<1ppm		
	0.3	FILL/Silty SAND: fine to medium, pale brown, yellow and brown, with igneous gravel, trace clay and sandstone gravel, brick, plastic, metal, tile, PACM and glass fragments, humid.		E	0.3 0.4		PID1.1 ppm		
		Slight hydrocarbon odour from 0.6m to 2.8m		E	0.9 1.0		PID<1ppm		
				E	1.4 1.5		PID1.7 ppm		
				E	1.9 2.0		PID<1ppm		
	2.2	FILL/Silty SAND: fine to medium, pale brown and orange, with trace clay, igneous and sandstone gravel, shell, brick, tile and metal fragments, humid.		E	2.4 2.5		PID<1ppm		
	2.8	FILL/Clayey SAND: fine to medium, dark grey with trace silt, igneous gravel and organic matter, humid to wet.		E	2.9 3.0		PID1.9 ppm		
				E	3.4 3.5		PID2.2 ppm		
				E	3.9 4.0		PID1.5 ppm		
				E*	4.4 4.5		PID1.7 ppm		
		Wet at 4.6m						28-07-20	
				E	4.9 5.0		PID1.4 ppm		
	5.0	Pit discontinued at 5.0m - Target depth achieved/limit of backhoe reach							

RIG: Cat 432F Backhoe with 300mm bucket

LOGGED: TG

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Groundwater observed at 4.6m

REMARKS: *Replicate BD3/20200728 taken from 4.4-4.5m.

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

SAMPLING & IN SITU TESTING LEGEND

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

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.4 AHD
EASTING: 326393
NORTHING: 6237376

PIT No: TP128
PROJECT No: 99751.00
DATE: 28/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.05	ASPHALTIC CONCRETE							
	0.1	FILL/ROADBASE (Gravelly SAND): fine to medium, dark grey-brown, angular-subangular igneous gravel (20mm), dry, apparently well compacted.		E	0.1 0.2		PID<1 ppm		
	0.4	FILL/Silty SAND: fine to medium, brown, with igneous and sandstone gravel, asphalt and brick cobbles, humid.		E	0.4 0.5		PID3.7 ppm		
	0.9	FILL/Gravelly SAND: fine to coarse, yellow and brown, with igneous and sandstone gravel, trace clay, silt and rootlets, tile, terracotta pipe, metal and plastic fragments, humid.		E*	0.9 1.0		PID2.1 ppm		
		FILL/Silty SAND: fine to medium, brown, grey and orange, with igneous and sandstone gravel, trace clay, brick, timber, metal, plastic, fabric, PACM and shell fragments and sandstone cobbles, humid to wet.		E	1.4 1.5		PID<1 ppm		
		Slight hydrocarbon odour from 2.1m		E	2.0 2.1		PID2.7 ppm		
		Wet at 2.3m		E	2.6		PID3.2 ppm	28-07-20	
	2.7	Pit discontinued at 2.7m - Collapse in groundwater			2.7				

RIG: Cat 432F Backhoe with 300mm bucket

LOGGED: TG

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Groundwater observed at 2.3m

REMARKS: *Replicate BD4/20200728 taken from 0.9-1.0m.

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

SAMPLING & IN SITU TESTING LEGEND

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

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TEST PIT LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.4 AHD
EASTING: 326376
NORTHING: 6237386

PIT No: TP129
PROJECT No: 99751.00
DATE: 28/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm) 5 10 15 20
		FILL/TOPSOIL (Silty SAND): fine to medium, brown and yellow, with rootlets and organic matter, humid.		E	0.1 0.2		PID<1ppm		
	0.3	FILL/Silty SAND: fine to medium, brown, with igneous and sandstone gravel, asphalt and brick cobbles, PACM fragments, humid.		E*	0.4 0.5		PID2.6 ppm		
	0.7	FILL/Gravelly SAND: fine to coarse, yellow and brown, with igneous and sandstone gravel, trace clay, silt and rootlets, tile, terracotta pipe, metal and plastic fragments, humid.		E	0.8 0.9		PID1.3 ppm		
	1.3	FILL/Silty SAND: fine to medium, brown, grey and orange, with igneous and sandstone gravel, trace clay, brick, timber, metal, plastic, PACM, fabric and shell fragments and sandstone cobbles, humid to wet.		E	1.4 1.5		PID4.7 ppm		
				E	1.9 2.0		PID12 ppm		
		Slight hydrocarbon odour from 2.2m		E	2.4 2.5		PID8.7 ppm		
		Wet at 2.6m		E	2.9		PID7.8 ppm	28-07-20	
	3.0	Pit discontinued at 3.0m - Collapse in groundwater			3.0				

RIG: Cat 432F Backhoe with 300mm bucket

LOGGED: TG

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Groundwater observed at 2.6m

REMARKS: *Replicate BD5/20200728 taken from 0.4-0.5m.

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

SAMPLING & IN SITU TESTING LEGEND

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

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TEST PIT LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kogarah War Memorial Pool, Carss Park

SURFACE LEVEL: 3.5 AHD
EASTING: 326376
NORTHING: 6237386

PIT No: TP130
PROJECT No: 99751.00
DATE: 28/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILL/TOPSOIL (Silty SAND): fine to medium, brown and yellow, with rootlets and organic matter, humid.		E	0.0 0.1		PID21 ppm		
	0.6	FILL/SAND: fine to medium, brown and pale grey, with trace silt and igneous gravel, humid to wet.		E	0.6 0.7		PID2.8 ppm		
	1.0	FILL/Silty SAND: fine to medium, brown, grey and orange, with igneous and sandstone gravel, trace clay, brick, timber, metal, plastic, fabric, PACM and shell fragments and sandstone cobbles, humid to wet.		E	1.1 1.2		PID3.5 ppm		
		Slight hydrocarbon odour from 1.6m		E	1.5 1.6		PID2.1 ppm		
				E	2.1 2.2		PID1.7 ppm		
		Wet at 2.5m		E	2.7 2.8		PID2.9 ppm	28-07-20	
	2.8	Pit discontinued at 2.8m - Collapse in groundwater							

RIG: Cat 432F Backhoe with 300mm bucket

LOGGED: TG

SURVEY DATUM: MGA94 Zone 56

WATER OBSERVATIONS: Groundwater observed at 2.5m

REMARKS:

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

SAMPLING & IN SITU TESTING LEGEND

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

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Appendix H2

Geotechnical Borehole Logs (DP, 2020b)

BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kograh War Memorial Pool, Carss Park

SURFACE LEVEL: 3.1 AHD
EASTING: 326369
NORTHING: 6237466
DIP/AZIMUTH: 90°/--

BORE No: BH101(G)
PROJECT No: 99751.01
DATE: 22/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.06	ASPHALTIC CONCRETE							
		FILL/Gravelly SAND: fine to medium, dark grey-brown, angular-subangular igneous gravel (20mm), dry, apparently well compacted		A	0.1 0.2				
	0.3	FILL/SAND: fine to medium, brown, with pale grey and red brown clay clumps, trace rootlets, trace tile and glass fragments, dry		A	0.6				
	0.7	Bore discontinued at 0.7m - target depth reached			0.7				
	1								1
	2								2
	3								3

RIG: 5.5 tonne Excavator **DRILLER:** A&A Hire **LOGGED:** TM **CASING:** Uncased
TYPE OF BORING: Solid Flight Auger (300mm diameter) to 0.7m
WATER OBSERVATIONS: No free groundwater observed
REMARKS: Location within 1m of environmental borehole BH101(E)

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kograh War Memorial Pool, Carss Park

SURFACE LEVEL: 3.6 AHD
EASTING: 326334
NORTHING: 6237442
DIP/AZIMUTH: 90°/--

BORE No: BH102(G)
PROJECT No: 99751.01
DATE: 22/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.02	ASPHALTIC CONCRETE							
		FILL/Gravelly SAND: fine to medium, dark grey-brown, subangular to angular igneous gravel (20mm), moist, apparently well compacted		A	0.1 0.2				
		From 0.3m: dark grey							
	0.4	FILL/SAND: fine to medium, pale grey, moist							
	0.48	FILL/Gravelly SAND: dark grey and brown, fine to medium, trace sandstone gravel, trace slag, tile and brick fragments, moist		A	0.7				
	0.8	Bore discontinued at 0.8m - target depth reached			0.8				
3	1								1
2	2								2
1	3								3
0									

RIG: 5.5 tonne Excavator **DRILLER:** A&A Hire **LOGGED:** TM **CASING:** Uncased

TYPE OF BORING: Solid Flight Auger (300mm diameter) to 0.8m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Location within 1m of environmental borehole BH101(E)

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

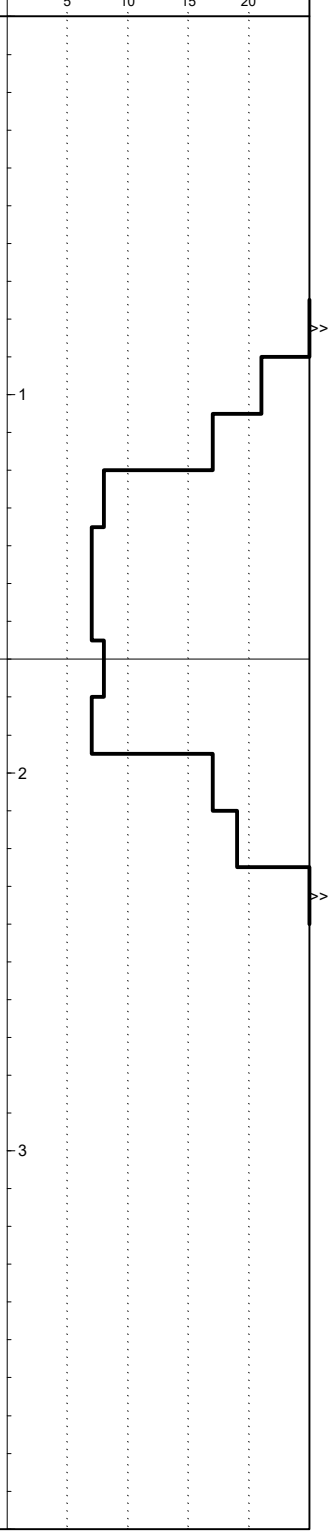
CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kograh War Memorial Pool, Carss Park

SURFACE LEVEL: 4.6 AHD
EASTING: 326331
NORTHING: 6237415
DIP/AZIMUTH: 90°/--

BORE No: BH103(G)
PROJECT No: 99751.01
DATE: 22/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water
	0.03	ASPHALTIC CONCRETE						
		FILL/Gravelly SAND: fine to medium, dark grey-brown, angular to subangular igneous gravel (20mm), dry, apparently well compacted		A	0.1 0.2			
				A	0.5			
4	0.6	FILL/SAND: fine to medium, orange-brown, with red-brown angular to subangular sandstone gravel (10-70mm), dry, apparently well compacted		A	0.6 0.7			
	0.8	FILL/Clayey SAND: fine to medium, dark brown, with red-brown angular to subangular sandstone gravel (100mm), trace brick and glass fragments, dry, apparently variably compacted		B A	0.8 1.1			
					1.3			
				A	1.4 1.5			
3	1.7	Bore discontinued at 1.7m - target depth reached						
2								
1								

Dynamic Penetrometer Test (blows per 150mm)



RIG: 5.5 tonne Excavator **DRILLER:** A&A Hire **LOGGED:** TM **CASING:** Uncased

TYPE OF BORING: Solid Flight Auger (300mm diameter) to 1.7m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Location within 1m of environmental borehole BH101(E)

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

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

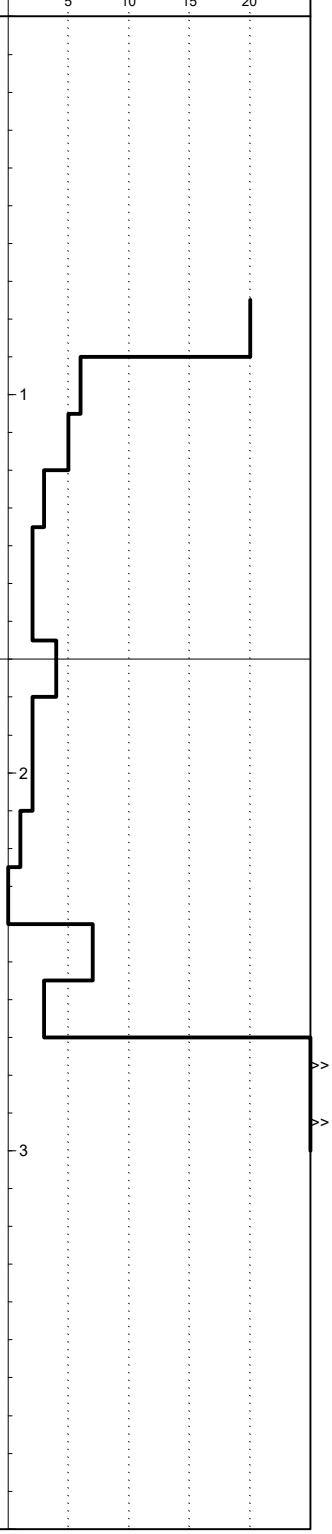
CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kograh War Memorial Pool, Carss Park

SURFACE LEVEL: 4.8 AHD
EASTING: 326351
NORTHING: 6237391
DIP/AZIMUTH: 90°/--

BORE No: BH104(G)
PROJECT No: 99751.01
DATE: 22/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water
	0.05	ASPHALTIC CONCRETE						
		FILL/Gravelly SAND: fine to medium, dark grey-brown, angular to subangular igneous gravel (20mm), dry, apparently well compacted		A	0.1 0.2			
		From 0.25m: dark grey						
	0.35	FILL/SAND: medium to coarse, orange-brown, with red-brown angular to subangular ironstone and sandstone gravel (10-70mm), dry, apparently poorly compacted		A	0.4 0.5			
		0.7m: ironstone boulder						
4	0.8	FILL/SAND: fine to medium, dark brown, with angular to subangular igneous and sandstone gravel, dry, apparently poorly compacted		B A	0.8 1.2 1.3			
	1.7	Bore discontinued at 1.7m - target depth reached						

Dynamic Penetrometer Test (blows per 150mm)



RIG: 5.5 tonne Excavator **DRILLER:** A&A Hire **LOGGED:** TM **CASING:** Uncased

TYPE OF BORING: Solid Flight Auger (300mm diameter) to 1.7m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Location within 1m of environmental borehole BH101(E)

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

SAMPLING & IN SITU TESTING LEGEND

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

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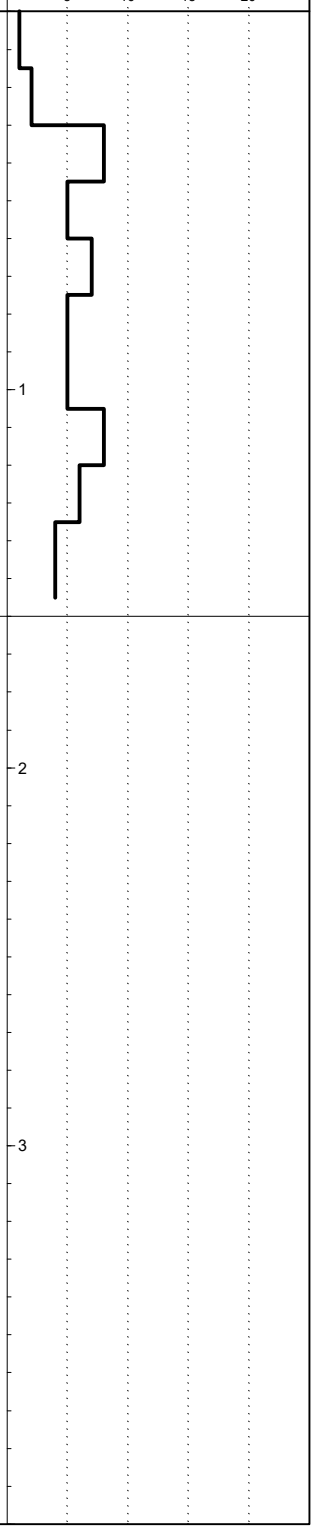
BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kograh War Memorial Pool, Carss Park

SURFACE LEVEL: 6.9 AHD
EASTING: 326366
NORTHING: 6237368
DIP/AZIMUTH: 90°/--

BORE No: BH105(G)
PROJECT No: 99751.01
DATE: 22/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
		FILL/Silty SAND: fine to medium, dark grey, with rootlets, dry		A	0.0 0.1				
	0.2	FILL/SAND: fine to medium, yellow-brown, trace sandstone gravel, dry, apparently moderately compacted		A	0.5 0.6				
	0.7	FILL/SAND: fine to medium, grey and red-brown, trace angular to subangular ironstone gravel (100mm), dry, apparently moderately compacted		A B A	0.9 1.0 1.3 1.4				
	1.6	Bore discontinued at 1.6m - auger refusal on inferred sandstone bedrock							



RIG: 5.5 tonne Excavator **DRILLER:** A&A Hire **LOGGED:** TM **CASING:** Uncased

TYPE OF BORING: Solid Flight Auger (300mm diameter) to 1.6m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: Location within 1m of environmental borehole BH101(E)

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

SAMPLING & IN SITU TESTING LEGEND

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

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BOREHOLE LOG

CLIENT: SJB Architects
PROJECT: Proposed Pool and Park Redevelopment
LOCATION: Kograh War Memorial Pool, Carss Park

SURFACE LEVEL: 3.6 AHD
EASTING: 326354
NORTHING: 6237412
DIP/AZIMUTH: 90°/--

BORE No: BH106(G)
PROJECT No: 99751.01
DATE: 22/7/2020
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.05	ASPHALTIC CONCRETE							
		FILL/Gravelly SAND: fine to medium, dark grey-brown, subangular to angular igneous gravel (20mm), dry, apparently well compacted		A	0.1 0.2				
	0.29	FILL/Gravelly SAND: fine to medium, dark grey, with angular to subangular igneous and sandstone gravel, trace clay clumps, dry		A	0.7				
	0.8	Bore discontinued at 0.8m - target depth reached			0.8				
3									
	1								1
2									
	2								2
1									
	3								3
0									

RIG: 5.5 tonne Excavator **DRILLER:** A&A Hire **LOGGED:** TM **CASING:** Uncased
TYPE OF BORING: Solid Flight Auger (300mm diameter) to 0.8m
WATER OBSERVATIONS: No free groundwater observed
REMARKS: Location within 1m of environmental borehole BH101(E)

SAMPLING & IN SITU TESTING LEGEND

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

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Appendix H3

Groundwater Field Sheets

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Groundwater Field Sheet

Bore Volume = casing volume + filter pack volume
$= \pi h_1 d_1^2/4 + n(\pi h_2 d_2^2/4 - \pi h_2 d_3^2/4)$

Where: $\pi = 3.14$
n = porosity (0.3 for most filter pack material)
h_1 = height of water column
d_1 = diameter of annulus
h_2 = length of filter pack
d_3 = diameter of casing

Bore Vol Normally: 7.2*h

Project and Bore Installation Details	
Bore / Standpipe ID:	BH10b
Project Name:	Carss Park Kogarah War Memorial Pool
Project Number:	99751.00
Site Location:	
Bore GPS Co-ord:	
Installation Date:	
GW Level (during drilling):	- m bgl
Well Depth:	m bgl
Screened Interval:	m bgl
Contaminants/Comments:	-

Bore Development Details	
Date/Time:	27.07.20
Purged By:	AMS
GW Level (pre-purge):	2.25 m bgl
GW Level (post-purge):	2.25 m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Observed Well Depth:	4.65 m bgl
Estimated Bore Volume:	17.28 L
Total Volume Purged:	(target: no drill mud, min 3 well vol. or dry) 60L
Equipment:	

Micropurge and Sampling Details	
Date/Time:	24.7.20 / 0710
Sampled By:	TG
Weather Conditions:	Clear
GW Level (pre-purge):	2.26 m bgl
GW Level (post sample):	m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Observed Well Depth:	4.65 m bgl
Estimated Bore Volume:	17.28 L
Total Volume Purged:	L
Equipment:	Peri pump

Water Quality Parameters

Time / Volume	Temp (°C)	DO (mg/L)	EC (µS or mS/cm)	pH	Turbidity	Redox (mV)
Stabilisation Criteria (3 readings)	**0.1°C**	**+/- 0.3 mg/L**	**+/- 3%**	**+/- 0.1**	**+/- 10%**	**+/- 10 mV**
0715/1	19.7	0.94	1245	6.43		-48.0
0717/2	21.1	0.22	1317	6.71		-82.5
0719/3	21.1	0.13	1284	6.73		-89.4
0721/4	21.1	0.07	1284	6.72		-94.8
0723/5	21.1	0.05	1291	6.71		-98.3
0725/6	21.1	0.02	1291	6.68		-100.6
Additional Readings Following stabilisation:	DO % Sat	SPC	TDS			
	0.2	1396				

Sample Details

Sampling Depth (rationale):	3.5 m bgl, Middle of water column
Sample Appearance (e.g. colour, siltiness, odour):	Slightly silty pale yellow, sulphur odour
Sample ID:	BH10b
QA/QC Samples:	—
Sampling Containers and filtration:	45 µm filter for metals
Comments / Observations:	Strong h/c odour whilst developing.

Rev March

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Groundwater Field Sheet

Bore Volume = casing volume + filter pack volume
$= \pi h_c d_c^2/4 + n(\pi h_f d_f^2/4 - \pi h_f d_c^2/4)$

Where: $\pi = 3.14$
n = porosity (0.3 for most filter pack material)
h_c = height of water column
d_f = diameter of annulus
h_f = length of filter pack
d_c = diameter of casing

Bore Vol Normally: 7.2*h

Project and Bore Installation Details	
Bore / Standpipe ID:	BH107
Project Name:	Carss Park Kogarah War Memorial Pool
Project Number:	99751.00
Site Location:	
Bore GPS Co-ord:	
Installation Date:	
GW Level (during drilling):	- m bgl
Well Depth:	m bgl
Screened Interval:	m bgl
Contaminants/Comments:	-

Bore Development Details	
Date/Time:	27.07.20
Purged By:	AMS
GW Level (pre-purge):	1.75 m bgl
GW Level (post-purge):	1.75 m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Observed Well Depth:	5.4 m bgl
Estimated Bore Volume:	26.28 L
Total Volume Purged:	(target: no drill mud, min 3 well vol. or dry) 90L
Equipment:	

Micropurge and Sampling Details	
Date/Time:	29.7.20 / 0620
Sampled By:	VH
Weather Conditions:	Clear
GW Level (pre-purge):	1.54 m bgl
GW Level (post sample):	1.59 m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Observed Well Depth:	5.4 m bgl
Estimated Bore Volume:	26.28 L
Total Volume Purged:	9 L
Equipment:	

Water Quality Parameters

Time / Volume	Temp (°C)	DO (mg/L)	EC (µS or mS/cm)	pH	Turbidity	Redox (mV)
Stabilisation Criteria (3 readings)	**0.1° C**	**+/- 0.3 mg/L**	**+/- 3%**	**+/- 0.1**	**+/- 10%**	**+/- 10 mV**
0630 / 1	19.0	0.93	1526	6.51		-94.5
0632 / 2	19.1	0.31	1489	6.78		-150.6
0634 / 3	19.0	0.18	1483	6.79		-165.2
0636 / 4	19.0	0.12	1482	6.79		-173.6
0638 / 5	19.0	0.11	1481	6.78		-176.4
0640 / 6	19.0	0.07	1468	6.76		-180.5
0642 / 7	19.1	0.05	1453	6.75		-182.3
Additional Readings Following stabilisation:	DO % Sat	SPC	TDS			

Sample Details

Sampling Depth (rationale):	3.5 m bgl, Middle of water column
Sample Appearance (e.g. colour, siltiness, odour):	Slightly silty; pale yellow. Sulphur odour.
Sample ID:	BH107
QA/QC Samples:	
Sampling Containers and filtration:	4 0.45µm metal filter
Comments / Observations:	Strong H/C odour apparent whilst developing. Sulphurous odour during sampling

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Groundwater Field Sheet

Bore Volume = casing volume + filter pack volume
$= \pi h_1 d_1^2/4 + n(\pi h_1 d_1^2/4 - \pi h_2 d_2^2/4)$
Where: $\pi = 3.14$
n = porosity (0.3 for most filter pack material)
h_1 = height of water column
d_1 = diameter of annulus
h_2 = length of filter pack
d_2 = diameter of casing
Bore Vol Normally: 7.2*h

Project and Bore Installation Details	
Bore / Standpipe ID:	BH108
Project Name:	Cross Park - Kogarah War Memorial Pool
Project Number:	99751.00
Site Location:	
Bore GPS Co-ord:	
Installation Date:	
GW Level (during drilling):	- m bgl
Well Depth:	m bgl
Screened Interval:	m bgl
Contaminants/Comments:	-

Bore Development Details	
Date/Time:	27.07.20
Purged By:	AMS
GW Level (pre-purge):	2 m bgl
GW Level (post-purge):	2 m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Observed Well Depth:	4.95 m bgl
Estimated Bore Volume:	21.24 L
Total Volume Purged:	(target: no drill mud, min 3 well vol. or dry)
Equipment:	

Micropurge and Sampling Details	
Date/Time:	29.7.20 / 0900
Sampled By:	TG
Weather Conditions:	Clear
GW Level (pre-purge):	2.01 m bgl
GW Level (post sample):	m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Observed Well Depth:	5.0 m bgl
Estimated Bore Volume:	21 L
Total Volume Purged:	~~21~~ L
Equipment:	

Water Quality Parameters

Time / Volume	Temp (°C)	DO (mg/L)	EC (µS or mS/cm)	pH	Turbidity	Redox (mV)
Stabilisation Criteria (3 readings)	**0.1°C**	**+/- 0.3 mg/L**	**+/- 3%**	**+/- 0.1**	**+/- 10%**	**+/- 10 mV**
0905 / 1	17.7	1.12	832	7.19		-99.9
0907 / 2	17.1	0.40	803	7.30		-128.3
0909 / 3	17.5	0.24	803	7.30		-134.2
0911 / 4	17.5	0.12	794	7.31		-134.5
0913 / 5	17.5	0.09	786	7.29		-136.5
0915 / 6	17.6	0.08	794	7.32		-136.8
Additional Readings Following stabilisation:	DO % Sat	SPC	TDS			

Sample Details

Sampling Depth (rationale):	3.5 m bgl, Middle of water column
Sample Appearance (e.g. colour, siltiness, odour):	Slightly silty, pale yellow / slight sulphurous odour
Sample ID:	BH108
QA/QC Samples:	-
Sampling Containers and filtration:	0.1 µm filter
Comments / Observations:	Slight h/c + sulfur odour whilst developing.

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Groundwater Field Sheet

Bore Volume = casing volume + filter pack volume
$= \pi h_1 d_1^2/4 + n(\pi h_2 d_2^2/4 - \pi h_2 d_3^2/4)$

Where: $\pi = 3.14$
n = porosity (0.3 for most filter pack material)
h_1 = height of water column
d_1 = diameter of annulus
h_2 = length of filter pack
d_2 = diameter of casing

Bore Vol Normally: 7.2*h

Project and Bore Installation Details	
Bore / Standpipe ID:	BH109
Project Name:	Carss Park Kogarah War Memorial Pool
Project Number:	99751.00
Site Location:	
Bore GPS Co-ord:	
Installation Date:	
GW Level (during drilling):	- m bgl
Well Depth:	m bgl
Screened Interval:	m bgl
Contaminants/Comments:	-

Bore Development Details	
Date/Time:	27.07.20
Purged By:	AMS
GW Level (pre-purge):	2.45 m bgl
GW Level (post-purge):	2.45 m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Observed Well Depth:	5.5 m bgl
Estimated Bore Volume:	21.96 L
Total Volume Purged:	(target: no drill mud, min 3 well vol. or dry) 80L
Equipment:	

Micropurge and Sampling Details	
Date/Time:	29.7.20 / 0830
Sampled By:	TG
Weather Conditions:	Clear
GW Level (pre-purge):	2.47 m bgl
GW Level (post sample):	m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Observed Well Depth:	5.5 m bgl
Estimated Bore Volume:	22 L
Total Volume Purged:	L
Equipment:	Peri Pump

Water Quality Parameters

Time / Volume	Temp (°C)	DO (mg/L)	EC (µS or mS/cm)	pH	Turbidity	Redox (mV)
Stabilisation Criteria (3 readings)	**0.1° C**	**+/- 0.3 mg/L**	**+/- 3%**	**+/- 0.1**	**+/- 10%**	**+/- 10 mV**
0834/1	19.3	0.34	1207	7.19		-130.5
0836/2	19.8	0.20	1145	7.27		-134.5
0838/3	19.7	0.10	1104	7.29		-135.9
0840/4	19.7	0.05	1133	7.25		-136.7
0842/5	19.7	0.03	1108	7.24		-137.4
0844/6	19.7	0.01	1100	7.22		-138.1
Additional Readings Following stabilisation:	DO % Sat	SPC	TDS			

Sample Details

Sampling Depth (rationale):	3.8 m bgl, middle of water column
Sample Appearance (e.g. colour, siltiness, odour):	Pale yellow, slightly silty, sulphur odour
Sample ID:	BH109
QA/QC Samples:	BD1/20200729
Sampling Containers and filtration:	45µm filter
Comments / Observations:	H/c + sulfur odour

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Groundwater Field Sheet

Bore Volume = casing volume + filter pack volume
$= \pi h_1 d_1^2/4 + n(\pi h_2 d_2^2/4 - \pi h_2 d_3^2/4)$
Where: $\pi = 3.14$
n = porosity (0.3 for most filter pack material)
h_1 = height of water column
d_1 = diameter of annulus
h_2 = length of filter pack
d_2 = diameter of casing
Bore Vol Normally: 7.2*h

Project and Bore Installation Details	
Bore / Standpipe ID:	BH110
Project Name:	Cross Park Kogarah War Memorial
Project Number:	99751.00
Site Location:	
Bore GPS Co-ord:	
Installation Date:	
GW Level (during drilling):	- m bgl
Well Depth:	m bgl
Screened Interval:	m bgl
Contaminants/Comments:	-

Bore Development Details	
Date/Time:	27.07.20
Purged By:	AMS
GW Level (pre-purge):	2.6 m bgl
GW Level (post-purge):	2.6 m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Observed Well Depth:	5.1 m bgl
Estimated Bore Volume:	18 L
Total Volume Purged:	(target: no drill mud, min 3 well vol. or dry) 60L
Equipment:	

Micropurge and Sampling Details	
Date/Time:	29.7.20 / 0800
Sampled By:	TG
Weather Conditions:	Clear
GW Level (pre-purge):	2.61 m bgl
GW Level (post sample):	m bgl
PSH observed:	Yes / No (interface / visual). Thickness if observed:
Observed Well Depth:	5.1 m bgl
Estimated Bore Volume:	18 L
Total Volume Purged:	L
Equipment:	

Water Quality Parameters

Time / Volume	Temp (°C)	DO (mg/L)	EC (µS or mS/cm)	pH	Turbidity	Redox (mV)
Stabilisation Criteria (3 readings)	**0.1° C**	**+/- 0.3 mg/L**	**+/- 3%**	**+/- 0.1**	**+/- 10%**	**+/- 10 mV**
0809 / 1	~~20~~ 19.9	1.01	4446	7.10		-138.2
0811 / 2	19.9	0.25	5113	7.30		-163.9
0813 / 3	19.9	0.13	5087	7.34		-169.6
0815 / 4	19.8	0.08	4867	7.30		-166.8
0817 / 5	19.6	0.03	4470	7.24		-158.8
0819 / 6	19.6	0.01	4386	7.22		-154.0
0821 / 7	19.6	0.01	4345	7.22		-153.1
Additional Readings Following stabilisation:	DO % Sat	SPC	TDS			

Sample Details

Sampling Depth (rationale):	3.9 m bgl, Middle of water column
Sample Appearance (e.g. colour, siltiness, odour):	Slightly silty, pale yellow, sulfur odour
Sample ID:	BH110
QA/QC Samples:	—
Sampling Containers and filtration:	45µm filter
Comments / Observations:	Strong h/c odour apparent whilst developing.

Appendix H4

Landfill Gas Field Sheets

Douglas Partners
Geotechnics / Environment / Groundwater

Landfill Gas Monitoring

Client: SJB
Project: Carss Park Pool
Location: Carss Park
Weather/ Site Conditions:
Well ID: 107
Time: 14:23 / 14:50

Date: 5/08/2020
Project Numbe Project Number: 99751
Atmospheric Pressure Mb: 1012
Relaitve Borehole Pressure: -0.16 / 4.77

Flow or Concentration taken first?

Time (sec)	Concentration (% v/v)			H_2S (ppm)	CO (ppm)	Flow (l/hr)
	CH_4	CO_2	O_2			
Initial (0)	0.5	2.3	20.4	0	1	-17.3
30	0.5	2.7	20.0	0	1	-16.1
60	0.6	3.1	19.9	0	1	-14.9
90	0.6	3.2	20.0	0	1	-13.6
120	0.6	3.2	20.0	0	1	-12.1
150	0.6	3.1	20.1	0	1	-9.8
180	0.6	3.0	20.1	0	1	-9.0
210	0.6	2.9	20.2	0	1	-7.8
240	0.5	2.9	20.2	0	1	-6.5
270	0.5	2.8	20.3	0	1	-5.4
300	0.5	2.7	20.3	0	1	-4.6
330						-3.9
360						-3.2
390						-2.4
420						-1.8
450						-1.4
480						-0.9
510						-0.4
540						-0.3
570						-0.1
600						-0.1

SWL -1.8 m bgL

Client: SJB
Project: Carss Park Pool
Location: Carss Park
Weather/ Site Conditions:
Well ID:
Time:

Date: 5/08/2020
Project Number: 99751
Atmospheric Pressure Mb:
Relaitve Borehole Pressure:

Pressure Mb:

Flow or Concentration taken first?

Time (sec)	Concentration (% v/v)			H_2S (ppm)	CO (ppm)	Flow (l/hr)
	CH_4	CO_2	O_2			
Initial (0)						
30						
60						
90						
120						
150						
180						
210						
240						
270						
300						
330						
360						
390						
420						
450						
480						
510						
540						
570						
600						

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Landfill Gas Monitoring

Client: SJB
Project: Carss Park Pool
Location: Carss Park
Weather/ Site Conditions: Clear, sunny slight breeze
Well ID: 108
Time: 1220 / 1325

Date: 5/8/2020 5/08/2020
Project Numbe Project Number: 99751
Atmospheric Pressure Mb: 1012mb
Relaitve Borehole Pressure: 0.64mb / -72.24

Flow or Concentration taken first?

Time (sec)	Concentration (% v/v)			H_2S (ppm)	CO (ppm)	Flow (l/hr)
	CH_4	CO_2	O_2			
Initial (0)	0.2	0.2	19.8	0	0	-22.2
30	0.1	0.2	20.2	0	0	-20.6
60	0.1	0.2	20.2	0	0	-18.9
90	0.1	0.2	20.2	0	0	-17.1
120	0.0	0.2	20.1	0	0	-15.4
150	0.1	0.2	20.1	0	0	-13.5
180	0.1	0.3	20.0	0	0	-12.7
210	0.1	0.3	19.9	0	0	-11.0
240	0.1	0.3	19.9	0	0	-9.6
270	0.1	0.3	19.9	0	0	-8.4
300	0.1	0.3	19.8	0	0	-7.2
330						-6.1
360						-4.8
390						-4.4
420						-3.6
450						-2.8
480						-2.2
510						-1.7
540						-1.1
570						-0.7
600						-0.6

SWL = 2.07 bgL

Client: SJB
Project: Carss Park Pool
Location: Carss Park
Weather/ Site Conditions:
Well ID: 109
Time: 1230 / 1340

Date: 5/8/20 5/08/2020
Project Number: 99751
Atmospheric Pressure Mb: 1012mb
Relaitve Borehole Pressure: 0.38mb

Pressure Mb:

Flow or Concentration taken first?

Time (sec)	Concentration (% v/v)			H_2S (ppm)	CO (ppm)	Flow (l/hr)
	CH_4	CO_2	O_2			
Initial (0)	0.4	0.1	19.5	0	0	-26.0
30	3.1	1.1	18.6	0	0	-26.0
60	3.1	1.1	18.6	0	0	-26.0
90	3.0	1.1	18.6	0	0	-26.0
120	3.0	1.1	18.6	0	0	-24.9
150	3.2	1.1	18.5	0	0	-23.2
180	3.7	1.1	18.4	0	0	-21.6
210	4.3	1.1	18.3	0	0	-20.1
240	4.6	1.1	18.2	0	0	-18.4
270	4.9	1.1	18.1	0	0	-16.9
300	5.0	1.1	18.1	0	0	-15.3
330	5.2	1.1	18.1	0	0	-14.0
360	5.7	1.1	18.0	0	0	-12.7
390	6.0	1.0	18.0	0	0	-11.3
420	6.0	1.0	18.0	0	0	-10.0
450	6.0	1.0	18.0	0	0	-8.4
480	5.9	1.0	18.1	0	0	-7.6
510	5.7	0.9	18.1	0	0	-6.5
540	5.5	0.9	18.1	0	0	-5.5
570						-4.6
600						-4.0

SWL = 2.55

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Landfill Gas Monitoring

Client: SJB
Project: Carss Park Pool
Location: Carss Park
Weather/ Site Conditions:
Well ID: 110
Time: 1245/1355

Date: 5/8/20 5/08/2020
Project Numbe Project Number: 99751
Atmospheric Pressure Mb: 1012
Relaitve Borehole Pressure: 0.12/1.13

Flow or Concentration taken first?

Time (sec)	Concentration (% v/v)			H_2S (ppm)	CO (ppm)	Flow (l/hr)
	CH_4	CO_2	O_2			
Initial (0)	5.6	10.9	15.8	0	0	0.1
30	6.1	12.5	2.4	0	0	0.1
60	7.0	14.1	0.4	0	0	0.1
90	7.2	14.2	0.3	0	0	0.1
120	7.2	14.2	0.2	0	0	0.1
150	7.2	14.2	0.2	0	0	0.1
180	7.3	14.2	0.2	0	0	0.1
210	7.3	14.2	0.2	0	0	0.1
240	7.4	14.2	0.2	0	0	0.0
270	7.4	14.1	0.1	0	0	0.1
300	7.4	14.2	0.1	0	0	0.1
330	7.5	14.2	0.1	0	0	
360	7.5	14.1	0.1	0	0	
390						
420						
450						
480						
510						
540						
570						
600						

SWL = 2.6 m bgL

Client: SJB
Project: Carss Park Pool
Location: Carss Park
Weather/ Site Conditions:
Well ID: 106
Time: 14:10/1435

Date: 5/08/2020
Project Number: 99751
Atmospheric Pressure Mb: 1012
Relaitve Borehole Pressure: -0.02/0.05

Pressure Mb:

Flow or Concentration taken first?

Time (sec)	Concentration (% v/v)			H_2S (ppm)	CO (ppm)	Flow (l/hr)
	CH_4	CO_2	O_2			
Initial (0)	2.1	2.3	16.0	0	5	0
30	3.8	3.7	14.8	0	1	0.1
60	6.3	6.1	11.7	0	1	0
90	7.8	7.5	10.0	0	1	0
120	9.1	9.0	8.2	0	1	0
150	10.3	10.5	6.6	0	1	0
180	10.9	11.2	5.7	0	1	0
210	11.7	12.4	4.4	0	1	0
240	12.6	13.4	3.2	0	1	0
270	13.4	14.2	2.2	0	1	0
300	13.9	14.8	1.4	0	1	0
330	14.4	15.2	0.8	0	1	
360	14.7	15.5	0.5	0	1	
390	14.9	15.6	0.4	0	1	
420	15.0	15.7	0.3	0	1	
450	15.1	15.8	0.3	0	1	
480	15.2	15.8	0.2	0	1	
510	15.2	15.9	0.2	0	1	
540	15.3	15.9	0.2	0	1	
570	15.3	15.9	0.2	0	1	
600						

SWL = 2.15 m bgL

Sydney Airport, New South Wales
August 2020 Daily Weather Observations

Australian Government
Bureau of Meteorology

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9am						3pm					
		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP
		°C	°C	mm	mm	hours		km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Sa	6.7	20.1	0	2.8	9.8	NW	28	10:33	11.1	72	1	NW	13	1027.1	19.0	40	3	W	7	1022.9
2	Su	7.1	18.8	0	2.6	8.9	WNW	30	10:18	12.5	64	1	WNW	15	1025.5	17.8	53	5	SE	17	1022.6
3	Mo	7.8	21.5	0	3.2	6.6	NW	26	09:58	12.1	63	6	WNW	15	1020.3	21.1	24	7	SSW	7	1014.7
4	Tu	8.5	22.7	0	3.4	8.7	W	48	15:44	14.6	53	1	N	7	1011.8	21.6	29	7	NW	19	1007.5
5	We	6.5	18.2	0	5.2	10.0	W	48	04:08	11.2	40	1	NW	24	1013.4	17.1	19	1	WSW	28	1011.2
6	Th	6.8	15.2	0	4.0	9.9	WSW	48	09:52	11.0	48	1	WNW	22	1019.1	14.3	37	4	SE	17	1018.3
7	Fr	8.9	15.0	0	3.4	0.0	S	35	07:54	13.0	91	8	S	19	1022.3	12.6	93	8	ESE	17	1018.4
8	Sa	11.2	17.4	26.8	1.6	1.0	NNW	37	13:03	13.8	92	7	NW	13	1014.2	15.5	79	7	WNW	15	1010.6
9	Su	8.2	15.4	0.4	2.6	1.6	SSW	78	19:05	11.4	68	7	W	22	1011.7	10.5	93	8	WNW	30	1007.5
10	Mo	9.5	16.0	28.2	1.6	4.6	SE	81	07:22	15.2	66	2	SSE	50	1015.7	15.2	65	7	S	46	1017.7
11	Tu	10.8	19.0	0.2	3.2	4.8	SW	30	00:28	13.1	78	7	W	11	1021.7	16.5	56	6	ESE	13	1018.4
12	We	10.5	19.3	0	2.8	1.3	NW	22	12:49	14.5	74	7	NW	9	1016.9	19.0	50	7	NNW	13	1012.0
13	Th	10.0	22.3	0	1.0	9.1	W	33	12:02	16.1	70	1	NW	11	1014.5	21.4	43	3	SSE	11	1012.3
14	Fr	10.5	19.1	0.2	2.8	1.8	WNW	20	06:41	15.3	73	7	NNW	7	1016.0	18.6	64	8	N	6	1012.5
15	Sa	11.9	20.1	3.0	0.6	7.7	W	54	12:45	15.5	77	2	W	20	1007.5	18.6	45	6	WSW	31	1004.9
16	Su	12.8	21.0	1.0	6.0	8.1	WNW	59	16:32	15.6	58	6	W	31	1007.1	19.0	34	3	W	41	1004.3
17	Mo	12.7	20.2	0	5.2	10.8	W	44	09:06	15.8	51	1	W	31	1008.9	19.4	37	1	WSW	31	1006.0
18	Tu	11.1	22.8	0	5.4	8.9	WNW	46	11:35	17.0	48	6	NW	17	1006.8	20.5	39	6	NNW	26	1001.7
19	We	11.2	22.4	0	4.0	9.7	WNW	76	16:47	17.9	46	1	NNW	20	997.4	20.1	26	4	WNW	44	992.2
20	Th	10.8	18.7	0	7.0	10.8	W	69	13:07	15.0	41	1	WNW	28	1000.8	17.7	33	1	W	39	1002.1
21	Fr	9.8	19.7	0	5.4	9.6	WNW	69	15:59	14.9	48	1	NW	22	1007.4	17.7	31	7	WNW	46	1003.8
22	Sa	9.2	16.4	0	6.6	10.3	WNW	59	21:23	12.0	44	4	WNW	30	1004.4	14.9	28	6	W	31	1002.3
23	Su	8.8	17.1	0	3.0	10.8	WSW	72	15:49	12.8	44	1	W	43	1007.2	16.1	34	2	W	44	1007.3
24	Mo	8.0	17.8	0	5.4	11.0	W	44	00:22	11.9	43	0	W	30	1019.0	16.1	39	1	SE	20	1018.7
25	Tu	6.2	14.9	0	4.0	10.7	WSW	35	03:33	12.0	49	1	WSW	15	1027.2	13.9	62	1	SSE	20	1026.1
26	We	6.4	19.1	0	3.8	10.8	ENE	31	15:12	12.0	56	1	WNW	17	1030.6	16.9	41	0	E	20	1026.7
27	Th	6.4	22.7	0	3.0	10.8	WNW	35	14:42	12.6	50	1	WNW	15	1026.8	22.0	14	1	WNW	24	1020.7
28	Fr	11.9	17.5	0.2	7.4	10.7	SW	39	09:12	14.9	40	1	SW	30	1024.1	17.2	34	0	SE	20	1025.0
29	Sa	7.6	22.4	0	4.6	10.9	E	31	14:44	14.2	51	0	WNW	13	1030.7	20.6	31	0	ENE	24	1026.9
30	Su	8.5	26.8	0	5.0	11.0	NNW	33	22:49	14.3	57	0	NW	13	1025.4	26.3	22	0	NW	17	1018.4
31	Mo	14.3	21.8	0	6.8	9.2	S	56	12:11	19.8	44	1	W	17	1018.0	15.7	67	1	SSE	43	1018.1
Statistics for August 2020																					
	Mean	9.4	19.4		4.0	8.1				14.0	58	2		20	1016.1	17.8	43	3		24	1013.3
	Lowest	6.2	14.9		0.6	0.0				11.0	40	0	#	7	997.4	10.5	14	0	N	6	992.2
	Highest	14.3	26.8	28.2	7.4	11.0	SE	81		19.8	92	8	SSE	50	1030.7	26.3	93	8	#	46	1026.9
	Total			60.0	123.4	249.9															

Observations were drawn from Sydney Airport AMO {station 066037}

IDCJDW2125.202008 Prepared at 13:00 UTC on 7 Sep 2020
Copyright © 2020 Bureau of Meteorology

Users of this product are deemed to have read the information and accepted the conditions described in the notes at http://www.bom.gov.au/climate/dwo/IDCJDW0000.pdf

Appendix H5

Calibration Certificates

ThermoFisher SCIENTIFIC

The world leader in serving science

SERVICE OR REPAIR: PID MINIRAE LITE

COMPANY	Douglas Partners Pty Ltd				
CONTACT	Celine Li				
SERIAL NO.	595-002219	**CALL NO.**	SV2004240043	**LAMP TYPE**	10.6eV

REQUEST/PROBLEM DESCRIPTION
Routine Calibration

This equipment has been calibrated to the manufacturer's specifications, using the standards shown below:

ISOBUTYLENE STANDARD (ppm)	TRACEABILITY LOT NO.	PRE CALIBRATION READING	POST CALIBRATION READING
0 ppm	Fresh Air	0.0 ppm	0.0 ppm
100 ppm	1188079	96.4 ppm	100 ppm

COMMENTS/ADDITIONAL REPAIRS/SERVICES PERFORMED
Verified flow. Replaced inlet filter. Cleaned sensor assembly and lamp. Checked battery condition. Field calibration performed as per manufacturer's specifications.

SERVICED BY	Martin Slapp	**COMPLETED**	24th APR 2020
SIGNATURE	M. Slapp		

ThermoFisher SCIENTIFIC

The world leader in serving science

SERVICE OR REPAIR: PID MINIRAE LITE

COMPANY	Douglas Partners Pty Ltd				
CONTACT	Celine Li				
SERIAL NO.	595-004553	**CALL NO.**	SV2004240043	**LAMP TYPE**	10.6eV

REQUEST/PROBLEM DESCRIPTION
Routine Calibration

This equipment has been calibrated to the manufacturer's specifications, using the standards shown below:

ISOBUTYLENE STANDARD (ppm)	TRACEABILITY LOT NO.	PRE CALIBRATION READING	POST CALIBRATION READING
0 ppm	Fresh Air	0.2 ppm	0.0 ppm
100 ppm	1188079	100 ppm	100 ppm

COMMENTS/ADDITIONAL REPAIRS/SERVICES PERFORMED
Verified flow. Replaced inlet filter. Cleaned sensor assembly and lamp. Checked battery condition. Field calibration performed as per manufacturer's specifications.

SERVICED BY	Martin Slapp	**COMPLETED**	24th APR 2020
SIGNATURE	M. Slapp		

Calibration & Service Report
Water Quality Meter

Company:	Active Environmental Solutions Hire	**Manufacturer:**	YSI	**Hire Contract:**	2058
Address:	Unit 16, 191 Parramatta Road AUBURN NSW 2144	**Instrument/Model:**	Professional Plus	**Client:**	Douglas Partners
		Cable:	1m Quatro Cable	**Contact:**	Kurt Plambeck
Phone:	02 9716 5966 | **Fax**: 02 9716 5988	**Serial #:**	17D105825	**Project #:**	152228
Email:	hire@aesoultions.com.au	**Notes:**		**Notes:**	

Item	Test	Pass	Comments
Battery	2 x Alkaline C-cells	✓	Voltage reading above 2.9V
	Battery Saver	✓	Automatically turns off after 60 minutes if not used
Connections	Condition	✓	Good, clean
Cable	Condition	✓	Clean, no tears
Display	Operation	✓	
Firmware	Version	✓	4.0.0
Keypad	Operational	✓	
Display	Screen	✓	
Unit	Condition, seals and O-rings	✓	
Monitor housing	Condition	✓	
pH			
Condition		✓	New probe fitted
pH millivolts for pH7 calibration range 0 mV ± 50 mV		✓	
pH 4 mV range + 165 to + 180 from 7 buffer mV value		✓	
pH slope		✓	55 to 60 mV/pH; ideal 59mV
Response time < 90 seconds		✓	
Calibrated and conforms to manufacturer's specifications		✓	
ORP			
Condition		✓	New probe fitted
Response time < 90 seconds		✓	
within ± 80mv of reference Zobell Reading		✓	
Calibrated and conforms to manufacturer's specifications		✓	Variance range ± 20mV
Conductivity			
Condition		✓	Good, Clean.
Temperature		✓	°C
Conductivity cell constant 5.0 ± 1.0 in GLP file		✓	
Clean sensor reads less than 3 uS/cm in dry air		✓	
Calibrated and conforms to manufacturer's specifications		✓	µs/cm
Dissolved Oxygen			
Condition		✓	New probe fitted
DO sensor in use		✓	Polarographic
1.25 mil PE membrane (yellow membrane):		✓	
DO Sensor Value		✓	(min 4.31 uA - max 8.00 uA) Avg 6.15 uA
Calibrated and conforms to manufacturer's specifications		✓	ppm

				Instrument Readings		
Parameter	**Standards**	**Reference**	**Calibration Point**	**Before**	**After**	**Units**
Temperature	Center 370 Thermometer	Room Temp.	16.1	16.0	16.1	°C
pH	pH 4.00	349389	4.01	4.01	4.01	pH
pH	pH 7.00	349958	7.00	7.00	7.00	pH
Conductivity	2760 µs/cm at 25°C	354236	2760	2767	2760	µs/cm
ORP (Ref. check only)	Zobell A & B	340526 & 340529	247.8	244.3	247.8	mV
Zero Dissolved Oxygen	NaSO3 in distilled water	323461/V070819	0.0	0.0	0.0	%
100% Dissolved Oxygen	100% Air Saturation	Fresh Air	100.0	97.6	100.0	%

Calibrated By: William Pak

Calibration Date: 20/07/2020 **Calibration Due:** 20/01/2021

Douglas Partners
Geotechnics | Environment | Groundwater

YSI CALIBRATION RECORD

Serial Number: 17D105825

DP Identification No.

Project: Carss Park Pool

Project Number: 99751.00

PARAMETER	STANDARD	PRE CALIBRATION READING		POST CALIBRATION READING	
Temperature	* 23.0		degrees C		degrees C
pH	10	9.91	pH units	10.01	pH units
	7	7.02	pH units	7.00	pH units
	4	4.02	pH units	4.01	pH units
Conductivity	0.0** uS/cm	-	µS/cm	-	µS/cm
	2760 uS/cm	2763	µS/cm	2760	mS/cm
TDS	0.0** ppm	-	ppm	-	ppm
	36.0 ppk	-	ppk	-	ppk
Dissolved Oxygen	0.0% sat	-	ppm		
		0.0	%	0.0	%
	100.0**% sat	-	ppm		
		99.3	%	100.0	%
Turbidity	0*** NTU	-	NTU	-	NTU
	360 NTU	-	NTU	-	NTU
ORP	240 mV	237	mV	241	mV

Calibrated by: TG

Date: 28/7/20

* use NATA certified reference thermometer from soils clean lab
** air
*** distilled water

NOTES:

Form Updated 21Mar2011

CERTIFICATION OF CALIBRATION

Issued by: QED Environmental Systems Ltd.

Kalibrierzertifikat Nummer -Calibration Certificate number: 19252 H-02174

Instrument: Laser One **Seriennummer - Serial number** 19252

Beschreibung des Kalibriervorgangs:

Die Kalibrierung des Gerätes erfolgt durch Messung der Reaktionszeit des Sensors unter Beaufschlagung von geeichten Prüfgasen. Der angewandte Kalibriervorgang entspricht der Arbeitsweise des Gerätes. Der maximale Messfehler des Messgerätes wie im Datenblatt angegeben.

Description of the calibration procedure:

The calibration is verified with certified gas bottle. The maximum error of the instrument as specified in the datasheet.

Überprüfung des Messgerätes im Messbereich - Gas verification from 0 - 1000 ppm CH4

Full scale (ppm)	Gas concentration (ppm)	Response 1 (ppm)	Response 2 (ppm)	Response 3 (ppm)	Average response (ppm)	Maximum error (ppm)	Maximum error (% F.s.)	Maximum error %
1000	2.7	2.2	2.3	2.3	2.27	0.50	0.05	0.05
1000	3.1	3.2	3.2	3.2	3.20	0.10	0.01	0.01
1000	10.3	10.3	10.3	10.3	10.30	0.00	0.00	0.00
1000	107	99	99	99	99.00	8.00	0.80	0.80
1000	1000	995	996	996	995.67	5.00	0.50	0.50

Unsicherheit - Uncertainty	0.80		%
Maximaler Fehler % - Max % error	0.80		% FS

Überprüfung des Messgerätes im Messbereich – Gas verification from 0 - 100 % vol CH4

Full scale (%vol)	Gas concentration (%vol)	Response 1 (%vol)	Response 2 (%vol)	Response 3 (%vol)	Average response (%vol)	Maximum error (%vol)	Maximum error (% F.s.)	Maximum error %
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00
10.00	2.20	2.20	2.20	2.20	2.20	0.00	0.00	0.00
10.00	5.00	5.00	5.00	5.00	5.00	0.00	0.00	0.00
100.00	15.00	15.30	15.30	15.30	15.30	0.30	0.30	0.30
100.00	50.00	50.50	50.50	50.50	50.50	0.50	0.50	0.50
100.00	100.00	100.00	100.00	100.00	100.00	0.00	0.00	0.00

Unsicherheit - Uncertainty	0.50		%
Maximaler Fehler % - Max % error	0.50		% FS

Überprüfung des Messgerätes im Messbereich – Gas verification from 0 - 100% CH4 LEL (0 - 4.4% vol)

Full scale (%vol)	Gas concentration (LEL%)	Response 1 (LEL%)	Response 2 (LEL%)	Response 3 (LEL%)	Average response (%vol)	Maximum error (LEL%)	Maximum error (% F.s.)	Maximum error %
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.00	2.00	1.99	1.99	1.99	1.99	0.01	0.10	0.10
100.00	50.00	50.00	50.00	50.00	50.00	0.00	0.00	0.00

Incertezza - Uncertainty	0.10		%
Massimo errore % - Max % error	0.10		% FS

CERTIFICATION OF CALIBRATION

Issued by: QED Environmental Systems Ltd.

Umgebungsbedingungen für die Kalibrierung - Environmental conditions during calibration

Temperature	21.2	C
Pressure	990	mBar

Gasflaschen zur Kalibrierung - Gas bottles used for calibration

Gas	Cylinder number	Expiry date	Gas
Synthetic Air	S1624403EE	19/05/2023	Synthetic Air
3 ppm	143123SG	11/04/2024	CH4
10 ppm	114031SG	11/04/2024	CH4
100 ppm	S1145642R	20/10/2024	CH4
1000 ppm	S1100299S	10/04/2024	CH4
1.0 vol	S1198415S	10/04/2024	CH4
2.2% vol	SP1230777S	29/10/2024	CH4
5% vol	220622	15/01/2022	CH4
15% vol	220594	15/01/2022	CH4
50% vol	232920	08/11/2021	CH4
100% vol	S1260447	05/07/2023	CH4

Kalibrierungsergebnisse
Calibration results: Pass

Nächste geplante Kalibrierung
Next scheduled calibration: 24/02/2021

Kalibrierungsdatum
Calibration date: 24/02/2020

Kalibrierungsmanager
Calibration done by: Laura McBride

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 01-May-2020

Certificate Number: G500665_2/25589

Issued by: QED Environmental Systems Ltd.

Customer: **Thermo Fisher Scientific Australia Pty L**
5 Caribbean Drive PO Box 9092 Scoresby
VIC 3179 AUSTRALIA

Description: Gas Analyser

Model: GA5000

Serial Number: G500665

UKAS Accredited results:

Results after adjustment :

Methane (CH_4)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	5.0	0.41
15.0	15.0	0.64
59.9	59.4	0.94

Carbon Dioxide (CO_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.8	0.43
15.0	14.6	0.70
40.0	39.9	1.1

Oxygen (O_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
21.1	21.2	0.31

The inwards assessment was carried out 23-Apr-2020.
The maximum adjustment is larger than the inwards assessment uncertainty.
Inwards assessment data is available if requested.

All concentrations are molar.

CH_4, CO_2 readings recorded at : 31.8 °C ± 2.5 °C

O2 readings recorded at : 22.8 °C ± 2.5 °C

Barometric Pressure : 0986 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:109 IGC Instance:109

www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk

QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 01-May-2020

Certificate Number: G500665_2/25589

Issued by: QED Environmental Systems Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	**Instrument Reading**
986	986

Additional Gas Cells		
Gas	**Certified Gas (ppm)**	**Instrument Reading (ppm)**
H_2S	261	261
CO	504	504

Internal Flow	
Applied (l/hr)	**Instrument Reading (l/hr)**
5.0	5.2
10.0	10.2

Date of Issue : 04-May-2020 **Approved by Signatory**

Dawn Hemings

Laboratory Inspection

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance:109 IGC Instance:109

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QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

SERVICE REPORT

Issued by: QED Environmental Systems Ltd.

Customer Name: Thermo Fisher Scientific Australia Pty L

Model:	GA5000	**Date of Service:**	04-May-2020
Part Number:	GA5KA0F0-100	**Service Engineer:**	Mustafa Ghalaboun
Serial Number:	G500665	**Calibration Engineer:**	Suk Balrey

Verification / Approved By: Dawn Hemings **Signature:**

Reason for Return (inc. Customer Comments):

Returned for full service and calibration. Please email invoice to me for approval.

Service Comments/Feedback:

Thank you for returning your gas analyser to the QED Service Centre for full service and calibration. We are pleased to inform you that the analyser was received and fully assessed by one of our experienced Service Engineers and no significant faults or issues were observed during the assessment. Our extensive service was carried out, and any necessary components replaced. The analyser has successfully passed all of our rigorous testing and quality checks and has been calibrated using our bespoke, state of the art calibration facility.
For further information about how to get the best use from your instrument please visit our YouTube channel http://www.youtube.com/GeotechTV and on our Website https://qedenv.com

The O2 electrochemical sensor has been replaced due to it being over 3 years old in accordance with the manufacturer's recommendations, and also as a proactive measure based on our experience of the typical lifetime of this type of sensor.
The CO and H2S electrochemical sensor has been replaced due it being over 2 years old in accordance with the manufacturer's recommendations, and also as a proactive measure based on our experience of the typical lifetime of this type of sensor.
We have replaced the battery because it is over 2 years old. This is in accordance to the battery cell manufacturer's recommendation.

If you require any further assistance with your instrument please email our Technical Support Team at technical@qedenv.co.uk or call us on +44 (0) 333 800 0088 (Monday to Thursday 08.30 - 17.00 & Friday 08.30 - 15.30) UK time zone.

Next Service Due: 01-May-2023

17025	5	50	65	7,384	340	25
Our ISO accreditation for our customised auto-calibration facilities	Number of days we aim to complete your service within	Number of checks instruments are subject to when serviced	Number of countries from which we service instruments /accessories each year	Number of calibrations completed in last 12 months	Minimum number of service instruments we process each month	Cost (in £) of fully insured analyser collection for our UK customers

www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk

QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

SERVICE REPORT

Issued by: QED Environmental Systems Ltd.

17025	5	50	65	7,384	340	25
Our ISO accreditation for our customised auto-calibration facilities	Number of days we aim to complete your service within	Number of checks instruments are subject to when serviced	Number of countries from which we service instruments /accessories each year	Number of calibrations completed in last 12 months	Minimum number of service instruments we process each month	Cost (in £) of fully insured analyser collection for our UK customers

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QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

Appendix I

Laboratory Certificates of Analysis

Sample Receipt Advice

and Chain of Custody Documentation

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

CERTIFICATE OF ANALYSIS 247641

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	82 Soil
Date samples received	24/07/2020
Date completed instructions received	24/07/2020

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	31/07/2020
Date of Issue	03/08/2020

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

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

Results Approved By
Ken Nguyen, Reporting Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

Micro testing in soil					
Our Reference		247641-4	247641-9	247641-45	247641-53
Your Reference	UNITS	BH101/1.4-1.6	BH102/0.8-1.0	BH111/4.5-5.0	BH112/3.5-4.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil
Date testing started	-	25/07/2020	25/07/2020	25/07/2020	25/07/2020
Date testing completed	-	25/07/2020	25/07/2020	25/07/2020	25/07/2020
Total Coliforms in soil	MPN/100g	<200	<200	<200	<200
Faecal Coliforms in soil	MPN/100g	<200	<200	<200	<200
Pseudomonas Aeruginosa	cfu/g	<10	<10	<10	<10

Method ID	Methodology Summary
Ext-008	Subcontracted to Sonic Food & Water Testing. NATA Accreditation No. 4034.
Ext-054	Analysed by MPL Envirolab

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Faecal Coliform & Total Coliform analysed by Sonic Food & Water Testing. Report No W2015221
Pseudomonas aeruginosa analysed by MPL. Report no. 247823
Samples tested out of holding time.

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CERTIFICATE OF ANALYSIS 247641-A

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	82 Soil
Date samples received	24/07/2020
Date completed instructions received	24/07/2020

Analysis Details

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

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

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

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

Report Details

Date results requested by	29/07/2020
Date of Issue	29/07/2020

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Results Approved By
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Lucy Zhu, Asbestos Supervisor
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Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247641-A-1	247641-A-2	247641-A-4	247641-A-7	247641-A-8
Your Reference	UNITS	BH101/0.1-0.2	BH101/0.3-0.5	BH101/1.4-1.6	BH102/0.2-0.3	BH102/0.4-0.6
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	112	108	117	109	120

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247641-A-11	247641-A-12	247641-A-13	247641-A-16	247641-A-19
Your Reference	UNITS	BH102/2.5-3.0	BH103/0.1-0.2	BH103/0.4-0.5	BH103/1.6-1.8	BH104/0.1-0.2
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	112	119	128	119	133

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247641-A-23	247641-A-26	247641-A-29	247641-A-30	247641-A-32
Your Reference	UNITS	BH104/2.1-2.6	BH106/0.8-1.0	BH106/2.5-3.0	BH107/0.1-0.2	BH107/0.7-0.8
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	117	127	131	132	140

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247641-A-35	247641-A-36	247641-A-41	247641-A-43	247641-A-45
Your Reference	UNITS	BH107/1.8-2.0	BH111/0.1-0.2	BH111/1.7-1.8	BH111/2.4-2.8	BH111/4.5-5.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	124	122	131	81	93

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247641-A-46	247641-A-47	247641-A-51	247641-A-53	247641-A-54
Your Reference	UNITS	BH112/0.1-0.2	BH112/0.2-0.4	BH112/1.9-2.1	BH112/3.5-4.0	BH113/0.9-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	115	113	107	92	104

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247641-A-55	247641-A-56	247641-A-57	247641-A-60	247641-A-61
Your Reference	UNITS	BH114/0.7-0.8	BH115/1.5-1.6	BH116/0.2-0.3	BH116/1.8-1.9	BH118/0.2-0.3
Date Sampled		22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	106	96	126	125	113

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247641-A-67	247641-A-73	247641-A-75	247641-A-77	247641-A-78
Your Reference	UNITS	BH118/1.4-1.5	BD4/020200723	BD1/020200722	TS	TB
Date Sampled		22/07/2020	23/07/2020	23/07/2020	22/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	[NA]	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	[NA]	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	98%	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	84%	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	101%	<1
m+p-xylene	mg/kg	<2	<2	<2	101%	<2
o-Xylene	mg/kg	<1	<1	<1	101%	<1
naphthalene	mg/kg	<1	<1	<1	[NA]	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	[NA]	<3
Surrogate aaa-Trifluorotoluene	%	107	120	124	98	117

svTRH (C10-C40) in Soil						
Our Reference		247641-A-1	247641-A-2	247641-A-4	247641-A-7	247641-A-8
Your Reference	UNITS	BH101/0.1-0.2	BH101/0.3-0.5	BH101/1.4-1.6	BH102/0.2-0.3	BH102/0.4-0.6
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	102	104	102	107	105

svTRH (C10-C40) in Soil						
Our Reference		247641-A-11	247641-A-12	247641-A-13	247641-A-16	247641-A-19
Your Reference	UNITS	BH102/2.5-3.0	BH103/0.1-0.2	BH103/0.4-0.5	BH103/1.6-1.8	BH104/0.1-0.2
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	440	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	340	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	61	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	61	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	700	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	270	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	1,000	<50	<50	<50	<50
Surrogate o-Terphenyl	%	138	96	99	101	95

svTRH (C10-C40) in Soil						
Our Reference		247641-A-23	247641-A-26	247641-A-29	247641-A-30	247641-A-32
Your Reference	UNITS	BH104/2.1-2.6	BH106/0.8-1.0	BH106/2.5-3.0	BH107/0.1-0.2	BH107/0.7-0.8
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	550	160	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	480	160	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	860	280	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	270	130	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	1,100	410	<50	<50
Surrogate o-Terphenyl	%	98	120	114	96	111

svTRH (C10-C40) in Soil						
Our Reference		247641-A-35	247641-A-36	247641-A-41	247641-A-43	247641-A-45
Your Reference	UNITS	BH107/1.8-2.0	BH111/0.1-0.2	BH111/1.7-1.8	BH111/2.4-2.8	BH111/4.5-5.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	130	84	<50
TRH C_{15} - C_{28}	mg/kg	140	<100	750	1,200	<100
TRH C_{29} - C_{36}	mg/kg	170	<100	810	1,200	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	340	95	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	340	95	<50
TRH >C_{16} -C_{34}	mg/kg	270	<100	1,200	2,100	<100
TRH >C_{34} -C_{40}	mg/kg	100	<100	560	1,400	<100
Total +ve TRH (>C10-C40)	mg/kg	370	<50	2,100	3,600	<50
Surrogate o-Terphenyl	%	111	99	138	#	113

svTRH (C10-C40) in Soil						
Our Reference		247641-A-46	247641-A-47	247641-A-51	247641-A-53	247641-A-54
Your Reference	UNITS	BH112/0.1-0.2	BH112/0.2-0.4	BH112/1.9-2.1	BH112/3.5-4.0	BH113/0.9-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	102	105	104	108	102

svTRH (C10-C40) in Soil						
Our Reference		247641-A-55	247641-A-56	247641-A-57	247641-A-60	247641-A-61
Your Reference	UNITS	BH114/0.7-0.8	BH115/1.5-1.6	BH116/0.2-0.3	BH116/1.8-1.9	BH118/0.2-0.3
Date Sampled		22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	98	105	95	100	96

svTRH (C10-C40) in Soil				
Our Reference		247641-A-67	247641-A-73	247641-A-75
Your Reference	UNITS	BH118/1.4-1.5	BD4/020200723	BD1/020200722
Date Sampled		22/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50
Surrogate o-Terphenyl	%	98	98	96

PAHs in Soil						
Our Reference		247641-A-1	247641-A-2	247641-A-4	247641-A-7	247641-A-8
Your Reference	UNITS	BH101/0.1-0.2	BH101/0.3-0.5	BH101/1.4-1.6	BH102/0.2-0.3	BH102/0.4-0.6
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.3	0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	1	0.4	<0.1	0.2
Pyrene	mg/kg	<0.1	1.2	0.4	<0.1	0.2
Benzo(a)anthracene	mg/kg	<0.1	0.8	0.3	<0.1	0.2
Chrysene	mg/kg	<0.1	0.9	0.3	<0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	2	0.8	<0.2	0.4
Benzo(a)pyrene	mg/kg	<0.05	1.1	0.5	<0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.5	0.2	<0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.9	0.4	<0.1	0.2
Total +ve PAH's	mg/kg	<0.05	8.9	3.3	<0.05	1.7
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	1.6	0.6	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	1.6	0.6	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	1.6	0.7	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	91	94	92	93	92

PAHs in Soil						
Our Reference		247641-A-11	247641-A-12	247641-A-13	247641-A-16	247641-A-19
Your Reference	UNITS	BH102/2.5-3.0	BH103/0.1-0.2	BH103/0.4-0.5	BH103/1.6-1.8	BH104/0.1-0.2
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Naphthalene	mg/kg	0.3	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Pyrene	mg/kg	0.2	<0.1	<0.1	0.2	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	0.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.4	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	0.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Total +ve PAH's	mg/kg	0.67	<0.05	<0.05	1.7	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	101	93	90	89	92

PAHs in Soil						
Our Reference		247641-A-23	247641-A-26	247641-A-29	247641-A-30	247641-A-32
Your Reference	UNITS	BH104/2.1-2.6	BH106/0.8-1.0	BH106/2.5-3.0	BH107/0.1-0.2	BH107/0.7-0.8
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Naphthalene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	1.5	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	1.0	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	3.3	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	2.2	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	16	<0.1	0.1	<0.1
Pyrene	mg/kg	0.1	15	0.1	0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	7.4	<0.1	0.1	<0.1
Chrysene	mg/kg	<0.1	6.2	<0.1	0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.2	17	<0.2	0.3	<0.2
Benzo(a)pyrene	mg/kg	0.1	10	0.09	0.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	4.0	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	2.8	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	6.7	<0.1	0.2	<0.1
Total +ve PAH's	mg/kg	0.64	94	0.2	1.1	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	16	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	16	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	16	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	91	90	101	89	93

PAHs in Soil						
Our Reference		247641-A-35	247641-A-36	247641-A-41	247641-A-43	247641-A-45
Your Reference	UNITS	BH107/1.8-2.0	BH111/0.1-0.2	BH111/1.7-1.8	BH111/2.4-2.8	BH111/4.5-5.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	0.3	<0.1
Acenaphthylene	mg/kg	0.2	<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	0.8	<0.1	0.3	0.3	<0.1
Anthracene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	2.2	0.5	0.2	0.5	<0.1
Pyrene	mg/kg	2.3	0.6	0.2	0.4	<0.1
Benzo(a)anthracene	mg/kg	1.5	0.4	<0.1	<0.1	<0.1
Chrysene	mg/kg	1.5	0.4	<0.1	0.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	2.9	0.8	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	1.9	0.55	0.09	0.08	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.7	0.2	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.3	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	1.2	0.4	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	16	3.8	0.73	1.7	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	2.7	0.7	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	2.7	0.7	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	2.7	0.8	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	89	91	95	103	108

PAHs in Soil						
Our Reference		247641-A-46	247641-A-47	247641-A-51	247641-A-53	247641-A-54
Your Reference	UNITS	BH112/0.1-0.2	BH112/0.2-0.4	BH112/1.9-2.1	BH112/3.5-4.0	BH113/0.9-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.2	0.2	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.2	0.2	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.09	0.06	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	0.4	0.4	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	101	97	97	104	101

PAHs in Soil						
Our Reference		247641-A-55	247641-A-56	247641-A-57	247641-A-60	247641-A-61
Your Reference	UNITS	BH114/0.7-0.8	BH115/1.5-1.6	BH116/0.2-0.3	BH116/1.8-1.9	BH118/0.2-0.3
Date Sampled		22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.1	0.5
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	0.2	1.6
Pyrene	mg/kg	<0.1	<0.1	<0.1	0.2	2.0
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	1
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	0.06	1.4
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	0.52	12
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	1.9
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	1.9
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	1.9
Surrogate p-Terphenyl-d14	%	95	104	94	96	97

PAHs in Soil				
Our Reference		247641-A-67	247641-A-73	247641-A-75
Your Reference	UNITS	BH118/1.4-1.5	BD4/020200723	BD1/020200722
Date Sampled		22/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.06	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.2	0.06	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	99	95	96

Organochlorine Pesticides in soil						
Our Reference		247641-A-1	247641-A-8	247641-A-12	247641-A-23	247641-A-26
Your Reference	UNITS	BH101/0.1-0.2	BH102/0.4-0.6	BH103/0.1-0.2	BH104/2.1-2.6	BH106/0.8-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	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
gamma-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	0.2	<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	0.2	<0.1	<0.1	<0.1	<0.1
Endrin	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-DDD	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
pp-DDT	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	%	100	105	106	103	101

Organochlorine Pesticides in soil						
Our Reference		247641-A-30	247641-A-41	247641-A-46	247641-A-51	247641-A-54
Your Reference	UNITS	BH107/0.1-0.2	BH111/1.7-1.8	BH112/0.1-0.2	BH112/1.9-2.1	BH113/0.9-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	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
gamma-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	0.2	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	0.2	<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	0.2	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.8	<0.1	<0.1	<0.1	<0.1
Endrin	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-DDD	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
pp-DDT	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	0.2	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	102	107	104	108

Organochlorine Pesticides in soil						
Our Reference		247641-A-55	247641-A-56	247641-A-57	247641-A-67	247641-A-75
Your Reference	UNITS	BH114/0.7-0.8	BH115/1.5-1.6	BH116/0.2-0.3	BH118/1.4-1.5	BD1/020200722
Date Sampled		22/07/2020	22/07/2020	22/07/2020	22/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	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
gamma-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
Endosulfan II	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
Endrin Aldehyde	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
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	%	103	112	105	106	108

Organophosphorus Pesticides in Soil						
Our Reference		247641-A-1	247641-A-8	247641-A-12	247641-A-23	247641-A-26
Your Reference	UNITS	BH101/0.1-0.2	BH102/0.4-0.6	BH103/0.1-0.2	BH104/2.1-2.6	BH106/0.8-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
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
Diazinon	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
Ronnel	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
Chlorpyriphos	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
Bromophos-ethyl	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
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	105	106	103	101

Organophosphorus Pesticides in Soil						
Our Reference		247641-A-30	247641-A-41	247641-A-46	247641-A-51	247641-A-54
Your Reference	UNITS	BH107/0.1-0.2	BH111/1.7-1.8	BH112/0.1-0.2	BH112/1.9-2.1	BH113/0.9-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
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
Diazinon	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
Ronnel	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
Chlorpyriphos	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
Bromophos-ethyl	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
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	102	107	104	108

Organophosphorus Pesticides in Soil						
Our Reference		247641-A-55	247641-A-56	247641-A-57	247641-A-67	247641-A-75
Your Reference	UNITS	BH114/0.7-0.8	BH115/1.5-1.6	BH116/0.2-0.3	BH118/1.4-1.5	BD1/020200722
Date Sampled		22/07/2020	22/07/2020	22/07/2020	22/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
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
Diazinon	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
Ronnel	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
Chlorpyriphos	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
Bromophos-ethyl	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
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	103	112	105	106	108

PCBs in Soil						
Our Reference		247641-A-1	247641-A-8	247641-A-12	247641-A-23	247641-A-26
Your Reference	UNITS	BH101/0.1-0.2	BH102/0.4-0.6	BH103/0.1-0.2	BH104/2.1-2.6	BH106/0.8-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
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 TCMX	%	100	105	106	103	101

PCBs in Soil						
Our Reference		247641-A-30	247641-A-41	247641-A-46	247641-A-51	247641-A-54
Your Reference	UNITS	BH107/0.1-0.2	BH111/1.7-1.8	BH112/0.1-0.2	BH112/1.9-2.1	BH113/0.9-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
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 TCMX	%	101	102	107	104	108

PCBs in Soil						
Our Reference		247641-A-55	247641-A-56	247641-A-57	247641-A-67	247641-A-75
Your Reference	UNITS	BH114/0.7-0.8	BH115/1.5-1.6	BH116/0.2-0.3	BH118/1.4-1.5	BD1/020200722
Date Sampled		22/07/2020	22/07/2020	22/07/2020	22/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
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 TCMX	%	103	112	105	106	108

Acid Extractable metals in soil						
Our Reference		247641-A-1	247641-A-2	247641-A-4	247641-A-7	247641-A-8
Your Reference	UNITS	BH101/0.1-0.2	BH101/0.3-0.5	BH101/1.4-1.6	BH102/0.2-0.3	BH102/0.4-0.6
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Arsenic	mg/kg	<4	4	9	<4	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	10	7	8	9	11
Copper	mg/kg	57	69	15	62	23
Lead	mg/kg	7	66	52	3	36
Mercury	mg/kg	<0.1	0.1	<0.1	<0.1	0.2
Nickel	mg/kg	62	8	3	73	16
Zinc	mg/kg	37	98	68	34	48

Acid Extractable metals in soil						
Our Reference		247641-A-11	247641-A-12	247641-A-13	247641-A-16	247641-A-19
Your Reference	UNITS	BH102/2.5-3.0	BH103/0.1-0.2	BH103/0.4-0.5	BH103/1.6-1.8	BH104/0.1-0.2
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Arsenic	mg/kg	17	<4	<4	4	<4
Cadmium	mg/kg	3	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	910	9	32	10	9
Copper	mg/kg	100	67	4	20	59
Lead	mg/kg	450	3	4	61	5
Mercury	mg/kg	0.2	<0.1	<0.1	0.2	<0.1
Nickel	mg/kg	15	82	9	3	81
Zinc	mg/kg	2,800	36	7	130	42

Acid Extractable metals in soil						
Our Reference		247641-A-23	247641-A-26	247641-A-29	247641-A-30	247641-A-32
Your Reference	UNITS	BH104/2.1-2.6	BH106/0.8-1.0	BH106/2.5-3.0	BH107/0.1-0.2	BH107/0.7-0.8
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Arsenic	mg/kg	6	<4	8	<4	<4
Cadmium	mg/kg	3	<0.4	0.7	<0.4	<0.4
Chromium	mg/kg	14	15	24	7	5
Copper	mg/kg	59	26	89	31	5
Lead	mg/kg	95	14	710	32	63
Mercury	mg/kg	0.3	<0.1	0.2	0.2	<0.1
Nickel	mg/kg	8	16	26	8	1
Zinc	mg/kg	1,000	18	470	55	18

Acid Extractable metals in soil						
Our Reference		247641-A-35	247641-A-36	247641-A-41	247641-A-43	247641-A-45
Your Reference	UNITS	BH107/1.8-2.0	BH111/0.1-0.2	BH111/1.7-1.8	BH111/2.4-2.8	BH111/4.5-5.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Arsenic	mg/kg	7	<4	7	11	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	3	2
Chromium	mg/kg	22	7	12	210	52
Copper	mg/kg	16	62	21	75	47
Lead	mg/kg	160	5	69	120	1,600
Mercury	mg/kg	0.1	<0.1	0.2	0.3	0.4
Nickel	mg/kg	4	70	2	33	20
Zinc	mg/kg	140	38	80	420	3,400

Acid Extractable metals in soil						
Our Reference		247641-A-46	247641-A-47	247641-A-51	247641-A-53	247641-A-54
Your Reference	UNITS	BH112/0.1-0.2	BH112/0.2-0.4	BH112/1.9-2.1	BH112/3.5-4.0	BH113/0.9-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Arsenic	mg/kg	<4	7	9	7	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	2	<0.4
Chromium	mg/kg	8	11	9	38	6
Copper	mg/kg	65	14	8	42	8
Lead	mg/kg	6	64	44	320	22
Mercury	mg/kg	<0.1	3.8	<0.1	0.2	3.4
Nickel	mg/kg	74	4	3	18	2
Zinc	mg/kg	36	49	53	1,300	53

Acid Extractable metals in soil						
Our Reference		247641-A-55	247641-A-56	247641-A-57	247641-A-60	247641-A-61
Your Reference	UNITS	BH114/0.7-0.8	BH115/1.5-1.6	BH116/0.2-0.3	BH116/1.8-1.9	BH118/0.2-0.3
Date Sampled		22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Arsenic	mg/kg	4	6	8	12	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	2	4	6	8	5
Copper	mg/kg	2	21	<1	7	67
Lead	mg/kg	2	9	3	12	61
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Nickel	mg/kg	<1	5	<1	2	3
Zinc	mg/kg	5	79	4	28	120

Acid Extractable metals in soil				
Our Reference		247641-A-67	247641-A-73	247641-A-75
Your Reference	UNITS	BH118/1.4-1.5	BD4/020200723	BD1/020200722
Date Sampled		22/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020
Arsenic	mg/kg	<4	9	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	2	12	3
Copper	mg/kg	5	26	6
Lead	mg/kg	24	61	3
Mercury	mg/kg	<0.1	2.8	<0.1
Nickel	mg/kg	<1	3	1
Zinc	mg/kg	56	59	5

Moisture						
Our Reference		247641-A-1	247641-A-2	247641-A-4	247641-A-7	247641-A-8
Your Reference	UNITS	BH101/0.1-0.2	BH101/0.3-0.5	BH101/1.4-1.6	BH102/0.2-0.3	BH102/0.4-0.6
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Moisture	%	6.6	6.1	9.2	6.9	14

Moisture						
Our Reference		247641-A-11	247641-A-12	247641-A-13	247641-A-16	247641-A-19
Your Reference	UNITS	BH102/2.5-3.0	BH103/0.1-0.2	BH103/0.4-0.5	BH103/1.6-1.8	BH104/0.1-0.2
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Moisture	%	19	3.5	5.3	11	4.4

Moisture						
Our Reference		247641-A-23	247641-A-26	247641-A-29	247641-A-30	247641-A-32
Your Reference	UNITS	BH104/2.1-2.6	BH106/0.8-1.0	BH106/2.5-3.0	BH107/0.1-0.2	BH107/0.7-0.8
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Moisture	%	6.3	6.5	17	7.6	6.0

Moisture						
Our Reference		247641-A-35	247641-A-36	247641-A-41	247641-A-43	247641-A-45
Your Reference	UNITS	BH107/1.8-2.0	BH111/0.1-0.2	BH111/1.7-1.8	BH111/2.4-2.8	BH111/4.5-5.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Moisture	%	14	3.4	14	36	32

Moisture						
Our Reference		247641-A-46	247641-A-47	247641-A-51	247641-A-53	247641-A-54
Your Reference	UNITS	BH112/0.1-0.2	BH112/0.2-0.4	BH112/1.9-2.1	BH112/3.5-4.0	BH113/0.9-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Moisture	%	4.7	10	19	37	8.0

Moisture						
Our Reference		247641-A-55	247641-A-56	247641-A-57	247641-A-60	247641-A-61
Your Reference	UNITS	BH114/0.7-0.8	BH115/1.5-1.6	BH116/0.2-0.3	BH116/1.8-1.9	BH118/0.2-0.3
Date Sampled		22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Moisture	%	0.6	2.1	8.8	17	12

Moisture				
Our Reference		247641-A-67	247641-A-73	247641-A-75
Your Reference	UNITS	BH118/1.4-1.5	BD4/020200723	BD1/020200722
Date Sampled		22/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil
Date prepared	-	24/07/2020	24/07/2020	24/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020
Moisture	%	18	11	9.1

Asbestos ID - soils						
Our Reference		247641-A-1	247641-A-2	247641-A-4	247641-A-7	247641-A-8
Your Reference	UNITS	BH101/0.1-0.2	BH101/0.3-0.5	BH101/1.4-1.6	BH102/0.2-0.3	BH102/0.4-0.6
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 25g	Approx. 30g	Approx. 60g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO	NO	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		247641-A-11	247641-A-12	247641-A-13	247641-A-16	247641-A-19
Your Reference	UNITS	BH102/2.5-3.0	BH103/0.1-0.2	BH103/0.4-0.5	BH103/1.6-1.8	BH104/0.1-0.2
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Sample mass tested	g	18.31g	Approx. 30g	Approx. 25g	Approx. 40g	Approx. 35g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	YES	NO	NO	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		247641-A-23	247641-A-26	247641-A-29	247641-A-30	247641-A-32
Your Reference	UNITS	BH104/2.1-2.6	BH106/0.8-1.0	BH106/2.5-3.0	BH107/0.1-0.2	BH107/0.7-0.8
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Sample mass tested	g	Approx. 25g	Approx. 35g	Approx. 75g	Approx. 40g	Approx. 50g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO	NO	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		247641-A-35	247641-A-36	247641-A-41	247641-A-43	247641-A-45
Your Reference	UNITS	BH107/1.8-2.0	BH111/0.1-0.2	BH111/1.7-1.8	BH111/2.4-2.8	BH111/4.5-5.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Sample mass tested	g	Approx. 20g	Approx. 55g	Approx. 40g	Approx. 50g	Approx. 20g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO	NO	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		247641-A-46	247641-A-47	247641-A-51	247641-A-53	247641-A-54
Your Reference	UNITS	BH112/0.1-0.2	BH112/0.2-0.4	BH112/1.9-2.1	BH112/3.5-4.0	BH113/0.9-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Sample mass tested	g	Approx. 70g	Approx. 45g	Approx. 25g	Approx. 10g	Approx. 30g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO	NO	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils					
Our Reference		247641-A-55	247641-A-56	247641-A-57	247641-A-60
Your Reference	UNITS	BH114/0.7-0.8	BH115/1.5-1.6	BH116/0.2-0.3	BH116/1.8-1.9
Date Sampled		22/07/2020	22/07/2020	22/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Sample mass tested	g	Approx. 50g	Approx. 50g	Approx. 35g	Approx. 50g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Misc Soil - Inorg						
Our Reference		247641-A-1	247641-A-8	247641-A-12	247641-A-23	247641-A-26
Your Reference	UNITS	BH101/0.1-0.2	BH102/0.4-0.6	BH103/0.1-0.2	BH104/2.1-2.6	BH106/0.8-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg						
Our Reference		247641-A-30	247641-A-41	247641-A-46	247641-A-51	247641-A-54
Your Reference	UNITS	BH107/0.1-0.2	BH111/1.7-1.8	BH112/0.1-0.2	BH112/1.9-2.1	BH113/0.9-1.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg						
Our Reference		247641-A-55	247641-A-56	247641-A-57	247641-A-67	247641-A-75
Your Reference	UNITS	BH114/0.7-0.8	BH115/1.5-1.6	BH116/0.2-0.3	BH118/1.4-1.5	BD1/020200722
Date Sampled		22/07/2020	22/07/2020	22/07/2020	22/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Asbestos ID - soils NEPM			
Our Reference		247641-A-62	247641-A-66
Your Reference	UNITS	BH118/0.4-0.5	BH118/1.2-1.3
Date Sampled		22/07/2020	22/07/2020
Type of sample		Soil	Soil
Date analysed	-	28/07/2020	28/07/2020
Sample mass tested	g	1,402.71	1,523
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected Synthetic mineral fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–
FA and AF Estimation*	g	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001

Misc Inorg - Soil						
Our Reference		247641-A-2	247641-A-8	247641-A-13	247641-A-26	247641-A-41
Your Reference	UNITS	BH101/0.3-0.5	BH102/0.4-0.6	BH103/0.4-0.5	BH106/0.8-1.0	BH111/1.7-1.8
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
pH 1:5 soil:water	pH Units	7.7	7.8	7.8	9.2	8.0

Misc Inorg - Soil				
Our Reference		247641-A-55	247641-A-57	247641-A-67
Your Reference	UNITS	BH114/0.7-0.8	BH116/0.2-0.3	BH118/1.4-1.5
Date Sampled		22/07/2020	22/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020
pH 1:5 soil:water	pH Units	9.1	9.1	8.6

CEC						
Our Reference		247641-A-2	247641-A-8	247641-A-13	247641-A-26	247641-A-41
Your Reference	UNITS	BH101/0.3-0.5	BH102/0.4-0.6	BH103/0.4-0.5	BH106/0.8-1.0	BH111/1.7-1.8
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Exchangeable Ca	meq/100g	5.4	18	1.9	19	3.3
Exchangeable K	meq/100g	0.1	0.9	0.1	0.1	0.5
Exchangeable Mg	meq/100g	1.1	5.7	1.8	2.7	1.7
Exchangeable Na	meq/100g	<0.1	0.45	0.16	0.29	0.24
Cation Exchange Capacity	meq/100g	6.7	25	4.0	22	5.8

CEC				
Our Reference		247641-A-55	247641-A-57	247641-A-67
Your Reference	UNITS	BH114/0.7-0.8	BH116/0.2-0.3	BH118/1.4-1.5
Date Sampled		22/07/2020	22/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil
Date prepared	-	29/07/2020	29/07/2020	29/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020
Exchangeable Ca	meq/100g	20	14	9.0
Exchangeable K	meq/100g	<0.1	<0.1	<0.1
Exchangeable Mg	meq/100g	1.9	0.10	0.16
Exchangeable Na	meq/100g	0.15	0.14	<0.1
Cation Exchange Capacity	meq/100g	22	14	9.3

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals by ICP-AES.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.

Method ID	Methodology Summary
Org-020	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-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. 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-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	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-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	247641-A-8
Date extracted	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			29/07/2020	1	29/07/2020	29/07/2020		29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	84	111
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	84	111
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	78	108
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	91	116
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	90	120
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	83	109
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	78	103
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	119	1	112	121	8	127	99

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247641-A-46
Date extracted	-			[NT]	23	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			[NT]	23	29/07/2020	29/07/2020		29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	23	<25	<25	0	104	88
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	23	<25	<25	0	104	88
Benzene	mg/kg	0.2	Org-023	[NT]	23	<0.2	<0.2	0	102	90
Toluene	mg/kg	0.5	Org-023	[NT]	23	<0.5	<0.5	0	102	89
Ethylbenzene	mg/kg	1	Org-023	[NT]	23	<1	<1	0	103	84
m+p-xylene	mg/kg	2	Org-023	[NT]	23	<2	<2	0	106	88
o-Xylene	mg/kg	1	Org-023	[NT]	23	<1	<1	0	103	83
naphthalene	mg/kg	1	Org-023	[NT]	23	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	23	117	124	6	114	104

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]	41	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	29/07/2020	29/07/2020		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	41	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	41	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	41	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	41	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	41	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	41	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	41	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	41	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	41	131	115	13	[NT]	[NT]

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]	57	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	57	29/07/2020	29/07/2020		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	57	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	57	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	57	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	57	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	57	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	57	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	57	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	57	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	57	126	120	5	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	247641-A-8
Date extracted	-			28/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			28/07/2020	1	28/07/2020	28/07/2020		28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	106	116
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	90	91
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	92	76
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	106	116
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	90	91
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	92	76
Surrogate o-Terphenyl	%		Org-020	86	1	102	98	4	116	110

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247641-A-46
Date extracted	-			[NT]	23	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			[NT]	23	28/07/2020	28/07/2020		28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	23	<50	<50	0	111	109
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	23	<100	<100	0	89	96
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	23	<100	<100	0	108	92
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	23	<50	<50	0	111	109
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	23	<100	<100	0	89	96
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	23	<100	<100	0	108	92
Surrogate o-Terphenyl	%		Org-020	[NT]	23	98	102	4	92	90

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	28/07/2020	28/07/2020		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	41	130	76	52	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	41	750	450	50	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	41	810	510	45	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	41	340	210	47	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	41	1200	730	49	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	41	560	300	60	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	41	138	130	6	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	57	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	57	28/07/2020	28/07/2020		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	57	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	57	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	57	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	57	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	57	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	57	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	57	95	95	0	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	247641-A-8
Date extracted	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	100
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	96
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	85
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	81
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	88
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	110
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	120	132
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	99	1	91	91	0	89	88

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247641-A-46
Date extracted	-			[NT]	23	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			[NT]	23	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	104	96
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	90	80
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	98	91
Anthracene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	23	0.1	<0.1	0	96	86
Pyrene	mg/kg	0.1	Org-022/025	[NT]	23	0.1	0.1	0	96	89
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	90	80
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	23	0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	23	0.1	0.1	0	102	106
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	23	0.1	0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	23	91	90	1	98	94

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	41	0.3	0.3	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	41	0.2	0.2	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	41	0.2	0.2	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	41	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	41	0.09	0.1	11	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	41	95	98	3	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	57	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	57	27/07/2020	27/07/2020		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	57	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	57	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	57	94	98	4	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	247641-A-8
Date extracted	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	98
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	96
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	84	80
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	80
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	92
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.2	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	0.1	0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	0.1	0	102	98
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.3	40	130	114
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	91
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	124	130
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	82
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	105	1	100	103	3	104	106

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247641-A-46
Date extracted	-			[NT]	23	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			[NT]	23	27/07/2020	27/07/2020		27/07/2020	27/07/2020
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	104	98
HCB	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	98	90
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	94	90
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	106	100
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	98	90
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	98	94
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	112	102
Endrin	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	96	90
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	80	80
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	82	82
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	23	103	104	1	105	100

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	41	102	104	2	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	57	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	57	27/07/2020	27/07/2020		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	57	105	109	4	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	247641-A-8
Date extracted	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	124	118
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	90
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	99	97
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	103	90
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	104
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	130	126
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	110	110
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	105	1	100	103	3	104	106

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247641-A-46
Date extracted	-			[NT]	23	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			[NT]	23	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	124	124
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	92	96
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	86	92
Malathion	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	70	80
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	96	102
Parathion	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	94	118
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	82	94
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	23	103	104	1	105	100

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	41	102	104	2	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	57	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	57	27/07/2020	27/07/2020		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	57	105	109	4	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	247641-A-8
Date extracted	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	88	88
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	105	1	100	103	3	104	106

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247641-A-46
Date extracted	-			[NT]	23	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			[NT]	23	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	92	86
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	23	103	104	1	105	100

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	41	102	104	2	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	57	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	57	27/07/2020	27/07/2020		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	57	105	109	4	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247641-A-8
Date prepared	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	101	90
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	104	80
Chromium	mg/kg	1	Metals-020	<1	1	10	10	0	98	89
Copper	mg/kg	1	Metals-020	<1	1	57	59	3	100	108
Lead	mg/kg	1	Metals-020	<1	1	7	10	35	99	116
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	0.1	0	76	88
Nickel	mg/kg	1	Metals-020	<1	1	62	65	5	98	88
Zinc	mg/kg	1	Metals-020	<1	1	37	42	13	100	94

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247641-A-46
Date prepared	-			[NT]	23	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			[NT]	23	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Arsenic	mg/kg	4	Metals-020	[NT]	23	6	5	18	104	83
Cadmium	mg/kg	0.4	Metals-020	[NT]	23	3	3	0	107	77
Chromium	mg/kg	1	Metals-020	[NT]	23	14	10	33	101	82
Copper	mg/kg	1	Metals-020	[NT]	23	59	47	23	103	89
Lead	mg/kg	1	Metals-020	[NT]	23	95	90	5	101	75
Mercury	mg/kg	0.1	Metals-021	[NT]	23	0.3	0.2	40	120	116
Nickel	mg/kg	1	Metals-020	[NT]	23	8	9	12	101	#
Zinc	mg/kg	1	Metals-020	[NT]	23	1000	730	31	101	#

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	41	7	8	13	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	41	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	41	12	12	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	41	21	25	17	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	41	69	60	14	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	41	0.2	0.2	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	41	2	3	40	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	41	80	97	19	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	57	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	57	27/07/2020	27/07/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	57	8	<4	67	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	57	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	57	6	3	67	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	57	<1	1	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	57	3	3	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	57	<1	<1	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	57	4	5	22	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	247641-A-8
Date prepared	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Date analysed	-			27/07/2020	1	27/07/2020	27/07/2020		27/07/2020	27/07/2020
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	1	<5	<5	0	103	103

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	27/07/2020	27/07/2020		[NT]	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	[NT]	41	<5	<5	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date prepared	-			28/07/2020	2	28/07/2020	28/07/2020		28/07/2020	[NT]
Date analysed	-			28/07/2020	2	28/07/2020	28/07/2020		28/07/2020	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	2	7.7	7.4	4	100	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date prepared	-			29/07/2020	[NT]	[NT]	[NT]	[NT]	29/07/2020	[NT]
Date analysed	-			29/07/2020	[NT]	[NT]	[NT]	[NT]	29/07/2020	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

8 metals in soil - # Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples 247641-A-1, 2, 4, 7, 12, 13, 19, 23, 26, 30, 32, 36, 41, 45, 46, 47, 54, 55, 56, 60 were sub-sampled from jars provided by the client.

Sample 247641-A-8; Chrysotile and Amosite asbestos identified embedded in a fragment of fibre cement, however it is estimated less than the reporting limit for the method (i.e. < 0.1g/kg).

TRH Soil C10-C40 NEPM - The RPD for duplicate results is accepted due to the non homogenous nature of sample 247641-A-41.

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CERTIFICATE OF ANALYSIS 247641-B

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	82 Soil
Date samples received	24/07/2020
Date completed instructions received	24/07/2020

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	27/07/2020
Date of Issue	27/07/2020

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

Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

sPOCAS field test						
Our Reference		247641-B-15	247641-B-16	247641-B-18	247641-B-22	247641-B-33
Your Reference	UNITS	BH103/1.4-1.6	BH103/1.6-1.8	BH103/2.8-3.0	BH104/1.5-1.7	BH107/1.3-1.4
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
pH_F (field pH test)*	pH Units	7.1	7.9	8.1	6.9	7.1
pH_{FOX} (field peroxide test)*	pH Units	4.0	5.5	2.8	4.9	4.9
Reaction Rate*	-	High reaction	Medium reaction	Medium reaction	Medium reaction	High reaction

sPOCAS field test						
Our Reference		247641-B-35	247641-B-38	247641-B-40	247641-B-42	247641-B-43
Your Reference	UNITS	BH107/1.8-2.0	BH111/0.8-1.0	BH111/1.2-1.4	BH111/2.2-2.4	BH111/2.4-2.8
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
pH_F (field pH test)*	pH Units	8.0	9.2	7.8	8.0	7.7
pH_{FOX} (field peroxide test)*	pH Units	6.4	9.0	2.6	6.8	6.9
Reaction Rate*	-	Extreme reaction	Volcanic reaction	Volcanic reaction	Volcanic reaction	High reaction

sPOCAS field test						
Our Reference		247641-B-44	247641-B-45	247641-B-49	247641-B-51	247641-B-52
Your Reference	UNITS	BH111/3.6-4.0	BH111/4.5-5.0	BH112/1.1-1.3	BH112/1.9-2.1	BH112/2.2-2.6
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
pH_F (field pH test)*	pH Units	7.5	7.3	8.0	8.1	8.0
pH_{FOX} (field peroxide test)*	pH Units	3.9	6.5	5.0	3.6	7.2
Reaction Rate*	-	High reaction	Volcanic reaction	Medium reaction	Extreme reaction	Medium reaction

sPOCAS field test						
Our Reference		247641-B-53	247641-B-57	247641-B-58	247641-B-59	247641-B-60
Your Reference	UNITS	BH112/3.5-4.0	BH116/0.2-0.3	BH116/0.9-1.0	BH116/1.5-1.6	BH116/1.8-1.9
Date Sampled		23/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
pH_F (field pH test)*	pH Units	7.6	8.9	8.7	8.5	8.2
pH_{FOX} (field peroxide test)*	pH Units	3.0	6.4	6.5	6.5	6.1
Reaction Rate*	-	Extreme reaction	Medium reaction	Medium reaction	Low reaction	Low reaction

sPOCAS field test						
Our Reference		247641-B-61	247641-B-63	247641-B-65	247641-B-67	247641-B-69
Your Reference	UNITS	BH118/0.2-0.3	BH118/0.7-0.8	BH118/0.9-1.0	BH118/1.4-1.5	BH118/1.9-2.0
Date Sampled		22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Date analysed	-	27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
pH_F (field pH test)*	pH Units	9.8	8.1	8.1	7.9	8.1
pH_{FOX} (field peroxide test)*	pH Units	6.4	6.0	6.0	6.0	6.1
Reaction Rate*	-	Low reaction	Low reaction	Low reaction	Low reaction	Low reaction

Method ID	Methodology Summary
Inorg-063	pH- measured using pH meter and electrode. Soil is oxidised with Hydrogen Peroxide or extracted with water. Based on section H, Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004. To ensure accurate results these tests are recommended to be done in the field as pH may change with time thus these results may not be representative of true field conditions.

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
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Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

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CERTIFICATE OF ANALYSIS 247641-C

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	82 Soil
Date samples received	24/07/2020
Date completed instructions received	03/08/2020

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	05/08/2020
Date of Issue	05/08/2020

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Results Approved By
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Jaimie Loa-Kum-Cheung, Metals Supervisor
Steven Luong, Organics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		247641-C-25	247641-C-39
Your Reference	UNITS	BH106/0.2-0.4	BH111/1.1-1.2
Date Sampled		23/07/2020	23/07/2020
Type of sample		Soil	Soil
Date extracted	-	04/08/2020	04/08/2020
Date analysed	-	04/08/2020	04/08/2020
TRH C_6 - C_9	mg/kg	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
naphthalene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<3	<3
Surrogate aaa-Trifluorotoluene	%	121	111

svTRH (C10-C40) in Soil			
Our Reference		247641-C-25	247641-C-39
Your Reference	UNITS	BH106/0.2-0.4	BH111/1.1-1.2
Date Sampled		23/07/2020	23/07/2020
Type of sample		Soil	Soil
Date extracted	-	04/08/2020	04/08/2020
Date analysed	-	05/08/2020	05/08/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100
TRH C_{29} - C_{36}	mg/kg	160	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50
TRH >C_{16} -C_{34}	mg/kg	170	<100
TRH >C_{34} -C_{40}	mg/kg	190	<100
Total +ve TRH (>C10-C40)	mg/kg	360	<50
Surrogate o-Terphenyl	%	90	94

PAHs in Soil			
Our Reference		247641-C-25	247641-C-39
Your Reference	UNITS	BH106/0.2-0.4	BH111/1.1-1.2
Date Sampled		23/07/2020	23/07/2020
Type of sample		Soil	Soil
Date extracted	-	04/08/2020	04/08/2020
Date analysed	-	04/08/2020	04/08/2020
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1
Acenaphthene	mg/kg	0.4	<0.1
Fluorene	mg/kg	0.2	<0.1
Phenanthrene	mg/kg	0.3	<0.1
Anthracene	mg/kg	0.2	<0.1
Fluoranthene	mg/kg	0.7	<0.1
Pyrene	mg/kg	0.7	<0.1
Benzo(a)anthracene	mg/kg	0.3	<0.1
Chrysene	mg/kg	0.3	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.3	<0.2
Benzo(a)pyrene	mg/kg	0.4	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.2	<0.1
Total +ve PAH's	mg/kg	4.2	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.6	<0.5
Surrogate p-Terphenyl-d14	%	98	94

Acid Extractable metals in soil			
Our Reference		247641-C-25	247641-C-39
Your Reference	UNITS	BH106/0.2-0.4	BH111/1.1-1.2
Date Sampled		23/07/2020	23/07/2020
Type of sample		Soil	Soil
Date prepared	-	04/08/2020	04/08/2020
Date analysed	-	04/08/2020	04/08/2020
Arsenic	mg/kg	5	<4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	6	2
Copper	mg/kg	9	2
Lead	mg/kg	23	<1
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	5	1
Zinc	mg/kg	39	4

Moisture			
Our Reference		247641-C-25	247641-C-39
Your Reference	UNITS	BH106/0.2-0.4	BH111/1.1-1.2
Date Sampled		23/07/2020	23/07/2020
Type of sample		Soil	Soil
Date prepared	-	04/08/2020	04/08/2020
Date analysed	-	05/08/2020	05/08/2020
Moisture	%	7.3	2.4

sTPH in Soil (C10-C40)-Silica				
Our Reference		247641-C-11	247641-C-42	247641-C-43
Your Reference	UNITS	BH102/2.5-3.0	BH111/2.2-2.4	BH111/2.4-2.8
Date Sampled		23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	04/08/2020	04/08/2020	04/08/2020
Date analysed	-	05/08/2020	05/08/2020	05/08/2020
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	400	130	400
TPH C_{29} - C_{36}	mg/kg	150	140	230
TPH >C_{10} -C_{16}	mg/kg	<50	<50	<50
TPH >C_{16} -C_{34}	mg/kg	<100	240	600
TPH >C_{34} -C_{40}	mg/kg	570	<100	130
Surrogate o-Terphenyl	%	115	93	93

TCLP Preparation - Acid						
Our Reference		247641-C-2	247641-C-7	247641-C-11	247641-C-12	247641-C-19
Your Reference	UNITS	BH101/0.3-0.5	BH102/0.2-0.3	BH102/2.5-3.0	BH103/0.1-0.2	BH104/0.1-0.2
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
pH of soil for fluid# determ.	pH units	6.8	9.9	9.1	9.9	10.0
pH of soil TCLP (after HCl)	pH units	1.6	1.8	1.8	1.8	1.8
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.0	5.1	5.5	5.1	5.1

TCLP Preparation - Acid						
Our Reference		247641-C-26	247641-C-29	247641-C-35	247641-C-43	247641-C-44
Your Reference	UNITS	BH106/0.8-1.0	BH106/2.5-3.0	BH107/1.8-2.0	BH111/2.4-2.8	BH111/3.6-4.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
pH of soil for fluid# determ.	pH units	9.8	8.3	8.9	8.8	9.1
pH of soil TCLP (after HCl)	pH units	4.7	1.7	1.8	1.9	1.8
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	6.3	5.2	5.4	5.2	5.6

TCLP Preparation - Acid				
Our Reference		247641-C-46	247641-C-53	247641-C-61
Your Reference	UNITS	BH112/0.1-0.2	BH112/3.5-4.0	BH118/0.2-0.3
Date Sampled		23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil
pH of soil for fluid# determ.	pH units	10.0	7.8	9.2
pH of soil TCLP (after HCl)	pH units	1.9	1.8	1.7
Extraction fluid used	-	1	1	1
pH of final Leachate	pH units	5.1	5.3	5.0

PAHs in TCLP (USEPA 1311)					
Our Reference		247641-C-2	247641-C-26	247641-C-35	247641-C-61
Your Reference	UNITS	BH101/0.3-0.5	BH106/0.8-1.0	BH107/1.8-2.0	BH118/0.2-0.3
Date Sampled		23/07/2020	23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Date analysed	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Naphthalene in TCLP	mg/L	<0.001	0.001	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	0.001	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	0.002	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	0.0043	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	106	97	96	100

Metals in TCLP USEPA1311						
Our Reference		247641-C-7	247641-C-11	247641-C-12	247641-C-19	247641-C-29
Your Reference	UNITS	BH102/0.2-0.3	BH102/2.5-3.0	BH103/0.1-0.2	BH104/0.1-0.2	BH106/2.5-3.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Date analysed	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Arsenic in TCLP	mg/L	[NA]	0.06	[NA]	[NA]	[NA]
Cadmium in TCLP	mg/L	[NA]	<0.01	[NA]	[NA]	[NA]
Chromium in TCLP	mg/L	[NA]	0.02	[NA]	[NA]	[NA]
Copper in TCLP	mg/L	[NA]	<0.01	[NA]	[NA]	[NA]
Lead in TCLP	mg/L	[NA]	0.2	[NA]	[NA]	4.4
Mercury in TCLP	mg/L	[NA]	<0.0005	[NA]	[NA]	[NA]
Nickel in TCLP	mg/L	0.2	0.07	0.1	0.1	[NA]
Zinc in TCLP	mg/L	[NA]	5.6	[NA]	[NA]	[NA]

Metals in TCLP USEPA1311						
Our Reference		247641-C-35	247641-C-43	247641-C-44	247641-C-46	247641-C-53
Your Reference	UNITS	BH107/1.8-2.0	BH111/2.4-2.8	BH111/3.6-4.0	BH112/0.1-0.2	BH112/3.5-4.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Date analysed	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Arsenic in TCLP	mg/L	[NA]	0.05	0.05	[NA]	[NA]
Cadmium in TCLP	mg/L	[NA]	<0.01	<0.01	[NA]	[NA]
Chromium in TCLP	mg/L	[NA]	0.07	<0.01	[NA]	[NA]
Copper in TCLP	mg/L	[NA]	<0.01	<0.01	[NA]	[NA]
Lead in TCLP	mg/L	1.2	0.64	4.7	[NA]	0.34
Mercury in TCLP	mg/L	[NA]	<0.0005	<0.0005	[NA]	[NA]
Nickel in TCLP	mg/L	[NA]	0.2	0.1	0.2	[NA]
Zinc in TCLP	mg/L	[NA]	7.8	5.0	[NA]	[NA]

Metals-ASLP Neutral (ICP-MS)						
Our Reference		247641-C-11	247641-C-23	247641-C-29	247641-C-43	247641-C-44
Your Reference	UNITS	BH102/2.5-3.0	BH104/2.1-2.6	BH106/2.5-3.0	BH111/2.4-2.8	BH111/3.6-4.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Date analysed	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020	05/08/2020
pH of final Leachate	pH units	8.3	9.3	8.4	8.5	8.7
Arsenic in ASLP	µg/L	3	2	4	3	<1
Cadmium in ASLP	µg/L	<0.1	0.2	0.2	<0.1	<0.1
Chromium in ASLP	µg/L	49	10	6	72	3
Copper in ASLP	µg/L	6	15	14	5	8
Lead in ASLP	µg/L	14	17	96	51	110
Mercury in ASLP	µg/L	<0.05	0.08	<0.05	<0.05	<0.05
Nickel in ASLP	µg/L	2	4	3	3	3
Zinc in ASLP	µg/L	55	180	78	95	73

Metals-ASLP Neutral (ICP-MS)		
Our Reference		247641-C-53
Your Reference	UNITS	BH112/3.5-4.0
Date Sampled		23/07/2020
Type of sample		Soil
Date extracted	-	05/08/2020
Date analysed	-	05/08/2020
pH of final Leachate	pH units	8.6
Arsenic in ASLP	µg/L	2
Cadmium in ASLP	µg/L	<0.1
Chromium in ASLP	µg/L	2
Copper in ASLP	µg/L	1
Lead in ASLP	µg/L	17
Mercury in ASLP	µg/L	<0.05
Nickel in ASLP	µg/L	2
Zinc in ASLP	µg/L	63

Misc Inorg - Soil						
Our Reference		247641-C-3	247641-C-13	247641-C-26	247641-C-41	247641-C-47
Your Reference	UNITS	BH101/0.7-0.8	BH103/0.4-0.5	BH106/0.8-1.0	BH111/1.7-1.8	BH112/0.2-0.4
Date Sampled		23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Date analysed	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Chloride, Cl 1:5 soil:water	mg/kg	<10	<10	<10	<10	27

Misc Inorg - Soil						
Our Reference		247641-C-54	247641-C-55	247641-C-56	247641-C-57	247641-C-60
Your Reference	UNITS	BH113/0.9-1.0	BH114/0.7-0.8	BH115/1.5-1.6	BH116/0.2-0.3	BH116/1.8-1.9
Date Sampled		22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Date analysed	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Chloride, Cl 1:5 soil:water	mg/kg	<10	20	36	<10	<10

Misc Inorg - Soil			
Our Reference		247641-C-61	247641-C-62
Your Reference	UNITS	BH118/0.2-0.3	BH118/0.4-0.5
Date Sampled		22/07/2020	22/07/2020
Type of sample		Soil	Soil
Date prepared	-	05/08/2020	05/08/2020
Date analysed	-	05/08/2020	05/08/2020
Chloride, Cl 1:5 soil:water	mg/kg	<10	<10

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
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.
Metals-021 ASLP	Determination of Mercury by Cold Vapour AAS following neutral water leaching by AS 4439.3 - 1997.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS following leaching using neutralised deionised water by AS 4439.3 - 1997.
Org-020	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-020	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-022/025	Leachates are extracted with Dichloromethane and analysed by GC-MS/GC-MSMS.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	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-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Date analysed	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	89	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	89	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	92	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	89	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	111	[NT]	[NT]	[NT]	[NT]	111	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Date analysed	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	123	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	110	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	123	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	123	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	110	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	123	[NT]
Surrogate o-Terphenyl	%		Org-020	109	[NT]	[NT]	[NT]	[NT]	130	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Date analysed	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	116	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	97	[NT]	[NT]	[NT]	[NT]	120	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date prepared	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Date analysed	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	98	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	97	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]

QUALITY CONTROL: sTPH in Soil (C10-C40)-Silica						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	[NT]
Date extracted	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Date analysed	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
TPH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	102	[NT]
TPH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TPH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	84	[NT]
TPH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	102	[NT]
TPH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TPH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	84	[NT]
Surrogate o-Terphenyl	%		Org-020	90	[NT]	[NT]	[NT]	[NT]	121	[NT]

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	82	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	76	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	82	[NT]
Anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	74	[NT]
Pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	80	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	74	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	72	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	111	[NT]	[NT]	[NT]	[NT]	85	[NT]

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	247641-C-11
Date extracted	-			05/08/2020	7	05/08/2020	05/08/2020		05/08/2020	05/08/2020
Date analysed	-			05/08/2020	7	05/08/2020	05/08/2020		05/08/2020	05/08/2020
Arsenic in TCLP	mg/L	0.05	Metals-020 ICP-AES	<0.05	[NT]	[NT]	[NT]	[NT]	113	113
Cadmium in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01	[NT]	[NT]	[NT]	[NT]	99	96
Chromium in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01	[NT]	[NT]	[NT]	[NT]	99	99
Copper in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01	[NT]	[NT]	[NT]	[NT]	110	113
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	96	94
Mercury in TCLP	mg/L	0.0005	Metals-021 CV-AAS	<0.0005	[NT]	[NT]	[NT]	[NT]	99	100
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	7	0.2	0.2	0	100	98
Zinc in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	[NT]	[NT]	[NT]	[NT]	98	92

QUALITY CONTROL: Metals-ASLP Neutral (ICP-MS)						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	247641-C-23
Date extracted	-			05/08/2020	11	05/08/2020	05/08/2020		05/08/2020	05/08/2020
Date analysed	-			05/08/2020	11	05/08/2020	05/08/2020		05/08/2020	05/08/2020
Arsenic in ASLP	µg/L	1	Metals-022	<1	11	3	3	0	96	94
Cadmium in ASLP	µg/L	0.1	Metals-022	<0.1	11	<0.1	<0.1	0	94	93
Chromium in ASLP	µg/L	1	Metals-022	<1	11	49	49	0	99	97
Copper in ASLP	µg/L	1	Metals-022	<1	11	6	6	0	104	97
Lead in ASLP	µg/L	1	Metals-022	<1	11	14	14	0	106	95
Mercury in ASLP	µg/L	0.05	Metals-021 ASLP	<0.05	11	<0.05	<0.05	0	104	98
Nickel in ASLP	µg/L	1	Metals-022	<1	11	2	2	0	98	96
Zinc in ASLP	µg/L	1	Metals-022	<1	11	55	65	17	102	#

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	247641-C-13
Date prepared	-			05/08/2020	3	05/08/2020	05/08/2020		05/08/2020	05/08/2020
Date analysed	-			05/08/2020	3	05/08/2020	05/08/2020		05/08/2020	05/08/2020
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	3	<10	<10	0	87	76

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	60	05/08/2020	05/08/2020		[NT]	[NT]
Date analysed	-			[NT]	60	05/08/2020	05/08/2020		[NT]	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	[NT]	60	<10	<10	0	[NT]	[NT]

Result Definitions

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

Quality Control Definitions

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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.
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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.
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Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Metals-ASLP Neutral (ICP-MS) - # Percent recovery is not possible to report due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 247641-D

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	82 Soil
Date samples received	24/07/2020
Date completed instructions received	04/08/2020

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	07/08/2020
Date of Issue	07/08/2020

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Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Chromium Suite					
Our Reference		247641-D-18	247641-D-40	247641-D-53	247641-D-69
Your Reference	UNITS	BH103/2.8-3.0	BH111/1.2-1.4	BH112/3.5-4.0	BH118/1.9-2.0
Date Sampled		23/07/2020	23/07/2020	23/07/2020	22/07/2020
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Date analysed	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020
pH $_{kcl}$	pH units	6.7	6.8	8.7	8.8
s-TAA pH 6.5	%w/w S	<0.01	<0.01	<0.01	<0.01
TAA pH 6.5	moles H^+ /t	<5	<5	<5	<5
Chromium Reducible Sulfur	%w/w	0.06	0.09	0.27	0.02
a-Chromium Reducible Sulfur	moles H^+ /t	38	59	170	11
S_{HCl}	%w/w S	NA	NA	NA	NA
S_{KCl}	%w/w S	0.009	0.007	0.056	<0.005
S_{NAS}	%w/w S	NA	NA	NA	NA
ANC_{BT}	% $CaCO_3$	1.4	0.60	3.2	1.1
s-ANC_{BT}	%w/w S	0.45	0.19	1.0	0.35
s-Net Acidity	%w/w S	<0.005	<0.005	<0.005	<0.005
a-Net Acidity	moles H^+ /t	<5	<5	<5	<5
Liming rate	kg $CaCO_3$ /t	<0.75	<0.75	<0.75	<0.75
a-Net Acidity without ANCE	moles H^+ /t	38	59	170	11
Liming rate without ANCE	kg $CaCO_3$ /t	2.9	4.4	13	0.86
s-Net Acidity without ANCE	%w/w S	0.061	0.094	0.27	0.018

Method ID	Methodology Summary
Inorg-068	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.

QUALITY CONTROL: Chromium Suite						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			05/08/2020	18	05/08/2020	05/08/2020		05/08/2020	[NT]
Date analysed	-			05/08/2020	18	05/08/2020	05/08/2020		05/08/2020	[NT]
pH $_{kcl}$	pH units		Inorg-068	[NT]	18	6.7	6.7	0	96	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-068	<0.01	18	<0.01	<0.01	0	[NT]	[NT]
TAA pH 6.5	moles H^+ /t	5	Inorg-068	<5	18	<5	<5	0	100	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	<0.005	18	0.06	0.06	0	[NT]	[NT]
a-Chromium Reducible Sulfur	moles H^+ /t	3	Inorg-068	<3	18	38	41	8	115	[NT]
S_{HCl}	%w/w S	0.005	Inorg-068	<0.005	18	NA	NA		[NT]	[NT]
S_{KCl}	%w/w S	0.005	Inorg-068	<0.005	18	0.009	0.007	25	[NT]	[NT]
S_{NAS}	%w/w S	0.005	Inorg-068	<0.005	18	NA	NA		[NT]	[NT]
ANC_{BT}	% $CaCO_3$	0.05	Inorg-068	<0.05	18	1.4	1.0	33	[NT]	[NT]
s-ANC_{BT}	%w/w S	0.05	Inorg-068	<0.05	18	0.45	0.34	28	[NT]	[NT]
s-Net Acidity	%w/w S	0.005	Inorg-068	<0.005	18	<0.005	<0.005	0	[NT]	[NT]
a-Net Acidity	moles H^+ /t	5	Inorg-068	<5	18	<5	<5	0	[NT]	[NT]
Liming rate	kg $CaCO_3$ /t	0.75	Inorg-068	<0.75	18	<0.75	<0.75	0	[NT]	[NT]
a-Net Acidity without ANCE	moles H^+ /t	5	Inorg-068	<5	18	38	41	8	[NT]	[NT]
Liming rate without ANCE	kg $CaCO_3$ /t	0.75	Inorg-068	<0.75	18	2.9	3.1	7	[NT]	[NT]
s-Net Acidity without ANCE	%w/w S	0.005	Inorg-068	<0.005	18	0.061	0.065	6	[NT]	[NT]

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐	No ☐	(If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total Coliform	Feacal Coliform	HUB							Notes/preservation
BH101/0.1-0.2	1	23/07/20	S	G										
BH101/0.3-0.5	2	23/07/20	S	G										
BH101/0.7-0.8	3	23/07/20	S	G+P										
BH101/1.4-1.6	4	23/07/20	S	G&P	x	x	x							
BH101/2.1-2.2	5	23/07/20	S	G+P										
BH102/0.1-0.2	6	23/07/20	S	G										
BH102/0.2-0.3	7	23/07/20	S	G										
BH102/0.4-0.6	8	23/07/20	S	G&P										
BH102/0.8-1.0	9	23/07/20	S	G+P	x	x	x							
BH102/1.6-2.0	10	23/07/20	S	G&P										
BH102/2.5-3.0	11	23/07/20	S	G&P										
BH103/0.1-0.2	12	23/07/20	S	G										
BH103/0.4-0.5	13	23/07/20	S	G										
BH103/0.9-1.0	14	23/07/20	S	G										
BH103/1.4-1.6	15	23/07/20	S	G&P										
PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes** ☐

Envirolab Services
~~12 Ashley St~~
Chatswood NSW 2067
Ph. (02) 9910 6200
Job No: 247641
Date Received: 24-7-2020
Time Received: 0900
Received By: KG
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH, 24/7/2020, 09:05 **Received by:** ELS Syd K-Lore **Date & Time:** 24-7-2020 0900

Douglas Partners
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CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total coliform	Feacal Coliform	HUB							Notes/preservation
BH103/1.6-1.8	16	23/07/20	S	x2 G&P										
BH103/2.3-2.5	17	23/07/20	S	x2 G										
BH103/2.8-3.0	18	23/07/20	S	G&P ← bag labelled '102' assumed to be 103 -KG.										
BH104/0.1-0.2	19	23/07/20	S	G										
BH104/0.4-0.5	20	23/07/20	S	G										
BH104/0.9-1.1	21	23/07/20	S	G										
BH104/1.5-1.7	22	23/07/20	S	x2 G&P										
BH104/2.1-2.6	23	23/07/20	S	G										
BH106/0.1-0.2	24	23/07/20	S	G										
BH106/0.2-0.4	25	23/07/20	S	G										
BH106/0.8-1.0	26	23/07/20	S	G										
BH106/1.3-1.5	27	23/07/20	S	G&P										
BH106/2.1-2.3	28	23/07/20	S	G x2										
BH106/2.5-3.0	29	23/07/20	S	G+P										
BH107/0.1-0.2	30	23/07/20	S	G										
PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 247641

Total number of samples in container:	**Relinquished by:** AS	**Transported to laboratory by:**	DP
Send Results to Douglas Partners Pty Ltd	**Address**	**Phone:**	**Fax:**
Signed: DIH, 24/7/2020, 09:05	**Received by:** ELS Syd K-Lure	**Date & Time:** 24/7/20	0900

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total coliform	Feacal Coliform	HUB							Notes/preservation
BH107/0.2-0.3	31	23/07/20	S	G										
BH107/0.7-0.8	32	23/07/20	S	G										
BH107/1.3-1.4	33	23/07/20	S	G&P										
BH107/1.4-1.5	34	23/07/20	S	G x2										
BH107/1.8-2.0	35	23/07/20	S	G&P										
BH111/0.1-0.2	36	23/07/20	S	G										
BH111/0.2-0.4	37	23/07/20	S	G										
BH111/0.8-1.0	38	23/07/20	S	G+P										
BH111/1.1-1.2	39	23/07/20	S	G										
BH111/1.2-1.4	40	23/07/20	S	G&P										
BH111/1.7-1.8	41	23/07/20	S	G										
BH111/2.2-2.4	42	23/07/20	S	G&P										
BH111/2.4-2.8	43	23/07/20	S	G&P										
BH111/3.6-4.0	44	23/07/20	S	G&P										
BH111/4.5-5.0	45	23/07/20	S	x2 G&P	x	x	x							
PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 247641

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

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

Signed: DIH, 24/7/2020, 09:05 **Received by:** ELS Syd K-Gore **Date & Time:** 24-7-2020 0900

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total coliform	Feacal Coliform	HUB							Notes/preservation
BH112/0.1-0.2	46	23/07/20	S	G										
BH112/0.2-0.4	47	23/07/20	S	G										
BH112/0.8-0.9	48	23/07/20	S	G										
BH112/1.1-1.3	49	23/07/20	S	G&P										
BH112/1.4-1.6	50	23/07/20	S	G										
BH112/1.9-2.1	51	23/07/20	S	G&P										
BH112/2.2-2.6	52	23/07/20	S	G&P										
BH112/3.5-4.0	53	23/07/20	S	*2 G&P	x	x	x							
BH113/0.9-1.0	54	22/07/20	S	G										
BH114/0.7-0.8	55	22/07/20	S	G										
BH115/1.5-1.6	56	22/07/20	S	G										
BH116/0.2-0.3	57	22/07/20	S	G&P										
BH116/0.9-1.0	58	22/07/20	S	G&P										
BH116/1.5-1.6	59	22/07/20	S	G&P										
BH116/1.8-1.9	60	22/07/20	S	G&P										
PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 247641

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

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

Signed: DIH, 24/7/2020, 09:05 **Received by:** ELS Syd K. Cove **Date & Time:** 24.7.2020 0900

Douglas Partners
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CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total coliform	Feacal Coliform	HUB							Notes/preservation
BH118/0.2-0.3	61	22/07/20	S	G&P										
BH118/0.4-0.5	62	22/07/20	S	P										
BH118/0.7-0.8	63	22/07/20	S	G&P										
BH118/0.8-0.9	64	22/07/20	S	P										
BH118/0.9-1.0	65	22/07/20	S	G&P										
BH118/1.2-1.3	66	22/07/20	S	P										
BH118/1.4-1.5	67	22/07/20	S	G&P										
BH118/1.7-1.8	68	22/07/20	S	P										
BH118/1.9-2.0	69	22/07/20	S	G&P										
extras BD2/20200722	75 ~~70~~													
BD1/20200723	70													
BD2/20200722	76													
BD2/20200723	73													
BD3/20200723	72													
BD4/20200723	73													
PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 247641

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

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

Signed: DIH, 24/7/2020, 09:05 **Received by:** EDS Syd K. Lee **Date & Time:** 24-7-20 0900

BD5/20200723 74 ~~77~~
TS 77 22/7
TB 78 22/7

extras: BH116 0.4-0.5 79
BH116 0.7-0.8 80
BH116 1.2-1.3 81
BH116 1.9-2.0 82
← all AF/FA bags.

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden

Sample Login Details

Your reference	99751.00, Carss Park Swimming Pool
Envirolab Reference	247641
Date Sample Received	24/07/2020
Date Instructions Received	24/07/2020
Date Results Expected to be Reported	31/07/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	82 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14.4
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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

Sample ID	Micro testing in soil	On Hold
BH101/0.1-0.2		✓
BH101/0.3-0.5		✓
BH101/0.7-0.8		✓
BH101/1.4-1.6	✓	
BH101/2.1-2.2		✓
BH102/0.1-0.2		✓
BH102/0.2-0.3		✓
BH102/0.4-0.6		✓
BH102/0.8-1.0	✓	
BH102/1.6-2.0		✓
BH102/2.5-3.0		✓
BH103/0.1-0.2		✓
BH103/0.4-0.5		✓
BH103/0.9-1.0		✓
BH103/1.4-1.6		✓
BH103/1.6-1.8		✓
BH103/2.3-2.5		✓
BH103/2.8-3.0		✓
BH104/0.1-0.2		✓
BH104/0.4-0.5		✓
BH104/0.9-1.1		✓
BH104/1.5-1.7		✓
BH104/2.1-2.6		✓
BH106/0.1-0.2		✓
BH106/0.2-0.4		✓
BH106/0.8-1.0		✓
BH106/1.3-1.5		✓
BH106/2.1-2.3		✓
BH106/2.5-3.0		✓
BH107/0.1-0.2		✓
BH107/0.2-0.3		✓
BH107/0.7-0.8		✓

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Sample ID	Micro testing in soil	On Hold
BH107/1.3-1.4		✓
BH107/1.4-1.5		✓
BH107/1.8-2.0		✓
BH111/0.1-0.2		✓
BH111/0.2-0.4		✓
BH111/0.8-1.0		✓
BH111/1.1-1.2		✓
BH111/1.2-1.4		✓
BH111/1.7-1.8		✓
BH111/2.2-2.4		✓
BH111/2.4-2.8		✓
BH111/3.6-4.0		✓
BH111/4.5-5.0	✓	
BH112/0.1-0.2		✓
BH112/0.2-0.4		✓
BH112/0.8-0.9		✓
BH112/1.1-1.3		✓
BH112/1.4-1.6		✓
BH112/1.9-2.1		✓
BH112/2.2-2.6		✓
BH112/3.5-4.0	✓	
BH113/0.9-1.0		✓
BH114/0.7-0.8		✓
BH115/1.5-1.6		✓
BH116/0.2-0.3		✓
BH116/0.9-1.0		✓
BH116/1.5-1.6		✓
BH116/1.8-1.9		✓
BH118/0.2-0.3		✓
BH118/0.4-0.5		✓
BH118/0.7-0.8		✓
BH118/0.8-0.9		✓

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customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	Micro testing in soil	On Hold
BH118/0.9-1.0		✓
BH118/1.2-1.3		✓
BH118/1.4-1.5		✓
BH118/1.7-1.8		✓
BH118/1.9-2.0		✓
-		✓
BD2/020200723		✓
-		✓
BD4/020200723		✓
BD5/020200723		✓
BD1/020200722		✓
BD2/020200722		✓
TS		✓
TB		✓
BH116 0.4-0.5		✓
BH116 0.7-0.8		✓
BH116 1.2-1.3		✓
BH116 1.9-2.0		✓

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 247737

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimmimg Pool**
Number of Samples	47 soil
Date samples received	24/07/2020
Date completed instructions received	27/07/2020

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	30/07/2020
Date of Issue	30/07/2020

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Asbestos Approved By
Analysed by Asbestos Approved Identifier: Nyovan Moonean
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Senior Chemist
Lucy Zhu, Asbestos Supervisor
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247737-1	247737-2	247737-3	247737-4	247737-7
Your Reference	UNITS	BH101/2.2-2.7	BH104/2.6-3.1	BH105/0.1-0.2	BH105/0.4-0.5	BH105/1.6-1.7
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	99	104	89	84	97

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247737-9	247737-12	247737-14	247737-18	247737-21
Your Reference	UNITS	BH106/3.5-4.0	BH108/0.1-0.2	BH108/0.9-1.1	BH108/4.7-5.0	BH109/0.8-1.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	90	84	82	105	105

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247737-24	247737-27	247737-29	247737-34	247737-36
Your Reference	UNITS	BH109/2.5-3.0	BH109/5.5-6.0	BH110/0.6-0.7	BH110/3.5-4.0	BH110/4.5-5.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	104	105	110	89	101

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247737-37	247737-41	247737-44	247737-45	247737-46
Your Reference	UNITS	BH117/0.2-0.4	BH119/0.4-0.6	BD3/20200724	Trip Spike	Trip Blank
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	[NA]	[NA]
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	[NA]	[NA]
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	[NA]	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	101%	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	102%	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	101%	<1
m+p-xylene	mg/kg	3	<2	<2	102%	<2
o-Xylene	mg/kg	1	<1	<1	102%	<1
naphthalene	mg/kg	<1	<1	<1	[NA]	[NA]
Total +ve Xylenes	mg/kg	4	<3	<3	[NA]	[NA]
Surrogate aaa-Trifluorotoluene	%	99	107	100	94	113

svTRH (C10-C40) in Soil						
Our Reference		247737-1	247737-2	247737-3	247737-4	247737-7
Your Reference	UNITS	BH101/2.2-2.7	BH104/2.6-3.1	BH105/0.1-0.2	BH105/0.4-0.5	BH105/1.6-1.7
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	28/07/2020	29/07/2020	29/07/2020	28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	110	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	170	320	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	110	240	300	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	130	180	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	110	380	480	<50	<50
Surrogate o-Terphenyl	%	71	80	79	68	68

svTRH (C10-C40) in Soil						
Our Reference		247737-9	247737-12	247737-14	247737-18	247737-21
Your Reference	UNITS	BH106/3.5-4.0	BH108/0.1-0.2	BH108/0.9-1.1	BH108/4.7-5.0	BH109/0.8-1.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	160	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	160	<50	<50	<50	<50
Surrogate o-Terphenyl	%	81	77	67	66	68

svTRH (C10-C40) in Soil						
Our Reference		247737-24	247737-27	247737-29	247737-34	247737-36
Your Reference	UNITS	BH109/2.5-3.0	BH109/5.5-6.0	BH110/0.6-0.7	BH110/3.5-4.0	BH110/4.5-5.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	120	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	120	<50
Surrogate o-Terphenyl	%	68	77	69	79	77

svTRH (C10-C40) in Soil				
Our Reference		247737-37	247737-41	247737-44
Your Reference	UNITS	BH117/0.2-0.4	BH119/0.4-0.6	BD3/20200724
Date Sampled		24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	120	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	120	<50	<50
Surrogate o-Terphenyl	%	79	77	66

PAHs in Soil						
Our Reference		247737-1	247737-2	247737-3	247737-4	247737-7
Your Reference	UNITS	BH101/2.2-2.7	BH104/2.6-3.1	BH105/0.1-0.2	BH105/0.4-0.5	BH105/1.6-1.7
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
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	0.2	0.9	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	0.4	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.4	2.9	0.3	<0.1	<0.1
Pyrene	mg/kg	0.3	3.2	0.3	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.2	1.8	0.2	<0.1	<0.1
Chrysene	mg/kg	0.2	1.7	0.4	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.2	4.2	1	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.2	3.0	0.4	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	1.7	0.3	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	2.6	0.3	<0.1	<0.1
Total +ve PAH's	mg/kg	1.6	23	3.5	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	4.1	0.6	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	4.1	0.7	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	4.1	0.7	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	104	104	101	101	101

PAHs in Soil						
Our Reference		247737-9	247737-12	247737-14	247737-18	247737-21
Your Reference	UNITS	BH106/3.5-4.0	BH108/0.1-0.2	BH108/0.9-1.1	BH108/4.7-5.0	BH109/0.8-1.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.9	<0.1	<0.1	<0.1	0.2
Anthracene	mg/kg	0.4	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	1.8	0.1	<0.1	<0.1	0.4
Pyrene	mg/kg	1.7	0.1	<0.1	<0.1	0.4
Benzo(a)anthracene	mg/kg	0.9	0.1	<0.1	<0.1	0.3
Chrysene	mg/kg	0.8	<0.1	<0.1	<0.1	0.3
Benzo(b,j+k)fluoranthene	mg/kg	1	<0.2	<0.2	<0.2	0.5
Benzo(a)pyrene	mg/kg	0.83	0.08	<0.05	<0.05	0.3
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	<0.1	0.2
Total +ve PAH's	mg/kg	9.6	0.5	<0.05	<0.05	2.9
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.1	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.1	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.2	<0.5	<0.5	<0.5	0.5
Surrogate p-Terphenyl-d14	%	103	105	109	103	106

PAHs in Soil						
Our Reference		247737-24	247737-27	247737-29	247737-34	247737-36
Your Reference	UNITS	BH109/2.5-3.0	BH109/5.5-6.0	BH110/0.6-0.7	BH110/3.5-4.0	BH110/4.5-5.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	0.4	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	0.4	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.2	<0.2
Benzo(a)pyrene	mg/kg	0.05	<0.05	<0.05	0.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Total +ve PAH's	mg/kg	0.3	<0.05	<0.05	1.8	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	103	105	106	106	105

PAHs in Soil				
Our Reference		247737-37	247737-41	247737-44
Your Reference	UNITS	BH117/0.2-0.4	BH119/0.4-0.6	BD3/20200724
Date Sampled		24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.2	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1
Phenanthrene	mg/kg	2.1	0.3	<0.1
Anthracene	mg/kg	0.6	0.1	<0.1
Fluoranthene	mg/kg	4.8	0.8	<0.1
Pyrene	mg/kg	5.1	0.9	<0.1
Benzo(a)anthracene	mg/kg	2.7	0.5	<0.1
Chrysene	mg/kg	2.5	0.5	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	4.4	0.9	<0.2
Benzo(a)pyrene	mg/kg	3.2	0.66	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	1.6	0.3	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.3	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	2.1	0.5	<0.1
Total +ve PAH's	mg/kg	30	5.5	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	4.4	0.8	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	4.4	0.9	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	4.4	0.9	<0.5
Surrogate p-Terphenyl-d14	%	105	103	105

Organochlorine Pesticides in soil						
Our Reference		247737-3	247737-9	247737-12	247737-21	247737-34
Your Reference	UNITS	BH105/0.1-0.2	BH106/3.5-4.0	BH108/0.1-0.2	BH109/0.8-1.0	BH110/3.5-4.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	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
gamma-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
Endosulfan II	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
Endrin Aldehyde	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
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	%	87	94	88	94	85

Organochlorine Pesticides in soil		
Our Reference		247737-41
Your Reference	UNITS	BH119/0.4-0.6
Date Sampled		24/07/2020
Type of sample		soil
Date extracted	-	28/07/2020
Date analysed	-	29/07/2020
alpha-BHC	mg/kg	<0.1
HCB	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	84

Organophosphorus Pesticides in Soil						
Our Reference		247737-3	247737-9	247737-12	247737-21	247737-34
Your Reference	UNITS	BH105/0.1-0.2	BH106/3.5-4.0	BH108/0.1-0.2	BH109/0.8-1.0	BH110/3.5-4.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
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
Diazinon	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
Ronnel	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
Chlorpyriphos	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
Bromophos-ethyl	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
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	87	94	88	94	85

Organophosphorus Pesticides in Soil		
Our Reference		247737-41
Your Reference	UNITS	BH119/0.4-0.6
Date Sampled		24/07/2020
Type of sample		soil
Date extracted	-	28/07/2020
Date analysed	-	29/07/2020
Dichlorvos	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Diazinon	mg/kg	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Malathion	mg/kg	<0.1
Chlorpyriphos	mg/kg	<0.1
Parathion	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Ethion	mg/kg	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1
Surrogate TCMX	%	84

PCBs in Soil						
Our Reference		247737-3	247737-9	247737-12	247737-21	247737-34
Your Reference	UNITS	BH105/0.1-0.2	BH106/3.5-4.0	BH108/0.1-0.2	BH109/0.8-1.0	BH110/3.5-4.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
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 TCMX	%	87	94	88	94	85

PCBs in Soil		
Our Reference		247737-41
Your Reference	UNITS	BH119/0.4-0.6
Date Sampled		24/07/2020
Type of sample		soil
Date extracted	-	28/07/2020
Date analysed	-	29/07/2020
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCMX	%	84

Acid Extractable metals in soil						
Our Reference		247737-1	247737-2	247737-3	247737-4	247737-7
Your Reference	UNITS	BH101/2.2-2.7	BH104/2.6-3.1	BH105/0.1-0.2	BH105/0.4-0.5	BH105/1.6-1.7
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Arsenic	mg/kg	12	8	37	23	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	31	11	8	5
Copper	mg/kg	24	51	24	4	<1
Lead	mg/kg	200	86	75	8	9
Mercury	mg/kg	0.2	0.3	<0.1	<0.1	<0.1
Nickel	mg/kg	9	42	3	<1	<1
Zinc	mg/kg	360	140	99	15	5

Acid Extractable metals in soil						
Our Reference		247737-9	247737-12	247737-14	247737-18	247737-21
Your Reference	UNITS	BH106/3.5-4.0	BH108/0.1-0.2	BH108/0.9-1.1	BH108/4.7-5.0	BH109/0.8-1.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Arsenic	mg/kg	8	<4	8	11	5
Cadmium	mg/kg	1	<0.4	<0.4	<0.4	0.6
Chromium	mg/kg	24	8	8	17	19
Copper	mg/kg	120	19	14	2	50
Lead	mg/kg	180	66	19	16	95
Mercury	mg/kg	0.3	<0.1	<0.1	<0.1	0.1
Nickel	mg/kg	26	2	1	3	43
Zinc	mg/kg	300	140	7	26	92

Acid Extractable metals in soil						
Our Reference		247737-24	247737-27	247737-29	247737-34	247737-36
Your Reference	UNITS	BH109/2.5-3.0	BH109/5.5-6.0	BH110/0.6-0.7	BH110/3.5-4.0	BH110/4.5-5.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Arsenic	mg/kg	9	12	<4	10	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	29	21	6	19	18
Copper	mg/kg	21	12	4	18	<1
Lead	mg/kg	94	44	15	87	8
Mercury	mg/kg	0.4	<0.1	<0.1	0.2	<0.1
Nickel	mg/kg	5	7	1	4	3
Zinc	mg/kg	180	70	12	100	13

Acid Extractable metals in soil				
Our Reference		247737-37	247737-41	247737-44
Your Reference	UNITS	BH117/0.2-0.4	BH119/0.4-0.6	BD3/20200724
Date Sampled		24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020
Arsenic	mg/kg	<4	8	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	3	4	8
Copper	mg/kg	27	110	4
Lead	mg/kg	38	110	21
Mercury	mg/kg	0.2	0.1	<0.1
Nickel	mg/kg	2	6	1
Zinc	mg/kg	72	200	24

Moisture						
Our Reference		247737-1	247737-2	247737-3	247737-4	247737-7
Your Reference	UNITS	BH101/2.2-2.7	BH104/2.6-3.1	BH105/0.1-0.2	BH105/0.4-0.5	BH105/1.6-1.7
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Moisture	%	27	38	47	6.1	5.8

Moisture						
Our Reference		247737-9	247737-12	247737-14	247737-18	247737-21
Your Reference	UNITS	BH106/3.5-4.0	BH108/0.1-0.2	BH108/0.9-1.1	BH108/4.7-5.0	BH109/0.8-1.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Moisture	%	16	7.4	23	21	13

Moisture						
Our Reference		247737-24	247737-27	247737-29	247737-34	247737-36
Your Reference	UNITS	BH109/2.5-3.0	BH109/5.5-6.0	BH110/0.6-0.7	BH110/3.5-4.0	BH110/4.5-5.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Moisture	%	24	26	7.1	24	20

Moisture				
Our Reference		247737-37	247737-41	247737-44
Your Reference	UNITS	BH117/0.2-0.4	BH119/0.4-0.6	BD3/20200724
Date Sampled		24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	29/07/2020	29/07/2020
Moisture	%	6.3	7.2	7.4

Asbestos ID - soils						
Our Reference		247737-1	247737-2	247737-3	247737-4	247737-7
Your Reference	UNITS	BH101/2.2-2.7	BH104/2.6-3.1	BH105/0.1-0.2	BH105/0.4-0.5	BH105/1.6-1.7
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Sample mass tested	g	Approx. 45g	Approx. 35g	Approx. 25g	Approx. 35g	Approx. 60g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected Synthetic mineral fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO	NO	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		247737-10	247737-12	247737-14	247737-16	247737-21
Your Reference	UNITS	BH106/4.0-4.5	BH108/0.1-0.2	BH108/0.9-1.1	BH108/3.0-3.5	BH109/0.8-1.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date analysed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Sample mass tested	g	Approx. 50g	Approx. 30g	Approx. 35g	58.10g	Approx. 40g
Sample Description	-	Brown coarse-grained soil & rocks	Brown fine-grained soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	Chrysotile asbestos detected Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	NO	NO	NO	YES	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils				
Our Reference		247737-24	247737-29	247737-38
Your Reference	UNITS	BH109/2.5-3.0	BH110/0.6-0.7	BH117/0.4-0.6
Date Sampled		24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil
Date analysed	-	29/07/2020	29/07/2020	29/07/2020
Sample mass tested	g	34.27g	Approx. 40g	Approx. 40g
Sample Description	-	Brown clayey soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	Chrysotile asbestos detected Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	YES	NO	NO
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected

Misc Soil - Inorg						
Our Reference		247737-3	247737-9	247737-12	247737-21	247737-34
Your Reference	UNITS	BH105/0.1-0.2	BH106/3.5-4.0	BH108/0.1-0.2	BH109/0.8-1.0	BH110/3.5-4.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	29/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	29/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg		
Our Reference		247737-41
Your Reference	UNITS	BH119/0.4-0.6
Date Sampled		24/07/2020
Type of sample		soil
Date prepared	-	28/07/2020
Date analysed	-	28/07/2020
Total Phenolics (as Phenol)	mg/kg	<5

Asbestos ID - soils NEPM			
Our Reference		247737-8	247737-34
Your Reference	UNITS	BH106/3.0-3.5	BH110/3.5-4.0
Date Sampled		24/07/2020	24/07/2020
Type of sample		soil	soil
Date analysed	-	29/07/2020	29/07/2020
Sample mass tested	g	582.52	516.68
Sample Description	-	Brown clayey soil & rocks	Brown clayey soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–
FA and AF Estimation*	g	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001

Misc Inorg - Soil		
Our Reference		247737-37
Your Reference	UNITS	BH117/0.2-0.4
Date Sampled		24/07/2020
Type of sample		soil
Date prepared	-	29/07/2020
Date analysed	-	29/07/2020
pH 1:5 soil:water	pH Units	9.9

CEC		
Our Reference		247737-37
Your Reference	UNITS	BH117/0.2-0.4
Date Sampled		24/07/2020
Type of sample		soil
Date prepared	-	30/07/2020
Date analysed	-	30/07/2020
Exchangeable Ca	meq/100g	3.4
Exchangeable K	meq/100g	0.2
Exchangeable Mg	meq/100g	0.13
Exchangeable Na	meq/100g	<0.1
Cation Exchange Capacity	meq/100g	3.8

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals by ICP-AES.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.

Method ID	Methodology Summary
Org-020	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-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. 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-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	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-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247737-12
Date extracted	-			28/07/2020	3	28/07/2020	28/07/2020		28/07/2020	28/07/2020
Date analysed	-			29/07/2020	3	29/07/2020	29/07/2020		29/07/2020	29/07/2020
TRH C_6 - C_9	mg/kg	25	Org-023	<25	3	<25	<25	0	82	98
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	3	<25	<25	0	82	98
Benzene	mg/kg	0.2	Org-023	<0.2	3	<0.2	<0.2	0	81	97
Toluene	mg/kg	0.5	Org-023	<0.5	3	<0.5	<0.5	0	80	96
Ethylbenzene	mg/kg	1	Org-023	<1	3	<1	<1	0	83	99
m+p-xylene	mg/kg	2	Org-023	<2	3	<2	<2	0	83	98
o-Xylene	mg/kg	1	Org-023	<1	3	<1	<1	0	82	98
naphthalene	mg/kg	1	Org-023	<1	3	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	95	3	89	104	16	93	109

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]	41	28/07/2020	28/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	29/07/2020	29/07/2020		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	41	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	41	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	41	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	41	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	41	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	41	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	41	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	41	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	41	107	113	5	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247737-12
Date extracted	-			28/07/2020	3	28/07/2020	28/07/2020		28/07/2020	28/07/2020
Date analysed	-			28/07/2020	3	29/07/2020	29/07/2020		28/07/2020	28/07/2020
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	3	<50	<50	0	91	84
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	3	<100	130	26	91	91
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	3	320	260	21	92	113
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	3	<50	<50	0	91	84
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	3	300	280	7	91	91
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	3	180	180	0	92	113
Surrogate o-Terphenyl	%		Org-020	100	3	79	80	1	97	93

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	28/07/2020	28/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	29/07/2020	30/07/2020		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	41	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	41	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	41	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	41	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	41	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	41	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	41	77	109	34	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247737-12
Date extracted	-			28/07/2020	3	28/07/2020	28/07/2020		28/07/2020	28/07/2020
Date analysed	-			29/07/2020	3	29/07/2020	29/07/2020		29/07/2020	29/07/2020
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	100	96
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	100	98
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	102	100
Anthracene	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	3	0.3	0.3	0	90	94
Pyrene	mg/kg	0.1	Org-022/025	<0.1	3	0.3	0.3	0	92	96
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	3	0.2	0.3	40	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	3	0.4	0.4	0	92	84
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	3	1	1	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	3	0.4	0.5	22	98	108
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	3	0.3	0.3	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	3	0.3	0.3	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	99	3	101	103	2	90	100

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	28/07/2020	28/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	29/07/2020	29/07/2020		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	41	0.3	0.2	40	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	41	0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	41	0.8	0.6	29	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	41	0.9	0.7	25	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	41	0.5	0.4	22	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	41	0.5	0.4	22	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	41	0.9	0.8	12	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	41	0.66	0.53	22	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	41	0.3	0.2	40	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	41	0.5	0.4	22	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	41	103	104	1	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247737-12
Date extracted	-			28/07/2020	3	28/07/2020	28/07/2020		28/07/2020	28/07/2020
Date analysed	-			29/07/2020	3	29/07/2020	29/07/2020		29/07/2020	29/07/2020
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	102	100
HCB	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	94	98
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	108	92
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	116	100
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	106	98
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	102	98
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	114	106
Endrin	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	92	114
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	92	102
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	94	102
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	86	3	87	88	1	85	85

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	28/07/2020	28/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	29/07/2020	29/07/2020		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	41	84	91	8	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247737-12
Date extracted	-			28/07/2020	3	28/07/2020	28/07/2020		28/07/2020	28/07/2020
Date analysed	-			29/07/2020	3	29/07/2020	29/07/2020		29/07/2020	29/07/2020
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	122	128
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	112	108
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	92	112
Malathion	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	99	109
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	116	108
Parathion	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	106	122
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	96	116
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	86	3	87	88	1	85	85

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	28/07/2020	28/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	29/07/2020	29/07/2020		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	41	84	91	8	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247737-12
Date extracted	-			28/07/2020	3	28/07/2020	28/07/2020		28/07/2020	28/07/2020
Date analysed	-			29/07/2020	3	29/07/2020	29/07/2020		29/07/2020	29/07/2020
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	3	<0.1	<0.1	0	90	82
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	3	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	86	3	87	88	1	85	85

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	41	28/07/2020	28/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	29/07/2020	29/07/2020		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	41	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	41	84	91	8	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	247737-12
Date prepared	-			28/07/2020	3	28/07/2020	28/07/2020		28/07/2020	28/07/2020
Date analysed	-			28/07/2020	3	28/07/2020	28/07/2020		28/07/2020	28/07/2020
Arsenic	mg/kg	4	Metals-020	<4	3	37	27	31	104	98
Cadmium	mg/kg	0.4	Metals-020	<0.4	3	<0.4	<0.4	0	98	98
Chromium	mg/kg	1	Metals-020	<1	3	11	11	0	102	90
Copper	mg/kg	1	Metals-020	<1	3	24	30	22	94	85
Lead	mg/kg	1	Metals-020	<1	3	75	90	18	109	85
Mercury	mg/kg	0.1	Metals-021	<0.1	3	<0.1	<0.1	0	99	93
Nickel	mg/kg	1	Metals-020	<1	3	3	4	29	107	100
Zinc	mg/kg	1	Metals-020	<1	3	99	110	11	125	#

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	41	28/07/2020	28/07/2020		[NT]	[NT]
Date analysed	-			[NT]	41	28/07/2020	28/07/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	41	8	8	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	41	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	41	4	4	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	41	110	100	10	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	41	110	95	15	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	41	0.1	0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	41	6	5	18	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	41	200	180	11	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	247737-12
Date prepared	-			28/07/2020	3	29/07/2020	29/07/2020		28/07/2020	28/07/2020
Date analysed	-			28/07/2020	3	29/07/2020	29/07/2020		28/07/2020	28/07/2020
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	3	<5	<5	0	103	101

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date prepared	-			29/07/2020	[NT]	[NT]	[NT]	[NT]	29/07/2020	[NT]
Date analysed	-			29/07/2020	[NT]	[NT]	[NT]	[NT]	29/07/2020	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date prepared	-			30/07/2020	[NT]	[NT]	[NT]	[NT]	30/07/2020	[NT]
Date analysed	-			30/07/2020	[NT]	[NT]	[NT]	[NT]	30/07/2020	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

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.

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that these sub-samples are indicative of the entire sample.
Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples 247737-3,4,12,14,29 were sub-sampled from jars provided by the client.

Asbestos: Excessive sample volumes were provided for asbestos analysis.
A portion of the supplied samples were sub-sampled according to Envirolab procedures.
We cannot guarantee that these sub-samples are indicative of the entire sample.
Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.
Note: Samples 247737-1,2,7,10,16,21,24,38 were sub-sampled from bags provided by the client.

Sample 247737-16; Chrysotile asbestos identified embedded in a fragment of fibre cement, it is estimated to be 3.88g/kg in 58.10g of soil (i.e. > reporting limit for the method of 0.1g/kg).

Sample 247737-24; Chrysotile asbestos identified in matted material, it is estimated to be 0.18g/kg in 34.27g of soil (i.e. > reporting limit for the method of 0.1g/kg).

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

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CERTIFICATE OF ANALYSIS 247737-A

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimmimg Pool**
Number of Samples	47 soil
Date samples received	24/07/2020
Date completed instructions received	27/07/2020

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	28/07/2020
Date of Issue	28/07/2020

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Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

sPOCAS field test						
Our Reference		247737-A-1	247737-A-2	247737-A-8	247737-A-9	247737-A-10
Your Reference	UNITS	BH101/2.2-2.7	BH104/2.6-3.1	BH106/3.0-3.5	BH106/3.5-4.0	BH106/4.0-4.5
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
pH_F (field pH test)*	pH Units	7.5	7.9	7.9	8.0	7.8
pH_{FOX} (field peroxide test)*	pH Units	4.4	6.2	5.5	5.3	5.3
Reaction Rate*	-	Extreme reaction	Extreme reaction	Extreme reaction	Volcanic reaction	Extreme reaction

sPOCAS field test						
Our Reference		247737-A-11	247737-A-13	247737-A-15	247737-A-16	247737-A-17
Your Reference	UNITS	BH106/4.5-4.6	BH108/0.6-0.8	BH108/2.0-2.9	BH108/3.0-3.5	BH108/4.0-4.5
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
pH_F (field pH test)*	pH Units	8.5	7.7	7.9	7.9	8.2
pH_{FOX} (field peroxide test)*	pH Units	5.6	6.5	6.3	4.1	2.1
Reaction Rate*	-	Low reaction	Medium reaction	Volcanic reaction	Extreme reaction	Extreme reaction

sPOCAS field test						
Our Reference		247737-A-18	247737-A-30	247737-A-32	247737-A-33	247737-A-34
Your Reference	UNITS	BH108/4.7-5.0	BH110/0.7-0.9	BH110/2.2-2.7	BH110/3.0-3.5	BH110/3.5-4.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
pH_F (field pH test)*	pH Units	7.9	7.7	7.9	7.7	7.6
pH_{FOX} (field peroxide test)*	pH Units	2.9	5.9	6.6	6.4	5.8
Reaction Rate*	-	Medium reaction	Volcanic reaction	Volcanic reaction	High reaction	High reaction

sPOCAS field test						
Our Reference		247737-A-35	247737-A-36	247737-A-40	247737-A-41	247737-A-47
Your Reference	UNITS	BH110/4.0-4.5	BH110/4.5-5.0	BH119.0.2-0.4	BH119/0.4-0.6	BH106/4.5-5.0
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
pH_F (field pH test)*	pH Units	8.4	8.4	8.2	7.5	8.3
pH_{FOX} (field peroxide test)*	pH Units	4.3	6.4	7.9	4.9	4.8
Reaction Rate*	-	Low reaction	Low reaction	High reaction	Volcanic reaction	Volcanic reaction

Method ID	Methodology Summary
Inorg-063	pH- measured using pH meter and electrode. Soil is oxidised with Hydrogen Peroxide or extracted with water. Based on section H, Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004. To ensure accurate results these tests are recommended to be done in the field as pH may change with time thus these results may not be representative of true field conditions.

Result Definitions

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PQL	Practical Quantitation Limit
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RPD	Relative Percent Difference
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Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

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

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Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

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CERTIFICATE OF ANALYSIS 247737-B

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimmimg Pool**
Number of Samples	47 soil
Date samples received	24/07/2020
Date completed instructions received	04/08/2020

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	07/08/2020
Date of Issue	07/08/2020

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Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Josh Williams, Senior Chemist
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Metals in TCLP USEPA1311						
Our Reference		247737-B-1	247737-B-2	247737-B-8	247737-B-37	247737-B-41
Your Reference	UNITS	BH101/2.2-2.7	BH104/2.6-3.1	BH106/3.0-3.5	BH117/0.2-0.4	BH119/0.4-0.6
Date Sampled		24/07/2020	24/07/2020	24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	07/08/2020	07/08/2020	07/08/2020	07/08/2020	07/08/2020
Date analysed	-	07/08/2020	07/08/2020	07/08/2020	07/08/2020	07/08/2020
pH of soil for fluid# determ.	pH units	8.7	9.6	9.3	9.7	7.7
pH of soil TCLP (after HCl)	pH units	1.8	1.8	1.8	1.8	1.8
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.3	5.1	5.1	5.1	5.0
Lead in TCLP	mg/L	0.36	[NA]	0.1	[NA]	0.2

PAHs in TCLP (USEPA 1311)				
Our Reference		247737-B-2	247737-B-8	247737-B-37
Your Reference	UNITS	BH104/2.6-3.1	BH106/3.0-3.5	BH117/0.2-0.4
Date Sampled		24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil
Date extracted	-	06/08/2020	06/08/2020	06/08/2020
Date analysed	-	06/08/2020	06/08/2020	06/08/2020
Naphthalene in TCLP	mg/L	<0.001	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	87	101	109

Misc Inorg - Soil			
Our Reference		247737-B-37	247737-B-41
Your Reference	UNITS	BH117/0.2-0.4	BH119/0.4-0.6
Date Sampled		24/07/2020	24/07/2020
Type of sample		soil	soil
Date prepared	-	06/08/2020	06/08/2020
Date analysed	-	06/08/2020	06/08/2020
Chloride, Cl 1:5 soil:water	mg/kg	10	10

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Org-022/025	Leachates are extracted with Dichloromethane and analysed by GC-MS/GC-MSMS.

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			07/08/2020	[NT]	[NT]	[NT]	[NT]	07/08/2020	[NT]
Date analysed	-			07/08/2020	[NT]	[NT]	[NT]	[NT]	07/08/2020	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	92	[NT]

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			06/08/2020	[NT]	[NT]	[NT]	[NT]	06/08/2020	[NT]
Date analysed	-			06/08/2020	[NT]	[NT]	[NT]	[NT]	06/08/2020	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	94	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	90	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	84	[NT]
Anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	90	[NT]
Pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	72	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	80	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	100	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			06/08/2020	37	06/08/2020	06/08/2020		06/08/2020	[NT]
Date analysed	-			06/08/2020	37	06/08/2020	06/08/2020		06/08/2020	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	37	10	20	67	94	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
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The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

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

CERTIFICATE OF ANALYSIS 247737-C

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimmimg Pool**
Number of Samples	47 soil
Date samples received	24/07/2020
Date completed instructions received	04/08/2020

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	07/08/2020
Date of Issue	07/08/2020

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

Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Chromium Suite				
Our Reference		247737-C-10	247737-C-17	247737-C-35
Your Reference	UNITS	BH106/4.0-4.5	BH108/4.0-4.5	BH110/4.0-4.5
Date Sampled		24/07/2020	24/07/2020	24/07/2020
Type of sample		soil	soil	soil
Date prepared	-	05/08/2020	05/08/2020	05/08/2020
Date analysed	-	05/08/2020	05/08/2020	05/08/2020
pH $_{kcl}$	pH units	8.3	7.3	8.8
s-TAA pH 6.5	%w/w S	<0.01	<0.01	<0.01
TAA pH 6.5	moles H^+ /t	<5	<5	<5
Chromium Reducible Sulfur	%w/w	0.14	0.91	0.22
a-Chromium Reducible Sulfur	moles H^+ /t	88	570	140
S_{HCl}	%w/w S	NA	NA	NA
S_{KCl}	%w/w S	0.014	0.030	0.017
S_{NAS}	%w/w S	NA	NA	NA
ANC_{BT}	% $CaCO_3$	2.1	0.55	1.4
s-ANC_{BT}	%w/w S	0.67	0.18	0.43
s-Net Acidity	%w/w S	<0.005	0.80	<0.005
a-Net Acidity	moles H^+ /t	<5	500	<5
Liming rate	kg $CaCO_3$ /t	<0.75	37	<0.75
a-Net Acidity without ANCE	moles H^+ /t	88	570	140
Liming rate without ANCE	kg $CaCO_3$ /t	6.6	43	10
s-Net Acidity without ANCE	%w/w S	0.14	0.91	0.22

Method ID	Methodology Summary
Inorg-068	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.

QUALITY CONTROL: Chromium Suite						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
pH $_{kcl}$	pH units		Inorg-068	[NT]	[NT]	[NT]	[NT]	[NT]	96	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-068	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
TAA pH 6.5	moles H^+ /t	5	Inorg-068	<5	[NT]	[NT]	[NT]	[NT]	100	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Chromium Reducible Sulfur	moles H^+ /t	3	Inorg-068	<3	[NT]	[NT]	[NT]	[NT]	115	[NT]
S_{HCl}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{KCl}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{NAS}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
ANC_{BT}	% $CaCO_3$	0.05	Inorg-068	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-ANC_{BT}	%w/w S	0.05	Inorg-068	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-Net Acidity	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Net Acidity	moles H^+ /t	5	Inorg-068	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Liming rate	kg $CaCO_3$ /t	0.75	Inorg-068	<0.75	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Net Acidity without ANCE	moles H^+ /t	5	Inorg-068	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Liming rate without ANCE	kg $CaCO_3$ /t	0.75	Inorg-068	<0.75	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-Net Acidity without ANCE	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

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Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 day			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8a	Combo 3a	Combo 8	Combo 3	AF/FA	ph, CEC	TRH/BTEX			Notes/preservation
BH101/2.2-2.7	1	24/07/20	S	G&P				x	x					247737
BH104/2.6-3.1	2	24/07/20	S	G&P				x	x					
BH105/0.1-0.2	3	24/07/20	S	G	x									
BH105/0.4-0.5	4	24/07/20	S	G&P		x								
BH105/0.7-0.9	5	24/07/20	S	G										
BH105/1.2-1.3	6	24/07/20	S	G&P										
BH105/1.6-1.7	7	24/07/20	S	G		x								27/7/20
BH106/3.0-3.5	8	24/07/20	S	G&P					x					
BH106/3.5-4.0	9	24/07/20	S	G&P			x							
BH106/4.0-4.5	10	24/07/20	S	G&P					x					
BH106/4.5-4.6	11	24/07/20	S	P										
BH106/4.5-5.0	47	24/07/20	S	P										
PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes** ☐

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container:	**Relinquished by:** AS	**Transported to laboratory by:**	DP
Send Results to: Douglas Partners Pty Ltd	**Address**	**Phone:**	**Fax:**
Signed: DIH, 27/7/2020, 13:30	**Received by:**	**Date & Time:**	

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BH108/0.1-0.2	12	24/07/20	S	G	x									
BH108/0.6-0.8	13	24/07/20	S	G&P										
BH108/0.9-1.1	14	24/07/20	S	G		x								
BH108/2.0-2.9	15	24/07/20	S	G&P										
BH108/3.0-3.5	16	24/07/20	S	G&P					x					
BH108/4.0-4.5	17	24/07/20	S	G&P										
BH108/4.7-5.0	18	24/07/20	S	G&P				x						
BH109/0.1-0.2	19	24/07/20	S	G										
BH109/0.5-0.7	20	24/07/20	S	G&P										
BH109/0.8-1.0	21	24/07/20	S	G&P	x									
BH109/1.5-1.6	22	24/07/20	S	G&P										
BH109/1.8-2.0	23	24/07/20	S	G&P										
BH109/2.5-3.0	24	24/07/20	S	G&P		x								
BH109/3.5-4.5	25	24/07/20	S	G										
BH109/5.05.5	26	24/07/20	S	G										
PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

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

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BH109/5.5-6.0	27	24/07/20	S	G				x						
BH110/0.1-0.2	28	24/07/20	S	G										
BH110/0.6-0.7	29	24/07/20	S	G		x								
BH110/0.7-0.9	30	24/07/20	S	G&P										
BH110/1.6-1.8	31	24/07/20	S	G										
BH110/2.2-2.7	32	24/07/20	S	G&P										
BH110/3.0-3.5	33	24/07/20	S	G&P										
BH110/3.5-4.0	34	24/07/20	S	G&P			x		x					
BH110/4.0-4.5	35	24/07/20	S	G&P										
BH110/4.5-5.0	36	24/07/20	S	G&P				x						
BH117/0.2-0.4	37	24/07/20	S	G&P				x		x				
BH117/0.4-0.6	38	24/07/20	S	P					x					
BH117/0.6-0.8	39	24/07/20	S	G&P										
BH119/0.2-0.4	40	24/07/20	S	G&P										
BH119/0.4-0.6	41	24/07/20	S	G&P			x							
PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes** ☐

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Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8a	Combo 3a	Combo 8	Combo 3	AF/FA	ph, CEC	TRH/BTEX			Notes/preservation
BD1/20200724	42	24/07/20	S	G										
BD2/20200724	-	24/07/20	S	G				x						Forward for inter lab
BD3/20200724	44	24/07/20	S	G				x						
Trip Spike	45	24/07/20	S	G							x			
Trip Blank	46	24/07/20	S	G							x			
PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes** ☐

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Lab Report/Reference No:

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

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

Signed: DIH, 27/7/2020, 13:30 **Received by:** **Date & Time:**

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

SAMPLE RECEIPT ADVICE

Client Details	
Client	Douglas Partners Pty Ltd
Attention	David Holden

Sample Login Details	
Your reference	99751.00, Carss Park Swimmimg Pool
Envirolab Reference	247737
Date Sample Received	24/07/2020
Date Instructions Received	27/07/2020
Date Results Expected to be Reported	30/07/2020

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	47 soil
Turnaround Time Requested	3 days
Temperature on Receipt (°C)	4.8
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metals in soil	Asbestos ID - soils	Misc Soil - Inorg	Asbestos ID - soils NEPM	Misc Inorg - Soil	CEC	On Hold
BH101/2.2-2.7	✓	✓	✓				✓			✓			
BH104/2.6-3.1	✓	✓	✓				✓			✓			
BH105/0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓				
BH105/0.4-0.5	✓	✓	✓				✓	✓					
BH105/0.7-0.9													✓
BH105/1.2-1.3													✓
BH105/1.6-1.7	✓	✓	✓				✓	✓					
BH106/3.0-3.5										✓			
BH106/3.5-4.0	✓	✓	✓	✓	✓	✓	✓		✓				
BH106/4.0-4.5										✓			
BH106/4.5-4.6													✓
BH108/0.1-0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓				
BH108/0.6-0.8													✓
BH108/0.9-1.1	✓	✓	✓				✓	✓					
BH108/2.0-2.9													✓
BH108/3.0-3.5										✓			
BH108/4.0-4.5													✓
BH108/4.7-5.0	✓	✓	✓				✓						
BH109/0.1-0.2													✓
BH109/0.5-0.7													✓
BH109/0.8-1.0	✓	✓	✓	✓	✓	✓	✓	✓	✓				
BH109/1.5-1.6													✓
BH109/1.8-2.0													✓
BH109/2.5-3.0	✓	✓	✓				✓	✓					
BH109/3.5-4.5													✓
BH109/5.05.5													✓
BH109/5.5-6.0	✓	✓	✓				✓						
BH110/0.1-0.2													✓
BH110/0.6-0.7	✓	✓	✓				✓	✓					
BH110/0.7-0.9													✓
BH110/1.6-1.8													✓
BH110/2.2-2.7													✓

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metals in soil	Asbestos ID - soils	Misc Soil - Inorg	Asbestos ID - soils NEPM	Misc Inorg - Soil	CEC	On Hold
BH110/3.0-3.5													✓
BH110/3.5-4.0	✓	✓	✓	✓	✓	✓	✓		✓	✓			
BH110/4.0-4.5													✓
BH110/4.5-5.0	✓	✓	✓				✓						
BH117/0.2-0.4	✓	✓	✓				✓				✓	✓	
BH117/0.4-0.6										✓			
BH117/0.60.8													✓
BH119.0.2-0.4													✓
BH119/0.4-0.6	✓	✓	✓	✓	✓	✓	✓		✓				
BD1/20200724													✓
BD2/20200724													✓
BD3/20200724	✓	✓	✓				✓						
Trip Spike	✓												
Trip Blank	✓												
BH106/4.5-5.0													✓

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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CERTIFICATE OF ANALYSIS 247826

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	39 Soil
Date samples received	27/07/2020
Date completed instructions received	28/07/2020

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	04/08/2020
Date of Issue	05/08/2020

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Results Approved By
Ken Nguyen, Reporting Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

Micro testing in soil						
Our Reference		247826-2	247826-3	247826-5	247826-7	247826-11
Your Reference	UNITS	TP121/0.2-0.3	TP121/0.6-0.7	TP121/1.9-2.0	TP121/2.9-3.0	TP122/1.4-1.5
Date Sampled		27/07/20	27/07/20	27/07/20	27/07/20	27/07/20
Type of sample		Soil	Soil	Soil	Soil	Soil
Date testing started	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Date testing completed	-	29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Total Coliforms in soil	MPN/100g	<200	900	500	700	500
Faecal Coliforms in soil	MPN/100g	<200	<200	200	<200	<200
Pseudomonas Aeruginosa	cfu/g	70	<10	<10	<10	<10

Micro testing in soil				
Our Reference		247826-14	247826-17	247826-20
Your Reference	UNITS	TP122/2.9-3.0	TP123/0.6-0.7	TP123/2.4-2.5
Date Sampled		27/07/20	27/07/20	27/07/20
Type of sample		Soil	Soil	Soil
Date testing started	-	29/07/2020	29/07/2020	29/07/2020
Date testing completed	-	29/07/2020	29/07/2020	29/07/2020
Total Coliforms in soil	MPN/100g	>180,000	1,200	900
Faecal Coliforms in soil	MPN/100g	200	<200	<200
Pseudomonas Aeruginosa	cfu/g	<10	<10	<10

Method ID	Methodology Summary
Ext-008	Subcontracted to Sonic Food & Water Testing. NATA Accreditation No. 4034.
Ext-054	Analysed by MPL Envirolab

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Pseudomonas Aeruginosa analysed by MPL. Report no. 247849

Faecal Coliform & Total Coliform analysed by Sonic Food & Water Testing. Report No. W2015459

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CERTIFICATE OF ANALYSIS 247826-A

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	39 Soil
Date samples received	27/07/2020
Date completed instructions received	29/07/2020

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	03/08/2020
Date of Issue	03/08/2020

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Asbestos Approved By
Analysed by Asbestos Approved Identifier: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Senior Chemist
Josh Williams, Senior Chemist
Loren Bardwell, Senior Chemist
Lucy Zhu, Asbestos Supervisor
Manju Dewendrage, Chemist
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247826-A-2	247826-A-3	247826-A-4	247826-A-7	247826-A-8
Your Reference	UNITS	TP121/0.2-0.3	TP121/0.6-0.7	TP121/1.2-1.3	TP121/2.9-3.0	TP122/0.0-0.1
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	104	105	98	104	95

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247826-A-11	247826-A-13	247826-A-16	247826-A-17	247826-A-19
Your Reference	UNITS	TP122/1.4-1.5	TP122/2.4-2.5	TP123/0.3-0.4	TP123/0.6-0.7	TP123/1.9-2.0
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	106	102	101	94	102

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247826-A-23	247826-A-25	247826-A-29	247826-A-32	247826-A-34
Your Reference	UNITS	TP124/0.3-0.4	TP124/1.3-1.4	TP124/4.5-4.6	BH107/3.0-3.5	BD1/20200727
Date Sampled		27/07/2020	27/07/2020	27/07/2020	24/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	94	106	96	109	92

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		247826-A-36	247826-A-37
Your Reference	UNITS	Trip Spike	Trip Blank
Date Sampled		27/07/2020	27/07/2020
Type of sample		Soil	Soil
Date extracted	-	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020
TRH C_6 - C_9	mg/kg	[NA]	<25
TRH C_6 - C_{10}	mg/kg	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	[NA]	<25
Benzene	mg/kg	78%	<0.2
Toluene	mg/kg	77%	<0.5
Ethylbenzene	mg/kg	75%	<1
m+p-xylene	mg/kg	76%	<2
o-Xylene	mg/kg	76%	<1
naphthalene	mg/kg	[NA]	<1
Total +ve Xylenes	mg/kg	[NA]	<3
Surrogate aaa-Trifluorotoluene	%	91	103

svTRH (C10-C40) in Soil						
Our Reference		247826-A-2	247826-A-3	247826-A-4	247826-A-7	247826-A-8
Your Reference	UNITS	TP121/0.2-0.3	TP121/0.6-0.7	TP121/1.2-1.3	TP121/2.9-3.0	TP122/0.0-0.1
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	01/08/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	53	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	970	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	580	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	74	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	74	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	1,400	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	380	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	1,900	<50
Surrogate o-Terphenyl	%	92	78	84	#	73

svTRH (C10-C40) in Soil						
Our Reference		247826-A-11	247826-A-13	247826-A-16	247826-A-17	247826-A-19
Your Reference	UNITS	TP122/1.4-1.5	TP122/2.4-2.5	TP123/0.3-0.4	TP123/0.6-0.7	TP123/1.9-2.0
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	89	70	89	71	83

svTRH (C10-C40) in Soil						
Our Reference		247826-A-23	247826-A-25	247826-A-29	247826-A-32	247826-A-34
Your Reference	UNITS	TP124/0.3-0.4	TP124/1.3-1.4	TP124/4.5-4.6	BH107/3.0-3.5	BD1/20200727
Date Sampled		27/07/2020	27/07/2020	27/07/2020	24/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	01/08/2020	31/07/2020	31/07/2020	01/08/2020	01/08/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	130	<100	<100
TRH C_{29} - C_{36}	mg/kg	100	<100	150	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	110	<100	220	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	110	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	110	<50	340	<50	<50
Surrogate o-Terphenyl	%	71	72	80	83	70

PAHs in Soil						
Our Reference		247826-A-2	247826-A-3	247826-A-4	247826-A-7	247826-A-8
Your Reference	UNITS	TP121/0.2-0.3	TP121/0.6-0.7	TP121/1.2-1.3	TP121/2.9-3.0	TP122/0.0-0.1
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<1	0.2
Anthracene	mg/kg	<0.1	<0.1	<0.1	<1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	<0.1	<1	0.6
Pyrene	mg/kg	<0.1	0.1	<0.1	<1	0.6
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<1	0.4
Chrysene	mg/kg	<0.1	<0.1	<0.1	<1	0.3
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<2	0.6
Benzo(a)pyrene	mg/kg	<0.05	0.06	<0.05	<0.5	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<1	0.2
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<1	0.3
Total +ve PAH's	mg/kg	<0.05	0.3	<0.05	<0.5	3.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<5	0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<5	0.6
Surrogate p-Terphenyl-d14	%	77	81	79	86	85

PAHs in Soil						
Our Reference		247826-A-11	247826-A-13	247826-A-16	247826-A-17	247826-A-19
Your Reference	UNITS	TP122/1.4-1.5	TP122/2.4-2.5	TP123/0.3-0.4	TP123/0.6-0.7	TP123/1.9-2.0
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.1	0.4
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Fluoranthene	mg/kg	0.1	0.2	<0.1	0.4	0.6
Pyrene	mg/kg	0.1	0.2	<0.1	0.4	0.6
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.2	0.3
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.2	0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.4	0.4
Benzo(a)pyrene	mg/kg	<0.05	0.09	<0.05	0.2	0.3
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.1	0.2
Total +ve PAH's	mg/kg	0.2	0.5	<0.05	2.3	3.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	82	82	76	84	83

PAHs in Soil						
Our Reference		247826-A-23	247826-A-25	247826-A-29	247826-A-32	247826-A-34
Your Reference	UNITS	TP124/0.3-0.4	TP124/1.3-1.4	TP124/4.5-4.6	BH107/3.0-3.5	BD1/20200727
Date Sampled		27/07/2020	27/07/2020	27/07/2020	24/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
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	0.2	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.7	<0.1	0.2	0.3	<0.1
Pyrene	mg/kg	0.7	<0.1	0.2	0.3	<0.1
Benzo(a)anthracene	mg/kg	0.4	<0.1	0.1	0.3	<0.1
Chrysene	mg/kg	0.4	<0.1	0.1	0.3	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.8	<0.2	0.2	0.6	<0.2
Benzo(a)pyrene	mg/kg	0.55	<0.05	0.1	0.4	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.3	<0.1	<0.1	0.2	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.4	<0.1	0.1	0.2	<0.1
Total +ve PAH's	mg/kg	4.7	<0.05	1.2	2.6	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.7	<0.5	<0.5	0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.8	<0.5	<0.5	0.6	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.8	<0.5	<0.5	0.6	<0.5
Surrogate p-Terphenyl-d14	%	81	85	86	85	84

Organochlorine Pesticides in soil				
Our Reference		247826-A-2	247826-A-8	247826-A-23
Your Reference	UNITS	TP121/0.2-0.3	TP122/0.0-0.1	TP124/0.3-0.4
Date Sampled		27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	70	76	78

Organophosphorus Pesticides in Soil				
Our Reference		247826-A-2	247826-A-8	247826-A-23
Your Reference	UNITS	TP121/0.2-0.3	TP122/0.0-0.1	TP124/0.3-0.4
Date Sampled		27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	70	76	78

PCBs in Soil				
Our Reference		247826-A-2	247826-A-8	247826-A-23
Your Reference	UNITS	TP121/0.2-0.3	TP122/0.0-0.1	TP124/0.3-0.4
Date Sampled		27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	70	76	78

Acid Extractable metals in soil						
Our Reference		247826-A-2	247826-A-3	247826-A-4	247826-A-7	247826-A-8
Your Reference	UNITS	TP121/0.2-0.3	TP121/0.6-0.7	TP121/1.2-1.3	TP121/2.9-3.0	TP122/0.0-0.1
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Arsenic	mg/kg	<4	6	10	6	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	0.5	<0.4
Chromium	mg/kg	2	9	7	15	6
Copper	mg/kg	2	23	3	36	17
Lead	mg/kg	10	79	8	95	24
Mercury	mg/kg	0.8	50	0.3	11	<0.1
Nickel	mg/kg	<1	6	3	5	4
Zinc	mg/kg	11	73	20	280	38

Acid Extractable metals in soil						
Our Reference		247826-A-11	247826-A-13	247826-A-16	247826-A-17	247826-A-19
Your Reference	UNITS	TP122/1.4-1.5	TP122/2.4-2.5	TP123/0.3-0.4	TP123/0.6-0.7	TP123/1.9-2.0
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Arsenic	mg/kg	5	10	<4	8	7
Cadmium	mg/kg	<0.4	<0.4	0.5	<0.4	<0.4
Chromium	mg/kg	21	8	3	20	15
Copper	mg/kg	30	12	5	45	25
Lead	mg/kg	23	28	16	93	99
Mercury	mg/kg	<0.1	<0.1	<0.1	0.2	0.2
Nickel	mg/kg	6	3	1	5	2
Zinc	mg/kg	20	52	54	53	67

Acid Extractable metals in soil						
Our Reference		247826-A-23	247826-A-25	247826-A-29	247826-A-32	247826-A-34
Your Reference	UNITS	TP124/0.3-0.4	TP124/1.3-1.4	TP124/4.5-4.6	BH107/3.0-3.5	BD1/20200727
Date Sampled		27/07/2020	27/07/2020	27/07/2020	24/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Arsenic	mg/kg	8	10	10	8	9
Cadmium	mg/kg	<0.4	<0.4	5.8	<0.4	<0.4
Chromium	mg/kg	11	69	15	11	7
Copper	mg/kg	34	19	140	66	2
Lead	mg/kg	59	72	150	140	7
Mercury	mg/kg	<0.1	0.4	0.3	0.5	<0.1
Nickel	mg/kg	15	5	18	30	2
Zinc	mg/kg	67	86	550	170	14

Acid Extractable metals in soil		
Our Reference		247826-A-40
Your Reference	UNITS	TP124/0.3-0.4 - [TRIPLICATE]
Date Sampled		27/07/2020
Type of sample		Soil
Date prepared	-	31/07/2020
Date analysed	-	31/07/2020
Arsenic	mg/kg	10
Cadmium	mg/kg	<0.4
Chromium	mg/kg	11
Copper	mg/kg	38
Lead	mg/kg	69
Mercury	mg/kg	<0.1
Nickel	mg/kg	13
Zinc	mg/kg	66

Moisture						
Our Reference		247826-A-2	247826-A-3	247826-A-4	247826-A-7	247826-A-8
Your Reference	UNITS	TP121/0.2-0.3	TP121/0.6-0.7	TP121/1.2-1.3	TP121/2.9-3.0	TP122/0.0-0.1
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	03/08/2020	03/08/2020	03/08/2020	03/08/2020	03/08/2020
Moisture	%	16	15	15	29	13

Moisture						
Our Reference		247826-A-11	247826-A-13	247826-A-16	247826-A-17	247826-A-19
Your Reference	UNITS	TP122/1.4-1.5	TP122/2.4-2.5	TP123/0.3-0.4	TP123/0.6-0.7	TP123/1.9-2.0
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	03/08/2020	03/08/2020	03/08/2020	03/08/2020	03/08/2020
Moisture	%	21	16	14	14	16

Moisture						
Our Reference		247826-A-23	247826-A-25	247826-A-29	247826-A-32	247826-A-34
Your Reference	UNITS	TP124/0.3-0.4	TP124/1.3-1.4	TP124/4.5-4.6	BH107/3.0-3.5	BD1/20200727
Date Sampled		27/07/2020	27/07/2020	27/07/2020	24/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	03/08/2020	03/08/2020	03/08/2020	03/08/2020	03/08/2020
Moisture	%	12	21	25	20	19

Misc Soil - Inorg				
Our Reference		247826-A-2	247826-A-8	247826-A-23
Your Reference	UNITS	TP121/0.2-0.3	TP122/0.0-0.1	TP124/0.3-0.4
Date Sampled		27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil
Date prepared	-	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5

Asbestos ID - soils NEPM		
Our Reference		247826-A-7
Your Reference	UNITS	TP121/2.9-3.0
Date Sampled		27/07/2020
Type of sample		Soil
Date analysed	-	03/08/2020
Sample mass tested	g	1,081.93
Sample Description	-	Brown sandy soil & debris
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected
Total Asbestos#1	g/kg	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected
ACM >7mm Estimation*	g	–
FA and AF Estimation*	g	–
FA and AF Estimation*#2	%(w/w)	<0.001

Misc Inorg - Soil			
Our Reference		247826-A-8	247826-A-17
Your Reference	UNITS	TP122/0.0-0.1	TP123/0.6-0.7
Date Sampled		27/07/2020	27/07/2020
Type of sample		Soil	Soil
Date prepared	-	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020
pH 1:5 soil:water	pH Units	5.5	5.2

CEC			
Our Reference		247826-A-8	247826-A-17
Your Reference	UNITS	TP122/0.0-0.1	TP123/0.6-0.7
Date Sampled		27/07/2020	27/07/2020
Type of sample		Soil	Soil
Date prepared	-	03/08/2020	03/08/2020
Date analysed	-	03/08/2020	03/08/2020
Exchangeable Ca	meq/100g	4.1	6.5
Exchangeable K	meq/100g	0.1	0.3
Exchangeable Mg	meq/100g	0.51	1.8
Exchangeable Na	meq/100g	<0.1	0.13
Cation Exchange Capacity	meq/100g	4.7	8.7

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals by ICP-AES.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.

Method ID	Methodology Summary
Org-020	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-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. 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-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	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-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	247826-A-8
Date extracted	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
Date analysed	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
TRH C_6 - C_9	mg/kg	25	Org-023	<25	2	<25	<25	0	86	74
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	2	<25	<25	0	86	74
Benzene	mg/kg	0.2	Org-023	<0.2	2	<0.2	<0.2	0	82	70
Toluene	mg/kg	0.5	Org-023	<0.5	2	<0.5	<0.5	0	82	69
Ethylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	88	75
m+p-xylene	mg/kg	2	Org-023	<2	2	<2	<2	0	88	77
o-Xylene	mg/kg	1	Org-023	<1	2	<1	<1	0	88	74
naphthalene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	110	2	104	103	1	110	91

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]	23	31/07/2020	31/07/2020		[NT]	[NT]
Date analysed	-			[NT]	23	31/07/2020	31/07/2020		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	23	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	23	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	23	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	23	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	23	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	23	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	23	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	23	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	23	94	98	4	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247826-A-8
Date extracted	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
Date analysed	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	01/08/2020
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	2	<50	<50	0	95	88
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	2	<100	<100	0	78	70
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	2	<100	<100	0	77	129
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	2	<50	<50	0	95	88
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	2	<100	<100	0	78	70
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	2	<100	<100	0	77	129
Surrogate o-Terphenyl	%		Org-020	74	2	92	88	4	112	117

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	23	31/07/2020	31/07/2020		[NT]	[NT]
Date analysed	-			[NT]	23	01/08/2020	01/08/2020		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	23	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	23	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	23	100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	23	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	23	110	100	10	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	23	<100	120	18	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	23	71	70	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247826-A-8
Date extracted	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
Date analysed	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	102	94
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	96	100
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	100	95
Anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	94	79
Pyrene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	96	83
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	92	79
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	2	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	2	<0.05	<0.05	0	94	89
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	113	2	77	80	4	107	82

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	23	31/07/2020	31/07/2020		[NT]	[NT]
Date analysed	-			[NT]	23	31/07/2020	31/07/2020		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	23	0.2	0.3	40	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	23	0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	23	0.7	0.8	13	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	23	0.7	0.8	13	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	23	0.4	0.4	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	23	0.4	0.4	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	23	0.8	0.8	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	23	0.55	0.5	10	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	23	0.3	0.3	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	23	0.4	0.4	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	23	81	86	6	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247826-A-8
Date extracted	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
Date analysed	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	100	106
HCB	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	98	102
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	98	90
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	102	106
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	100	102
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	100	110
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	104	102
Endrin	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	82	106
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	96	108
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	92	100
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	111	2	70	72	3	101	74

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	23	31/07/2020	31/07/2020		[NT]	[NT]
Date analysed	-			[NT]	23	31/07/2020	31/07/2020		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	23	78	81	4	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247826-A-8
Date extracted	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
Date analysed	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	134	98
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	106	106
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	64	102
Malathion	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	80	104
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	104	98
Parathion	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	100	114
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	76	114
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	111	2	70	72	3	101	74

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	23	31/07/2020	31/07/2020		[NT]	[NT]
Date analysed	-			[NT]	23	31/07/2020	31/07/2020		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	23	78	81	4	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247826-A-8
Date extracted	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
Date analysed	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	88	88
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	111	2	70	72	3	101	74

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	23	31/07/2020	31/07/2020		[NT]	[NT]
Date analysed	-			[NT]	23	31/07/2020	31/07/2020		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	23	78	81	4	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	247826-A-8
Date prepared	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
Date analysed	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
Arsenic	mg/kg	4	Metals-020	<4	2	<4	<4	0	97	98
Cadmium	mg/kg	0.4	Metals-020	<0.4	2	<0.4	<0.4	0	95	89
Chromium	mg/kg	1	Metals-020	<1	2	2	1	67	98	97
Copper	mg/kg	1	Metals-020	<1	2	2	2	0	101	113
Lead	mg/kg	1	Metals-020	<1	2	10	7	35	95	89
Mercury	mg/kg	0.1	Metals-021	<0.1	2	0.8	0.6	29	100	102
Nickel	mg/kg	1	Metals-020	<1	2	<1	<1	0	97	94
Zinc	mg/kg	1	Metals-020	<1	2	11	9	20	103	94

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	23	31/07/2020	31/07/2020		[NT]	[NT]
Date analysed	-			[NT]	23	31/07/2020	31/07/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	23	8	8	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	23	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	23	11	12	9	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	23	34	29	16	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	23	59	75	24	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	23	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	23	15	17	12	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	23	67	110	49	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			31/07/2020	[NT]	[NT]	[NT]	[NT]	31/07/2020	[NT]
Date analysed	-			31/07/2020	[NT]	[NT]	[NT]	[NT]	31/07/2020	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			31/07/2020	[NT]	[NT]	[NT]	[NT]	31/07/2020	[NT]
Date analysed	-			31/07/2020	[NT]	[NT]	[NT]	[NT]	31/07/2020	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			03/08/2020	8	03/08/2020	03/08/2020		03/08/2020	[NT]
Date analysed	-			03/08/2020	8	03/08/2020	03/08/2020		03/08/2020	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	8	4.1	4.5	9	108	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	8	0.1	0.1	0	108	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	8	0.51	0.53	4	105	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	8	<0.1	<0.1	0	100	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
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The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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.

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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.

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Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

TRH Soil C10-C40 NEPM - # Percent recovery for the surrogate is not possible to report as the high concentration of analytes in sample 247826-a-7 have caused interference.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 247826-A-23 for Zn. Therefore a triplicate result has been issued as laboratory sample number 247826-A-40.

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

PAH_S:
The PQL has been raised due to interferences from analytes (other than those being tested) in samples 247826-A-7.

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CERTIFICATE OF ANALYSIS 247826-B

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	39 Soil
Date samples received	27/07/2020
Date completed instructions received	29/07/2020

Analysis Details

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

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

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

Report Details

Date results requested by	31/07/2020
Date of Issue	31/07/2020

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Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

sPOCAS field test						
Our Reference		247826-B-3	247826-B-4	247826-B-6	247826-B-18	247826-B-19
Your Reference	UNITS	TP121/0.6-0.7	TP121/1.2-1.3	TP121/2.4-2.5	TP123/1.3-1.4	TP123/1.9-2.0
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
pH_F (field pH test)*	pH Units	8.0	7.9	7.9	6.7	8.0
pH_{FOX} (field peroxide test)*	pH Units	5.9	2.7	2.9	4.0	6.0
Reaction Rate*	-	Low reaction	High reaction	Extreme reaction	Medium reaction	High reaction

sPOCAS field test						
Our Reference		247826-B-20	247826-B-21	247826-B-24	247826-B-25	247826-B-26
Your Reference	UNITS	TP123/2.4-2.5	TP123/2.9-3.0	TP124/0.8-0.9	TP124/1.3-1.4	TP124/1.9-2.0
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
pH_F (field pH test)*	pH Units	8.4	7.4	7.8	6.2	5.7
pH_{FOX} (field peroxide test)*	pH Units	5.9	4.7	5.7	4.3	3.5
Reaction Rate*	-	Extreme reaction	Medium reaction	Low reaction	Medium reaction	Medium reaction

sPOCAS field test						
Our Reference		247826-B-27	247826-B-28	247826-B-29	247826-B-30	247826-B-31
Your Reference	UNITS	TP124/2.6-2.7	TP124/3.4-3.5	TP124/4.5-4.6	BH107/2.0-2.5	BH107/2.5-3.0
Date Sampled		27/07/2020	27/07/2020	27/07/2020	24/07/2020	24/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
pH_F (field pH test)*	pH Units	6.2	7.0	7.2	7.5	7.7
pH_{FOX} (field peroxide test)*	pH Units	3.5	5.1	4.3	4.6	5.9
Reaction Rate*	-	Medium reaction	High reaction	High reaction	Extreme reaction	Extreme reaction

sPOCAS field test			
Our Reference		247826-B-32	247826-B-33
Your Reference	UNITS	BH107/3.0-3.5	BH107/4.5-5.0
Date Sampled		24/07/2020	24/07/2020
Type of sample		Soil	Soil
Date prepared	-	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020
pH_F (field pH test)*	pH Units	7.6	8.3
pH_{FOX} (field peroxide test)*	pH Units	4.8	4.1
Reaction Rate*	-	Extreme reaction	Medium reaction

Method ID	Methodology Summary
Inorg-063	pH- measured using pH meter and electrode. Soil is oxidised with Hydrogen Peroxide or extracted with water. Based on section H, Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004. To ensure accurate results these tests are recommended to be done in the field as pH may change with time thus these results may not be representative of true field conditions.

Result Definitions

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CERTIFICATE OF ANALYSIS 247826-C

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	39 Soil
Date samples received	27/07/2020
Date completed instructions received	04/08/2020

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	07/08/2020
Date of Issue	07/08/2020

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Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor
Priya Samarawickrama, Senior Chemist
Steven Luong, Organics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		247826-C-24
Your Reference	UNITS	TP124/0.8-0.9
Date Sampled		27/07/2020
Type of sample		Soil
Date extracted	-	05/08/2020
Date analysed	-	05/08/2020
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	99

svTRH (C10-C40) in Soil		
Our Reference		247826-C-24
Your Reference	UNITS	TP124/0.8-0.9
Date Sampled		27/07/2020
Type of sample		Soil
Date extracted	-	05/08/2020
Date analysed	-	06/08/2020
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	620
TRH C_{29} - C_{36}	mg/kg	1,400
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	1,700
TRH >C_{34} -C_{40}	mg/kg	1,200
Total +ve TRH (>C10-C40)	mg/kg	2,900
Surrogate o-Terphenyl	%	117

sTPH in Soil (C10-C40)-Silica			
Our Reference		247826-C-7	247826-C-29
Your Reference	UNITS	TP121/2.9-3.0	TP124/4.5-4.6
Date Sampled		27/07/2020	27/07/2020
Type of sample		Soil	Soil
Date extracted	-	05/08/2020	05/08/2020
Date analysed	-	06/08/2020	06/08/2020
TPH C_{10} - C_{14}	mg/kg	<50	<50
TPH C_{15} - C_{28}	mg/kg	120	150
TPH C_{29} - C_{36}	mg/kg	140	150
TPH >C_{10} -C_{16}	mg/kg	<50	<50
TPH >C_{16} -C_{34}	mg/kg	230	280
TPH >C_{34} -C_{40}	mg/kg	<100	<100
Surrogate o-Terphenyl	%	93	107

PAHs in Soil		
Our Reference		247826-C-24
Your Reference	UNITS	TP124/0.8-0.9
Date Sampled		27/07/2020
Type of sample		Soil
Date extracted	-	05/08/2020
Date analysed	-	06/08/2020
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	1.3
Fluorene	mg/kg	0.9
Phenanthrene	mg/kg	15
Anthracene	mg/kg	4.0
Fluoranthene	mg/kg	29
Pyrene	mg/kg	23
Benzo(a)anthracene	mg/kg	10
Chrysene	mg/kg	9.8
Benzo(b,j+k)fluoranthene	mg/kg	19
Benzo(a)pyrene	mg/kg	10
Indeno(1,2,3-c,d)pyrene	mg/kg	6.5
Dibenzo(a,h)anthracene	mg/kg	1.6
Benzo(g,h,i)perylene	mg/kg	8.5
Total +ve PAH's	mg/kg	140
Benzo(a)pyrene TEQ calc (zero)	mg/kg	16
Benzo(a)pyrene TEQ calc(half)	mg/kg	16
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	16
Surrogate p-Terphenyl-d14	%	103

Acid Extractable metals in soil		
Our Reference		247826-C-24
Your Reference	UNITS	TP124/0.8-0.9
Date Sampled		27/07/2020
Type of sample		Soil
Date prepared	-	05/08/2020
Date analysed	-	05/08/2020
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	11
Copper	mg/kg	32
Lead	mg/kg	20
Mercury	mg/kg	<0.1
Nickel	mg/kg	4
Zinc	mg/kg	24

Moisture		
Our Reference		247826-C-24
Your Reference	UNITS	TP124/0.8-0.9
Date Sampled		27/07/2020
Type of sample		Soil
Date prepared	-	05/08/2020
Date analysed	-	06/08/2020
Moisture	%	12

Misc Inorg - Soil						
Our Reference		247826-C-3	247826-C-11	247826-C-17	247826-C-19	247826-C-24
Your Reference	UNITS	TP121/0.6-0.7	TP122/1.4-1.5	TP123/0.6-0.7	TP123/1.9-2.0	TP124/0.8-0.9
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/08/2020	06/08/2020	06/08/2020	06/08/2020	06/08/2020
Date analysed	-	06/08/2020	06/08/2020	06/08/2020	06/08/2020	06/08/2020
Chloride, Cl 1:5 soil:water	mg/kg	<10	<10	<10	10	<10

Misc Inorg - Soil			
Our Reference		247826-C-29	247826-C-32
Your Reference	UNITS	TP124/4.5-4.6	BH107/3.0-3.5
Date Sampled		27/07/2020	24/07/2020
Type of sample		Soil	Soil
Date prepared	-	06/08/2020	06/08/2020
Date analysed	-	06/08/2020	06/08/2020
Chloride, Cl 1:5 soil:water	mg/kg	44	21

Metals in TCLP USEPA1311			
Our Reference		247826-C-29	247826-C-32
Your Reference	UNITS	TP124/4.5-4.6	BH107/3.0-3.5
Date Sampled		27/07/2020	24/07/2020
Type of sample		Soil	Soil
Date extracted	-	07/08/2020	07/08/2020
Date analysed	-	07/08/2020	07/08/2020
pH of soil for fluid# determ.	pH units	8.9	8.5
pH of soil TCLP (after HCl)	pH units	1.7	1.7
Extraction fluid used	-	1	1
pH of final Leachate	pH units	5.0	5.0
Lead in TCLP	mg/L	0.3	6.0

Metals-ASLP Neutral (ICP-MS)			
Our Reference		247826-C-29	247826-C-32
Your Reference	UNITS	TP124/4.5-4.6	BH107/3.0-3.5
Date Sampled		27/07/2020	24/07/2020
Type of sample		Soil	Soil
Date extracted	-	06/08/2020	06/08/2020
Date analysed	-	06/08/2020	06/08/2020
pH of final Leachate	pH units	8.4	8.6
Arsenic in ASLP	µg/L	1	6
Cadmium in ASLP	µg/L	<0.1	<0.1
Chromium in ASLP	µg/L	<1	<1
Copper in ASLP	µg/L	2	2
Lead in ASLP	µg/L	<1	4
Mercury in ASLP	µg/L	<0.05	<0.05
Nickel in ASLP	µg/L	<1	3
Zinc in ASLP	µg/L	2	4

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
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.
Metals-021 ASLP	Determination of Mercury by Cold Vapour AAS following neutral water leaching by AS 4439.3 - 1997.
Metals-022	Determination of various metals by ICP-MS following leaching using neutralised deionised water by AS 4439.3 - 1997.
Org-020	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-020	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).

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	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-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	92	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	87	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	88	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	95	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	106	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	127	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	117	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	127	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	117	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate o-Terphenyl	%		Org-020	83	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: sTPH in Soil (C10-C40)-Silica						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			06/08/2020	[NT]	[NT]	[NT]	[NT]	06/08/2020	[NT]
TPH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	96	[NT]
TPH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	82	[NT]
TPH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	92	[NT]
TPH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	96	[NT]
TPH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	82	[NT]
TPH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	92	[NT]
Surrogate o-Terphenyl	%		Org-020	91	[NT]	[NT]	[NT]	[NT]	112	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			06/08/2020	[NT]	[NT]	[NT]	[NT]	06/08/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	116	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	111	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	101	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	97	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	247826-C-11
Date prepared	-			06/08/2020	3	06/08/2020	06/08/2020		06/08/2020	06/08/2020
Date analysed	-			06/08/2020	3	06/08/2020	06/08/2020		06/08/2020	06/08/2020
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	3	<10	<10	0	84	80

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			07/08/2020	[NT]	[NT]	[NT]	[NT]	07/08/2020	[NT]
Date analysed	-			07/08/2020	[NT]	[NT]	[NT]	[NT]	07/08/2020	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: Metals-ASLP Neutral (ICP-MS)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			06/08/2020	[NT]	[NT]	[NT]	[NT]	06/08/2020	[NT]
Date analysed	-			06/08/2020	[NT]	[NT]	[NT]	[NT]	06/08/2020	[NT]
Arsenic in ASLP	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Cadmium in ASLP	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Chromium in ASLP	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Copper in ASLP	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Lead in ASLP	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Mercury in ASLP	µg/L	0.05	Metals-021 ASLP	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
Nickel in ASLP	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Zinc in ASLP	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

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CERTIFICATE OF ANALYSIS 247826-D

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	39 Soil
Date samples received	27/07/2020
Date completed instructions received	04/08/2020

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	07/08/2020
Date of Issue	07/08/2020

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Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Chromium Suite					
Our Reference		247826-D-4	247826-D-6	247826-D-21	247826-D-33
Your Reference	UNITS	TP121/1.2-1.3	TP121/2.4-2.5	TP123/2.9-3.0	BH107/4.5-5.0
Date Sampled		27/07/2020	27/07/2020	27/07/2020	24/07/2020
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Date analysed	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020
pH $_{kcl}$	pH units	8.1	8.4	8.3	6.6
s-TAA pH 6.5	%w/w S	<0.01	<0.01	<0.01	<0.01
TAA pH 6.5	moles H^+ /t	<5	<5	<5	<5
Chromium Reducible Sulfur	%w/w	0.49	0.21	0.36	0.03
a-Chromium Reducible Sulfur	moles H^+ /t	310	130	230	17
S_{HCl}	%w/w S	NA	NA	NA	NA
S_{KCl}	%w/w S	0.023	0.015	0.028	0.018
S_{NAS}	%w/w S	NA	NA	NA	NA
ANC_{BT}	% $CaCO_3$	0.95	1.2	3.2	0.50
s-ANC_{BT}	%w/w S	0.30	0.38	1.0	0.16
s-Net Acidity	%w/w S	0.29	<0.005	<0.005	<0.005
a-Net Acidity	moles H^+ /t	180	<5	<5	<5
Liming rate	kg $CaCO_3$ /t	14	<0.75	<0.75	<0.75
a-Net Acidity without ANCE	moles H^+ /t	310	130	230	17
Liming rate without ANCE	kg $CaCO_3$ /t	23	9.9	17	1.3
s-Net Acidity without ANCE	%w/w S	0.49	0.21	0.36	0.027

Method ID	Methodology Summary
Inorg-068	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.

QUALITY CONTROL: Chromium Suite						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			05/08/2020	21	05/08/2020	05/08/2020		05/08/2020	[NT]
Date analysed	-			05/08/2020	21	05/08/2020	05/08/2020		05/08/2020	[NT]
pH $_{kcl}$	pH units		Inorg-068	[NT]	21	8.3	8.5	2	96	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-068	<0.01	21	<0.01	<0.01	0	[NT]	[NT]
TAA pH 6.5	moles H^+ /t	5	Inorg-068	<5	21	<5	<5	0	100	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	<0.005	21	0.36	0.37	3	[NT]	[NT]
a-Chromium Reducible Sulfur	moles H^+ /t	3	Inorg-068	<3	21	230	230	0	115	[NT]
S_{HCl}	%w/w S	0.005	Inorg-068	<0.005	21	NA	NA		[NT]	[NT]
S_{KCl}	%w/w S	0.005	Inorg-068	<0.005	21	0.028	0.028	0	[NT]	[NT]
S_{NAS}	%w/w S	0.005	Inorg-068	<0.005	21	NA	NA		[NT]	[NT]
ANC_{BT}	% $CaCO_3$	0.05	Inorg-068	<0.05	21	3.2	3.5	9	[NT]	[NT]
s-ANC_{BT}	%w/w S	0.05	Inorg-068	<0.05	21	1.0	1.1	10	[NT]	[NT]
s-Net Acidity	%w/w S	0.005	Inorg-068	<0.005	21	<0.005	<0.005	0	[NT]	[NT]
a-Net Acidity	moles H^+ /t	5	Inorg-068	<5	21	<5	<5	0	[NT]	[NT]
Liming rate	kg $CaCO_3$ /t	0.75	Inorg-068	<0.75	21	<0.75	<0.75	0	[NT]	[NT]
a-Net Acidity without ANCE	moles H^+ /t	5	Inorg-068	<5	21	230	230	0	[NT]	[NT]
Liming rate without ANCE	kg $CaCO_3$ /t	0.75	Inorg-068	<0.75	21	17	17	0	[NT]	[NT]
s-Net Acidity without ANCE	%w/w S	0.005	Inorg-068	<0.005	21	0.36	0.37	3	[NT]	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Envirolab Services Pty Ltd
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CERTIFICATE OF ANALYSIS 247826-E

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	39 Soil
Date samples received	27/07/2020
Date completed instructions received	13/08/2020

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	18/08/2020
Date of Issue	18/08/2020

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Results Approved By
Dragana Tomas, Senior Chemist
Josh Williams, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

PAHs in TCLP (USEPA 1311)		
Our Reference		247826-E-24
Your Reference	UNITS	TP124/0.8-0.9
Date Sampled		27/07/20
Type of sample		Soil
pH of soil for fluid# determ.	pH units	8.2
pH of soil TCLP (after HCl)	pH units	1.7
Extraction fluid used	-	1
pH of final Leachate	pH units	5.0
Date extracted	-	17/08/2020
Date analysed	-	17/08/2020
Naphthalene in TCLP	mg/L	<0.001
Acenaphthylene in TCLP	mg/L	<0.001
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	0.003
Anthracene in TCLP	mg/L	0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	0.0040
Surrogate p-Terphenyl-d14	%	130

sTPH in Soil (C10-C40)-Silica		
Our Reference		247826-E-24
Your Reference	UNITS	TP124/0.8-0.9
Date Sampled		27/07/20
Type of sample		Soil
Date extracted	-	17/08/2020
Date analysed	-	18/08/2020
TPH C_{10} - C_{14}	mg/kg	<50
TPH C_{15} - C_{28}	mg/kg	240
TPH C_{29} - C_{36}	mg/kg	510
TPH >C_{10} -C_{16}	mg/kg	<50
TPH >C_{16} -C_{34}	mg/kg	590
TPH >C_{34} -C_{40}	mg/kg	430
Surrogate o-Terphenyl	%	130

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Org-020	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-022/025	Leachates are extracted with Dichloromethane and analysed by GC-MS/GC-MSMS.

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			14/08/2020	[NT]	[NT]	[NT]	[NT]	17/08/2020	[NT]
Date analysed	-			14/08/2020	[NT]	[NT]	[NT]	[NT]	17/08/2020	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	106	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	100	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
Anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	95	[NT]
Pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	93	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	107	[NT]	[NT]	[NT]	[NT]	109	[NT]

QUALITY CONTROL: sTPH in Soil (C10-C40)-Silica						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			17/08/2020	[NT]	[NT]	[NT]	[NT]	17/08/2020	[NT]
Date analysed	-			18/08/2020	[NT]	[NT]	[NT]	[NT]	18/08/2020	[NT]
TPH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	104	[NT]
TPH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	97	[NT]
TPH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	105	[NT]
TPH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	104	[NT]
TPH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	97	[NT]
TPH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	105	[NT]
Surrogate o-Terphenyl	%		Org-020	84	[NT]	[NT]	[NT]	[NT]	115	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	72 hrs			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total Coliform	Feacal Coliform	HUB							Notes/preservation
TP121/0.1-0.2	1	27/07/20	S	G										
TP121/0.2-0.3	2	27/07/20	S	G	x	x	x							
TP121/0.6-0.7	3	27/07/20	S	G&P	x	x	x							
TP121/1.2-1.3	4	27/07/20	S	G&P										
TP121/1.9-2.0	5	27/07/20	S	G&P	x	x	x							
TP121/2.4-2.5	6	27/07/20	S	G&P										
TP121/2.9-3.0	7	27/07/20	S	G&P	x	x	x							
TP122/0.0-0.1	8	27/07/20	S	G										
TP122/0.3-0.4	9	27/07/20	S	G&P										
TP122/0.8-0.9	10	27/07/20	S	G&P										
TP122/1.4-1.5	11	27/07/20	S	G&P	x	x	x							
TP122/1.8-1.9	12	27/07/20	S	G&P										
TP122/2.4-2.5	13	27/07/20	S	G&P										
TP122/2.9-3.0	14	27/07/20	S	G&P	x	x	x							
TP123/0.1-0.2	15	27/07/20	S	G										
PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes** ☐

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH, 09:30 28/07/2020 **Received by:** **Date & Time:**

247826

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	72 hrs			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total Coliform	Feacal Coliform	HUB							Notes/preservation
TP123/0.3-0.4	16	27/07/20	S	G&P										
TP123/0.6-0.7	17	27/07/20	S	G&P	x	x	x							
TP123/1.3-1.4	18	27/07/20	S	G&P										
TP123/1.9-2.0	19	27/07/20	S	G&P										
TP123/2.4-2.5	20	27/07/20	S	G&P	x	x	x							
TP123/2.9-3.0	21	27/07/20	S	G&P										
TP124/0.1-0.2	22	27/07/20	S	G										
TP124/0.3-0.4	23	27/07/20	S	G										
TP124/0.8-0.9	24	27/07/20	S	G&P										
TP124/1.3-1.4	25	27/07/20	S	G&P										
TP124/1.9-2.0	26	27/07/20	S	G&P										
TP124/2.6-2.7	27	27/07/20	S	G&P										
TP124/3.4-3.5	28	27/07/20	S	G&P										
TP124/4.5-4.6	29	27/07/20	S	G&P										
BH107/2.0-2.5	30	24/07/20	S	G&P										
PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes** ☐

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH, 09:30 28/07/2020 **Received by:** **Date & Time:**

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Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	72 hrs			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total Coliform	Feacal Coliform	HUB							Notes/preservation
BH107/2.5-3.0	31	24/07/20	S	G&P										
BH107/3.0-3.5	32	24/07/20	S	G&P										
BH107/4.5-5.0	33	24/07/20	S	G&P										
BD1/20200727	34	27/07/20	S	G										
BD2/20200727	35	27/07/20	S	G										
Trip Spike	36		S	G										
Trip Blank	37		S	G										
TP127 0.6-0.7	38													
TP123 1.8-1.9	39													
PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH, 09:30 28/07/2020 **Received by:** **Date & Time:**

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden

Sample Login Details

Your reference	99751.00, Carss Park Swimming Pool
Envirolab Reference	247826
Date Sample Received	27/07/2020
Date Instructions Received	28/07/2020
Date Results Expected to be Reported	04/08/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	39 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	9.2
Cooling Method	None
Sampling Date Provided	YES

Comments

Two extra samples -
- TP127 0.6-0.7
- TP123 1.8-1.9

Received Samples 9-11 labelled with “BH” prefix.

Please direct any queries to:

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

Analysis Underway, details on the following page:

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customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	Micro testing in soil	On Hold
TP121/0.1-0.2		✓
TP121/0.2-0.3	✓	
TP121/0.6-0.7	✓	
TP121/1.2-1.3		✓
TP121/1.9-2.0	✓	
TP121/2.4-2.5		✓
TP121/2.9-3.0	✓	
TP122/0.0-0.1		✓
TP122/0.3-0.4		✓
TP122/0.8-0.9		✓
TP122/1.4-1.5	✓	
TP122/1.8-1.9		✓
TP122/2.4-2.5		✓
TP122/2.9-3.0	✓	
TP123/0.1-0.2		✓
TP123/0.3-0.4		✓
TP123/0.6-0.7	✓	
TP123/1.3-1.4		✓
TP123/1.9-2.0		✓
TP123/2.4-2.5	✓	
TP123/2.9-3.0		✓
TP124/0.1-0.2		✓
TP124/0.3-0.4		✓
TP124/0.8-0.9		✓
TP124/1.3-1.4		✓
TP124/1.9-2.0		✓
TP124/2.6-2.7		✓
TP124/3.4-3.5		✓
TP124/4.5-4.6		✓
BH107/2.0-2.5		✓
BH107/2.5-3.0		✓
BH107/3.0-3.5		✓

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customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	Micro testing in soil	On Hold
BH107/4.5-5.0		✓
BD1/20200727		✓
BD2/20200727		✓
Trip Spike		✓
Trip Blank		✓
TP127/0.6-0.7		✓
TP123/1.8-1.9		✓

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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CERTIFICATE OF ANALYSIS 247934

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	68 Soil
Date samples received	29/07/2020
Date completed instructions received	29/07/2020

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	05/08/2020
Date of Issue	19/08/2020

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Results Approved By
Ken Nguyen, Reporting Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

Micro testing in soil						
Our Reference		247934-3	247934-6	247934-15	247934-25	247934-43
Your Reference	UNITS	TP120/1.0-1.1	TP120/2.5-2.6	TP125/3.9-4.0	TP126/2.7-2.8	TP128/0.9-1.0
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date testing started	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Total Coliforms in soil	MPN/100g	<200	400	[NA]	[NA]	[NA]
Faecal Coliforms in soil	MPN/100g	<200	<200	[NA]	[NA]	[NA]
Pseudomonas Aeruginosa	cfu/g	<10	<10	<10	<10	70

Micro testing in soil				
Our Reference		247934-51	247934-55	247934-59
Your Reference	UNITS	TP129/1.9-2.0	TP130/0.6-0.7	TP130/2.7-2.8
Date Sampled		28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil
Date testing started	-	30/07/2020	30/07/2020	30/07/2020
Total Coliforms in soil	MPN/100g	1,100	800	13,000
Faecal Coliforms in soil	MPN/100g	<200	500	3,300
Pseudomonas Aeruginosa	cfu/g	<10	<10	<10

Method ID	Methodology Summary
Ext-008	Subcontracted to Sonic Food & Water Testing. NATA Accreditation No. 4034.
Ext-054	Analysed by MPL Envirolab

QUALITY CONTROL: Micro testing in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date testing started	-			[NT]	3	30/07/2020	30/07/2020		[NT]	[NT]
Total Coliforms in soil	MPN/100g	200	Ext-008	[NT]	3	<200	[NT]		[NT]	[NT]
Faecal Coliforms in soil	MPN/100g	200	Ext-008	[NT]	3	<200	[NT]		[NT]	[NT]
Pseudomonas Aeruginosa	cfu/g	10	Ext-054	[NT]	3	<10	<10	0	[NT]	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Pseudomonas aeruginosa analysed by MPL. Report no. 247920
Total coliforms and E.Coli analysed by Sonic Food and water testing. Report no. W2015552
Analysed outside of holding time

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CERTIFICATE OF ANALYSIS 247934-A

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	68 Soil
Date samples received	29/07/2020
Date completed instructions received	29/07/2020

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	03/08/2020
Date of Issue	03/08/2020

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Results Approved By
Dragana Tomas, Senior Chemist
Loren Bardwell, Senior Chemist
Manju Dewendrage, Chemist
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247934-A-2	247934-A-3	247934-A-6	247934-A-7	247934-A-9
Your Reference	UNITS	TP120/0.5-0.6	TP120/1.0-1.1	TP120/2.5-2.6	TP120/2.9-3.0	TP125/0.2-0.3
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	111	103	99	97	103

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247934-A-13	247934-A-18	247934-A-19	247934-A-22	247934-A-31
Your Reference	UNITS	TP125/2.9-3.0	TP125/4.9-5.0	TP126/0.1-0.2	TP126/1.5-1.6	TP127/0.3-0.4
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	106	107	102	99	111

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247934-A-35	247934-A-41	247934-A-43	247934-A-48	247934-A-49
Your Reference	UNITS	TP127/2.4-2.5	TP128/0.1-0.2	TP128/0.9-1.0	TP129/0.4-0.5	TP129/0.8-0.9
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	102	107	98	102	104

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247934-A-51	247934-A-54	247934-A-56	247934-A-59	247934-A-63
Your Reference	UNITS	TP129/1.9-2.0	TP130/0.0-0.1	TP130/1.1-1.2	TP130/2.7-2.8	BD4/20200728
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	107	92	103	92	96

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		247934-A-65	247934-A-66
Your Reference	UNITS	Trip Spike	Trip Blank
Date Sampled		28/07/2020	28/07/2020
Type of sample		Soil	Soil
Date extracted	-	30/07/2020	30/07/2020
Date analysed	-	31/07/2020	31/07/2020
TRH C_6 - C_9	mg/kg	[NA]	<25
TRH C_6 - C_{10}	mg/kg	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	[NA]	<25
Benzene	mg/kg	99%	<0.2
Toluene	mg/kg	99%	<0.5
Ethylbenzene	mg/kg	95%	<1
m+p-xylene	mg/kg	95%	<2
o-Xylene	mg/kg	95%	<1
naphthalene	mg/kg	[NA]	<1
Total +ve Xylenes	mg/kg	[NA]	<3
Surrogate aaa-Trifluorotoluene	%	102	94

svTRH (C10-C40) in Soil						
Our Reference		247934-A-2	247934-A-3	247934-A-6	247934-A-7	247934-A-9
Your Reference	UNITS	TP120/0.5-0.6	TP120/1.0-1.1	TP120/2.5-2.6	TP120/2.9-3.0	TP125/0.2-0.3
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	180	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	220	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	220	<50	<50
Surrogate o-Terphenyl	%	79	79	91	82	82

svTRH (C10-C40) in Soil						
Our Reference		247934-A-13	247934-A-18	247934-A-19	247934-A-22	247934-A-31
Your Reference	UNITS	TP125/2.9-3.0	TP125/4.9-5.0	TP126/0.1-0.2	TP126/1.5-1.6	TP127/0.3-0.4
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	80	83	80	78	85

svTRH (C10-C40) in Soil						
Our Reference		247934-A-35	247934-A-41	247934-A-43	247934-A-48	247934-A-49
Your Reference	UNITS	TP127/2.4-2.5	TP128/0.1-0.2	TP128/0.9-1.0	TP129/0.4-0.5	TP129/0.8-0.9
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	31/07/2020	31/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	76	77	83	82	82

svTRH (C10-C40) in Soil						
Our Reference		247934-A-51	247934-A-54	247934-A-56	247934-A-59	247934-A-63
Your Reference	UNITS	TP129/1.9-2.0	TP130/0.0-0.1	TP130/1.1-1.2	TP130/2.7-2.8	BD4/20200728
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	170	150	<100	130	<100
TRH C_{29} - C_{36}	mg/kg	230	270	<100	140	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	360	340	<100	240	<100
TRH >C_{34} -C_{40}	mg/kg	<100	240	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	360	580	<50	240	<50
Surrogate o-Terphenyl	%	80	81	79	93	84

PAHs in Soil						
Our Reference		247934-A-2	247934-A-3	247934-A-6	247934-A-7	247934-A-9
Your Reference	UNITS	TP120/0.5-0.6	TP120/1.0-1.1	TP120/2.5-2.6	TP120/2.9-3.0	TP125/0.2-0.3
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.2	0.2	<0.1	0.2
Pyrene	mg/kg	<0.1	<0.1	0.2	<0.1	0.2
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Chrysene	mg/kg	<0.1	<0.1	0.1	<0.1	0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	0.3
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.1	<0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Total +ve PAH's	mg/kg	<0.05	0.2	0.57	<0.05	1.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	92	92	97	93	95

PAHs in Soil						
Our Reference		247934-A-13	247934-A-18	247934-A-19	247934-A-22	247934-A-31
Your Reference	UNITS	TP125/2.9-3.0	TP125/4.9-5.0	TP126/0.1-0.2	TP126/1.5-1.6	TP127/0.3-0.4
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.3	0.1	0.1	<0.1
Pyrene	mg/kg	<0.1	0.2	0.1	0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.08	0.1	0.08	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	0.91	0.4	0.3	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	93	97	96	95	96

PAHs in Soil						
Our Reference		247934-A-35	247934-A-41	247934-A-43	247934-A-48	247934-A-49
Your Reference	UNITS	TP127/2.4-2.5	TP128/0.1-0.2	TP128/0.9-1.0	TP129/0.4-0.5	TP129/0.8-0.9
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.4	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.6	0.3	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.6	0.3	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.3	0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.3	0.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.5	0.3	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.3	0.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.2	0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	3.4	1.4	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	95	94	98	96	94

PAHs in Soil						
Our Reference		247934-A-51	247934-A-54	247934-A-56	247934-A-59	247934-A-63
Your Reference	UNITS	TP129/1.9-2.0	TP130/0.0-0.1	TP130/1.1-1.2	TP130/2.7-2.8	BD4/20200728
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
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	0.2	0.5	0.1	<0.1	0.2
Anthracene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.4	1.7	0.3	<0.1	0.2
Pyrene	mg/kg	0.5	1.8	0.3	<0.1	0.2
Benzo(a)anthracene	mg/kg	0.5	0.9	0.2	0.1	0.1
Chrysene	mg/kg	0.6	0.9	0.2	<0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	1	2.0	0.3	<0.2	0.2
Benzo(a)pyrene	mg/kg	0.87	1.3	0.2	0.07	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	0.4	0.8	0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.5	1.1	0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	5.3	11	1.9	0.2	1.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.1	1.9	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.1	1.9	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.2	1.9	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	94	96	97	108	100

PAHs in Soil		
Our Reference		247934-A-69
Your Reference	UNITS	BD4/20200728 - [TRIPLICATE]
Date Sampled		28/07/2020
Type of sample		Soil
Date extracted	-	30/07/2020
Date analysed	-	30/07/2020
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	0.3
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	0.4
Pyrene	mg/kg	0.4
Benzo(a)anthracene	mg/kg	0.2
Chrysene	mg/kg	0.2
Benzo(b,j+k)fluoranthene	mg/kg	0.3
Benzo(a)pyrene	mg/kg	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	1.9
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	117

Organochlorine Pesticides in soil						
Our Reference		247934-A-19	247934-A-31	247934-A-41	247934-A-51	247934-A-54
Your Reference	UNITS	TP126/0.1-0.2	TP127/0.3-0.4	TP128/0.1-0.2	TP129/1.9-2.0	TP130/0.0-0.1
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	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
gamma-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
Endosulfan II	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
Endrin Aldehyde	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
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	110	100	108	111	108

Organophosphorus Pesticides in Soil						
Our Reference		247934-A-19	247934-A-31	247934-A-41	247934-A-51	247934-A-54
Your Reference	UNITS	TP126/0.1-0.2	TP127/0.3-0.4	TP128/0.1-0.2	TP129/1.9-2.0	TP130/0.0-0.1
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
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
Diazinon	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
Ronnel	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
Chlorpyriphos	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
Bromophos-ethyl	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
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	110	100	108	111	108

PCBs in Soil						
Our Reference		247934-A-19	247934-A-31	247934-A-41	247934-A-51	247934-A-54
Your Reference	UNITS	TP126/0.1-0.2	TP127/0.3-0.4	TP128/0.1-0.2	TP129/1.9-2.0	TP130/0.0-0.1
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
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 TCMX	%	110	100	108	111	108

Acid Extractable metals in soil						
Our Reference		247934-A-2	247934-A-3	247934-A-6	247934-A-7	247934-A-9
Your Reference	UNITS	TP120/0.5-0.6	TP120/1.0-1.1	TP120/2.5-2.6	TP120/2.9-3.0	TP125/0.2-0.3
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Arsenic	mg/kg	<4	10	9	9	4
Cadmium	mg/kg	<0.4	<0.4	0.5	<0.4	<0.4
Chromium	mg/kg	22	15	17	16	13
Copper	mg/kg	4	14	38	47	9
Lead	mg/kg	11	59	97	38	42
Mercury	mg/kg	0.1	0.4	0.1	0.3	<0.1
Nickel	mg/kg	<1	3	13	16	3
Zinc	mg/kg	22	76	270	85	36

Acid Extractable metals in soil						
Our Reference		247934-A-13	247934-A-18	247934-A-19	247934-A-22	247934-A-31
Your Reference	UNITS	TP125/2.9-3.0	TP125/4.9-5.0	TP126/0.1-0.2	TP126/1.5-1.6	TP127/0.3-0.4
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Arsenic	mg/kg	7	<4	11	7	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	40	2	11	10	3
Copper	mg/kg	10	12	11	18	6
Lead	mg/kg	45	16	24	39	11
Mercury	mg/kg	0.2	<0.1	<0.1	2.1	<0.1
Nickel	mg/kg	2	<1	3	3	2
Zinc	mg/kg	76	4	25	51	20

Acid Extractable metals in soil						
Our Reference		247934-A-35	247934-A-41	247934-A-43	247934-A-48	247934-A-49
Your Reference	UNITS	TP127/2.4-2.5	TP128/0.1-0.2	TP128/0.9-1.0	TP129/0.4-0.5	TP129/0.8-0.9
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Arsenic	mg/kg	13	<4	10	18	7
Cadmium	mg/kg	<0.4	<0.4	0.7	2	<0.4
Chromium	mg/kg	7	9	26	16	12
Copper	mg/kg	<1	69	270	250	32
Lead	mg/kg	5	3	200	130	33
Mercury	mg/kg	<0.1	<0.1	0.1	2.5	0.2
Nickel	mg/kg	1	49	34	15	13
Zinc	mg/kg	6	25	290	220	85

Acid Extractable metals in soil						
Our Reference		247934-A-51	247934-A-54	247934-A-56	247934-A-59	247934-A-63
Your Reference	UNITS	TP129/1.9-2.0	TP130/0.0-0.1	TP130/1.1-1.2	TP130/2.7-2.8	BD4/20200728
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Arsenic	mg/kg	17	7	6	7	10
Cadmium	mg/kg	0.6	<0.4	0.7	3	0.7
Chromium	mg/kg	20	15	10	990	23
Copper	mg/kg	61	44	24	86	190
Lead	mg/kg	110	43	120	130	190
Mercury	mg/kg	1.0	0.1	0.2	0.4	0.1
Nickel	mg/kg	9	21	4	17	27
Zinc	mg/kg	260	68	110	1,700	280

Moisture						
Our Reference		247934-A-2	247934-A-3	247934-A-6	247934-A-7	247934-A-9
Your Reference	UNITS	TP120/0.5-0.6	TP120/1.0-1.1	TP120/2.5-2.6	TP120/2.9-3.0	TP125/0.2-0.3
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Moisture	%	9.3	16	37	14	13

Moisture						
Our Reference		247934-A-13	247934-A-18	247934-A-19	247934-A-22	247934-A-31
Your Reference	UNITS	TP125/2.9-3.0	TP125/4.9-5.0	TP126/0.1-0.2	TP126/1.5-1.6	TP127/0.3-0.4
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Moisture	%	52	26	12	13	5.4

Moisture						
Our Reference		247934-A-35	247934-A-41	247934-A-43	247934-A-48	247934-A-49
Your Reference	UNITS	TP127/2.4-2.5	TP128/0.1-0.2	TP128/0.9-1.0	TP129/0.4-0.5	TP129/0.8-0.9
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Moisture	%	13	19	40	42	31

Moisture						
Our Reference		247934-A-51	247934-A-54	247934-A-56	247934-A-59	247934-A-63
Your Reference	UNITS	TP129/1.9-2.0	TP130/0.0-0.1	TP130/1.1-1.2	TP130/2.7-2.8	BD4/20200728
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Moisture	%	40	55	13	27	23

Misc Soil - Inorg						
Our Reference		247934-A-19	247934-A-31	247934-A-41	247934-A-51	247934-A-54
Your Reference	UNITS	TP126/0.1-0.2	TP127/0.3-0.4	TP128/0.1-0.2	TP129/1.9-2.0	TP130/0.0-0.1
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Inorg - Soil					
Our Reference		247934-A-3	247934-A-9	247934-A-41	247934-A-48
Your Reference	UNITS	TP120/1.0-1.1	TP125/0.2-0.3	TP128/0.1-0.2	TP129/0.4-0.5
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020
pH 1:5 soil:water	pH Units	6.5	7.4	8.5	7.4

CEC					
Our Reference		247934-A-3	247934-A-9	247934-A-41	247934-A-48
Your Reference	UNITS	TP120/1.0-1.1	TP125/0.2-0.3	TP128/0.1-0.2	TP129/0.4-0.5
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	03/08/2020	03/08/2020	03/08/2020	03/08/2020
Date analysed	-	03/08/2020	03/08/2020	03/08/2020	03/08/2020
Exchangeable Ca	meq/100g	8.3	8.7	13	6.7
Exchangeable K	meq/100g	0.2	0.4	0.2	0.2
Exchangeable Mg	meq/100g	0.42	0.73	2.5	2.0
Exchangeable Na	meq/100g	<0.1	<0.1	1.4	0.20
Cation Exchange Capacity	meq/100g	9.0	9.9	17	9.2

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals by ICP-AES.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	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-020	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-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. 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.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	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-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247934-A-19
Date extracted	-			31/07/2020	2	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Date analysed	-			31/07/2020	2	31/07/2020	31/07/2020		31/07/2020	31/07/2020
TRH C_6 - C_9	mg/kg	25	Org-023	<25	2	<25	<25	0	111	91
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	2	<25	<25	0	111	91
Benzene	mg/kg	0.2	Org-023	<0.2	2	<0.2	<0.2	0	108	89
Toluene	mg/kg	0.5	Org-023	<0.5	2	<0.5	<0.5	0	112	92
Ethylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	111	91
m+p-xylene	mg/kg	2	Org-023	<2	2	<2	<2	0	113	92
o-Xylene	mg/kg	1	Org-023	<1	2	<1	<1	0	111	92
naphthalene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	124	2	111	107	4	122	101

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	247934-A-54
Date extracted	-			[NT]	35	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Date analysed	-			[NT]	35	31/07/2020	31/07/2020		31/07/2020	31/07/2020
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	35	<25	<25	0	102	91
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	35	<25	<25	0	102	91
Benzene	mg/kg	0.2	Org-023	[NT]	35	<0.2	<0.2	0	101	86
Toluene	mg/kg	0.5	Org-023	[NT]	35	<0.5	<0.5	0	103	87
Ethylbenzene	mg/kg	1	Org-023	[NT]	35	<1	<1	0	101	95
m+p-xylene	mg/kg	2	Org-023	[NT]	35	<2	<2	0	103	95
o-Xylene	mg/kg	1	Org-023	[NT]	35	<1	<1	0	102	92
naphthalene	mg/kg	1	Org-023	[NT]	35	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	35	102	100	2	113	100

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]	63	30/07/2020	30/07/2020		[NT]	[NT]
Date analysed	-			[NT]	63	31/07/2020	31/07/2020		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	63	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	63	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	63	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	63	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	63	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	63	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	63	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	63	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	63	96	85	12	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247934-A-19
Date extracted	-			30/07/2020	2	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Date analysed	-			31/07/2020	2	30/07/2020	30/07/2020		30/07/2020	30/07/2020
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	2	<50	<50	0	102	99
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	2	<100	<100	0	89	90
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	2	<100	<100	0	92	80
TRH >C_{10}-C_{16}	mg/kg	50	Org-020	<50	2	<50	<50	0	102	99
TRH >C_{16}-C_{34}	mg/kg	100	Org-020	<100	2	<100	<100	0	89	90
TRH >C_{34}-C_{40}	mg/kg	100	Org-020	<100	2	<100	<100	0	92	80
Surrogate o-Terphenyl	%		Org-020	82	2	79	82	4	126	123

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	247934-A-54
Date extracted	-			[NT]	35	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Date analysed	-			[NT]	35	30/07/2020	30/07/2020		31/07/2020	31/07/2020
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	35	<50	<50	0	97	74
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	35	<100	<100	0	88	74
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	35	<100	<100	0	92	93
TRH >C_{10}-C_{16}	mg/kg	50	Org-020	[NT]	35	<50	<50	0	97	74
TRH >C_{16}-C_{34}	mg/kg	100	Org-020	[NT]	35	<100	<100	0	88	74
TRH >C_{34}-C_{40}	mg/kg	100	Org-020	[NT]	35	<100	<100	0	92	93
Surrogate o-Terphenyl	%		Org-020	[NT]	35	76	76	0	120	120

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	63	30/07/2020	30/07/2020		[NT]	[NT]
Date analysed	-			[NT]	63	31/07/2020	31/07/2020		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	63	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	63	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	63	<100	<100	0	[NT]	[NT]
TRH >C_{10}-C_{16}	mg/kg	50	Org-020	[NT]	63	<50	<50	0	[NT]	[NT]
TRH >C_{16}-C_{34}	mg/kg	100	Org-020	[NT]	63	<100	<100	0	[NT]	[NT]
TRH >C_{34}-C_{40}	mg/kg	100	Org-020	[NT]	63	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	63	84	81	4	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247934-A-19
Date extracted	-			31/07/2020	2	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Date analysed	-			31/07/2020	2	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	98	96
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	92	88
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	98	98
Anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	94	90
Pyrene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	96	94
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	84	80
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	2	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	2	<0.05	<0.05	0	98	95
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	112	2	92	93	1	92	93

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	247934-A-54
Date extracted	-			[NT]	35	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Date analysed	-			[NT]	35	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	102	92
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	92	94
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	100	96
Anthracene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	94	#
Pyrene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	96	#
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	86	122
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	35	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	35	<0.05	<0.05	0	104	#
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	35	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	35	95	95	0	95	107

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	63	30/07/2020	30/07/2020		[NT]	[NT]
Date analysed	-			[NT]	63	30/07/2020	30/07/2020		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	63	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	63	<0.1	0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	63	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	63	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	63	0.2	1.1	138	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	63	<0.1	0.3	100	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	63	0.2	1.3	147	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	63	0.2	1.1	138	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	63	0.1	0.5	133	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	63	0.2	0.5	86	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	63	0.2	0.7	111	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	63	0.1	0.4	120	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	63	<0.1	0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	63	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	63	<0.1	0.2	67	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	63	100	100	0	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247934-A-19
Date extracted	-			31/07/2020	31	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Date analysed	-			31/07/2020	31	30/07/2020	30/07/2020		30/07/2020	30/07/2020
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	110	88
HCB	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	104	90
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	100	86
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	110	100
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	100	94
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	100	96
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	110	100
Endrin	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	102	98
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	90	82
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	94	72
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	101	31	100	107	7	103	100

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247934-A-19
Date extracted	-			31/07/2020	31	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Date analysed	-			31/07/2020	31	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	108	74
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	110	94
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	94	94
Malathion	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	99	112
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	114	98
Parathion	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	90	82
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	96	90
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	101	31	100	107	7	103	100

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	247934-A-19
Date extracted	-			31/07/2020	31	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Date analysed	-			31/07/2020	31	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	31	<0.1	<0.1	0	90	84
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	31	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	101	31	100	107	7	103	100

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	247934-A-19
Date prepared	-			30/07/2020	2	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Date analysed	-			30/07/2020	2	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Arsenic	mg/kg	4	Metals-020	<4	2	<4	<4	0	101	107
Cadmium	mg/kg	0.4	Metals-020	<0.4	2	<0.4	<0.4	0	98	80
Chromium	mg/kg	1	Metals-020	<1	2	22	21	5	98	83
Copper	mg/kg	1	Metals-020	<1	2	4	5	22	101	104
Lead	mg/kg	1	Metals-020	<1	2	11	12	9	98	84
Mercury	mg/kg	0.1	Metals-021	<0.1	2	0.1	0.1	0	91	97
Nickel	mg/kg	1	Metals-020	<1	2	<1	<1	0	97	81
Zinc	mg/kg	1	Metals-020	<1	2	22	22	0	99	82

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	247934-A-54
Date prepared	-			[NT]	35	30/07/2020	30/07/2020		[NT]	30/07/2020
Date analysed	-			[NT]	35	30/07/2020	30/07/2020		[NT]	30/07/2020
Arsenic	mg/kg	4	Metals-020	[NT]	35	13	14	7	[NT]	99
Cadmium	mg/kg	0.4	Metals-020	[NT]	35	<0.4	<0.4	0	[NT]	87
Chromium	mg/kg	1	Metals-020	[NT]	35	7	6	15	[NT]	91
Copper	mg/kg	1	Metals-020	[NT]	35	<1	1	0	[NT]	113
Lead	mg/kg	1	Metals-020	[NT]	35	5	5	0	[NT]	102
Mercury	mg/kg	0.1	Metals-021	[NT]	35	<0.1	<0.1	0	[NT]	92
Nickel	mg/kg	1	Metals-020	[NT]	35	1	2	67	[NT]	91
Zinc	mg/kg	1	Metals-020	[NT]	35	6	7	15	[NT]	90

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	63	30/07/2020	30/07/2020		[NT]	[NT]
Date analysed	-			[NT]	63	30/07/2020	30/07/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	63	10	8	22	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	63	0.7	0.8	13	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	63	23	19	19	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	63	190	180	5	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	63	190	220	15	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	63	0.1	0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	63	27	24	12	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	63	280	250	11	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			30/07/2020	19	30/07/2020	30/07/2020		30/07/2020	[NT]
Date analysed	-			30/07/2020	19	30/07/2020	30/07/2020		30/07/2020	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	19	<5	<5	0	101	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			31/07/2020	41	31/07/2020	31/07/2020		31/07/2020	[NT]
Date analysed	-			31/07/2020	41	31/07/2020	31/07/2020		31/07/2020	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	41	8.5	8.6	1	101	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			03/08/2020	[NT]	[NT]	[NT]	[NT]	03/08/2020	[NT]
Date analysed	-			03/08/2020	[NT]	[NT]	[NT]	[NT]	03/08/2020	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

PAHs in Soil - # Percent recovery for the matrix spike is not possible to report as the high concentration of analytes in sample 247934-a-54ms have caused interference.
PAHs in Soil - The laboratory RPD acceptance criteria has been exceeded for 247934-a-63. Therefore a triplicate result has been issued as laboratory sample number 247934-a-69.

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CERTIFICATE OF ANALYSIS 247934-B

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	68 Soil
Date samples received	29/07/2020
Date completed instructions received	29/07/2020

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	30/07/2020
Date of Issue	30/07/2020

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Results Approved By
Nick Sarlamis, Inorganics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

sPOCAS field test						
Our Reference		247934-B-4	247934-B-5	247934-B-7	247934-B-11	247934-B-13
Your Reference	UNITS	TP120/1.5-1.6	TP120/2.0-2.1	TP120/2.9-3.0	TP125/1.6-1.7	TP125/2.9-3.0
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
pH_F (field pH test)*	pH Units	7.0	7.5	7.4	8.2	8.2
pH_{FOX} (field peroxide test)*	pH Units	2.8	3.6	4.9	6.3	6.0
Reaction Rate*	-	Medium reaction	High reaction	Volcanic reaction	Low reaction	Medium reaction

sPOCAS field test						
Our Reference		247934-B-14	247934-B-16	247934-B-18	247934-B-33	247934-B-35
Your Reference	UNITS	TP125/3.4-3.5	TP125/4.0-4.1	TP125/4.9-5.0	TP127/1.4-1.5	TP127/2.4-2.5
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
pH_F (field pH test)*	pH Units	7.6	6.7	6.8	7.4	8.3
pH_{FOX} (field peroxide test)*	pH Units	6.3	4.4	4.2	5.8	6.7
Reaction Rate*	-	Medium reaction	Extreme reaction	High reaction	Medium reaction	Low reaction

sPOCAS field test						
Our Reference		247934-B-38	247934-B-40	247934-B-49	247934-B-52	247934-B-56
Your Reference	UNITS	TP127/3.9-4.0	TP127/4.9-5.0	TP129/0.8-0.9	TP129/2.4-2.5	TP130/1.1-1.2
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
pH_F (field pH test)*	pH Units	7.5	7.8	7.9	8.1	7.6
pH_{FOX} (field peroxide test)*	pH Units	6.7	7.2	6.2	6.4	4.9
Reaction Rate*	-	Volcanic reaction	Extreme reaction	Extreme reaction	Volcanic reaction	Medium reaction

sPOCAS field test		
Our Reference		247934-B-59
Your Reference	UNITS	TP130/2.7-2.8
Date Sampled		28/07/2020
Type of sample		Soil
Date prepared	-	30/07/2020
Date analysed	-	30/07/2020
pH_F (field pH test)*	pH Units	7.5
pH_{FOX} (field peroxide test)*	pH Units	5.0
Reaction Rate*	-	Volcanic reaction

Method ID	Methodology Summary
Inorg-063	pH- measured using pH meter and electrode. Soil is oxidised with Hydrogen Peroxide or extracted with water. Based on section H, Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004. To ensure accurate results these tests are recommended to be done in the field as pH may change with time thus these results may not be representative of true field conditions.

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

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CERTIFICATE OF ANALYSIS 247934-C

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	68 Soil
Date samples received	29/07/2020
Date completed instructions received	04/08/2020

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	07/08/2020
Date of Issue	07/08/2020

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Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor
Priya Samarawickrama, Senior Chemist
Steven Luong, Organics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		247934-C-20
Your Reference	UNITS	TP126/0.4-0.5
Date Sampled		28/07/2020
Type of sample		Soil
Date extracted	-	05/08/2020
Date analysed	-	05/08/2020
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	101

svTRH (C10-C40) in Soil		
Our Reference		247934-C-20
Your Reference	UNITS	TP126/0.4-0.5
Date Sampled		28/07/2020
Type of sample		Soil
Date extracted	-	05/08/2020
Date analysed	-	06/08/2020
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	88

PAHs in Soil		
Our Reference		247934-C-20
Your Reference	UNITS	TP126/0.4-0.5
Date Sampled		28/07/2020
Type of sample		Soil
Date extracted	-	05/08/2020
Date analysed	-	06/08/2020
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	0.8
Anthracene	mg/kg	0.3
Fluoranthene	mg/kg	1.9
Pyrene	mg/kg	1.8
Benzo(a)anthracene	mg/kg	1
Chrysene	mg/kg	0.9
Benzo(b,j+k)fluoranthene	mg/kg	2
Benzo(a)pyrene	mg/kg	1.2
Indeno(1,2,3-c,d)pyrene	mg/kg	0.6
Dibenzo(a,h)anthracene	mg/kg	0.1
Benzo(g,h,i)perylene	mg/kg	0.8
Total +ve PAH's	mg/kg	11
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.7
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.7
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.7
Surrogate p-Terphenyl-d14	%	105

Acid Extractable metals in soil		
Our Reference		247934-C-20
Your Reference	UNITS	TP126/0.4-0.5
Date Sampled		28/07/2020
Type of sample		Soil
Date prepared	-	05/08/2020
Date analysed	-	05/08/2020
Arsenic	mg/kg	7
Cadmium	mg/kg	<0.4
Chromium	mg/kg	8
Copper	mg/kg	19
Lead	mg/kg	42
Mercury	mg/kg	<0.1
Nickel	mg/kg	6
Zinc	mg/kg	40

Moisture		
Our Reference		247934-C-20
Your Reference	UNITS	TP126/0.4-0.5
Date Sampled		28/07/2020
Type of sample		Soil
Date prepared	-	05/08/2020
Date analysed	-	06/08/2020
Moisture	%	19

Metals in TCLP USEPA1311						
Our Reference		247934-C-43	247934-C-48	247934-C-51	247934-C-54	247934-C-56
Your Reference	UNITS	TP128/0.9-1.0	TP129/0.4-0.5	TP129/1.9-2.0	TP130/0.0-0.1	TP130/1.1-1.2
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	07/08/2020	07/08/2020	07/08/2020	07/08/2020	07/08/2020
Date analysed	-	07/08/2020	07/08/2020	07/08/2020	07/08/2020	07/08/2020
pH of soil for fluid# determ.	pH units	9.1	8.5	9.4	7.7	7.8
pH of soil TCLP (after HCl)	pH units	2.0	1.8	1.9	1.8	1.8
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.5	5.0	5.3	5.0	5.0
Lead in TCLP	mg/L	0.08	0.06	0.1	[NA]	0.05

Metals in TCLP USEPA1311		
Our Reference		247934-C-59
Your Reference	UNITS	TP130/2.7-2.8
Date Sampled		28/07/2020
Type of sample		Soil
Date extracted	-	07/08/2020
Date analysed	-	07/08/2020
pH of soil for fluid# determ.	pH units	9.1
pH of soil TCLP (after HCl)	pH units	1.9
Extraction fluid used	-	1
pH of final Leachate	pH units	5.0
Lead in TCLP	mg/L	0.1
Chromium in TCLP	mg/L	<0.01

PAHs in TCLP (USEPA 1311)			
Our Reference		247934-C-51	247934-C-54
Your Reference	UNITS	TP129/1.9-2.0	TP130/0.0-0.1
Date Sampled		28/07/2020	28/07/2020
Type of sample		Soil	Soil
Date extracted	-	06/08/2020	06/08/2020
Date analysed	-	06/08/2020	06/08/2020
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	%	129	121

Metals-ASLP Neutral (ICP-MS)			
Our Reference		247934-C-43	247934-C-59
Your Reference	UNITS	TP128/0.9-1.0	TP130/2.7-2.8
Date Sampled		28/07/2020	28/07/2020
Type of sample		Soil	Soil
Date extracted	-	06/08/2020	06/08/2020
Date analysed	-	06/08/2020	06/08/2020
pH of final Leachate	pH units	8.6	8.1
Arsenic in ASLP	µg/L	<1	<1
Cadmium in ASLP	µg/L	<0.1	<0.1
Chromium in ASLP	µg/L	<1	<1
Copper in ASLP	µg/L	8	2
Lead in ASLP	µg/L	1	<1
Mercury in ASLP	µg/L	<0.05	<0.05
Nickel in ASLP	µg/L	<1	1
Zinc in ASLP	µg/L	2	7

Misc Inorg - Soil						
Our Reference		247934-C-1	247934-C-6	247934-C-13	247934-C-22	247934-C-31
Your Reference	UNITS	TP120/0.0-0.1	TP120/2.5-2.6	TP125/2.9-3.0	TP126/1.5-1.6	TP127/0.3-0.4
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	06/08/2020	06/08/2020	06/08/2020	06/08/2020	06/08/2020
Date analysed	-	06/08/2020	06/08/2020	06/08/2020	06/08/2020	06/08/2020
Chloride, Cl 1:5 soil:water	mg/kg	<10	10	20	<10	28

Misc Inorg - Soil				
Our Reference		247934-C-35	247934-C-49	247934-C-51
Your Reference	UNITS	TP127/2.4-2.5	TP129/0.8-0.9	TP129/1.9-2.0
Date Sampled		28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil
Date prepared	-	06/08/2020	06/08/2020	06/08/2020
Date analysed	-	06/08/2020	06/08/2020	06/08/2020
Chloride, Cl 1:5 soil:water	mg/kg	200	48	40

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
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.
Metals-021 ASLP	Determination of Mercury by Cold Vapour AAS following neutral water leaching by AS 4439.3 - 1997.
Metals-022	Determination of various metals by ICP-MS following leaching using neutralised deionised water by AS 4439.3 - 1997.
Org-020	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-020	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-022/025	Leachates are extracted with Dichloromethane and analysed by GC-MS/GC-MSMS.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	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-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	92	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	87	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	88	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	95	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	106	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	127	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	117	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	127	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	117	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate o-Terphenyl	%		Org-020	83	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			06/08/2020	[NT]	[NT]	[NT]	[NT]	06/08/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	116	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	111	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	101	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	97	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	247934-C-43
Date extracted	-			07/08/2020	[NT]	[NT]	[NT]	[NT]	07/08/2020	07/08/2020
Date analysed	-			07/08/2020	[NT]	[NT]	[NT]	[NT]	07/08/2020	07/08/2020
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	97	96
Chromium in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01	[NT]	[NT]	[NT]	[NT]	96	96

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			06/08/2020	[NT]	[NT]	[NT]	[NT]	06/08/2020	[NT]
Date analysed	-			06/08/2020	[NT]	[NT]	[NT]	[NT]	06/08/2020	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	94	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	90	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	84	[NT]
Anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	90	[NT]
Pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	72	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	80	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	100	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: Metals-ASLP Neutral (ICP-MS)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			06/08/2020	[NT]	[NT]	[NT]	[NT]	06/08/2020	[NT]
Date analysed	-			06/08/2020	[NT]	[NT]	[NT]	[NT]	06/08/2020	[NT]
Arsenic in ASLP	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Cadmium in ASLP	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Chromium in ASLP	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Copper in ASLP	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Lead in ASLP	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Mercury in ASLP	µg/L	0.05	Metals-021 ASLP	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
Nickel in ASLP	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Zinc in ASLP	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			06/08/2020	1	06/08/2020	06/08/2020		06/08/2020	[NT]
Date analysed	-			06/08/2020	1	06/08/2020	06/08/2020		06/08/2020	[NT]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	1	<10	<10	0	94	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

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

CERTIFICATE OF ANALYSIS 247934-D

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	68 Soil
Date samples received	29/07/2020
Date completed instructions received	04/08/2020

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	07/08/2020
Date of Issue	07/08/2020

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Results Approved By
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Chromium Suite					
Our Reference		247934-D-4	247934-D-18	247934-D-52	247934-D-59
Your Reference	UNITS	TP120/1.5-1.6	TP125/4.9-5.0	TP129/2.4-2.5	TP130/2.7-2.8
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020
Date analysed	-	05/08/2020	05/08/2020	05/08/2020	05/08/2020
pH $_{kcl}$	pH units	6.7	4.2	8.5	8.2
s-TAA pH 6.5	%w/w S	<0.01	0.04	<0.01	<0.01
TAA pH 6.5	moles H^+ /t	<5	27	<5	<5
Chromium Reducible Sulfur	%w/w	0.02	0.009	0.13	0.59
a-Chromium Reducible Sulfur	moles H^+ /t	12	5	79	370
S_{HCl}	%w/w S	NA	0.033	NA	NA
S_{KCl}	%w/w S	0.005	<0.005	0.030	0.080
S_{NAS}	%w/w S	NA	0.031	NA	NA
ANC_{BT}	% $CaCO_3$	0.70	NA	2.1	2.3
s-ANC_{BT}	%w/w S	0.22	NA	0.67	0.74
s-Net Acidity	%w/w S	<0.005	0.083	<0.005	0.10
a-Net Acidity	moles H^+ /t	<5	52	<5	64
Liming rate	kg $CaCO_3$ /t	<0.75	4	<0.75	5
a-Net Acidity without ANCE	moles H^+ /t	12	52	79	370
Liming rate without ANCE	kg $CaCO_3$ /t	0.92	3.9	6.0	28
s-Net Acidity without ANCE	%w/w S	0.020	0.083	0.13	0.59

Method ID	Methodology Summary
Inorg-068	Chromium Reducible Sulfur - Hydrogen Sulfide is quantified by iodometric titration after distillation to determine potential acidity. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.

QUALITY CONTROL: Chromium Suite						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
Date analysed	-			05/08/2020	[NT]	[NT]	[NT]	[NT]	05/08/2020	[NT]
pH $_{kcl}$	pH units		Inorg-068	[NT]	[NT]	[NT]	[NT]	[NT]	96	[NT]
s-TAA pH 6.5	%w/w S	0.01	Inorg-068	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
TAA pH 6.5	moles H^+ /t	5	Inorg-068	<5	[NT]	[NT]	[NT]	[NT]	100	[NT]
Chromium Reducible Sulfur	%w/w	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Chromium Reducible Sulfur	moles H^+ /t	3	Inorg-068	<3	[NT]	[NT]	[NT]	[NT]	115	[NT]
S_{HCl}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{KCl}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
S_{NAS}	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
ANC_{BT}	% $CaCO_3$	0.05	Inorg-068	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-ANC_{BT}	%w/w S	0.05	Inorg-068	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-Net Acidity	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Net Acidity	moles H^+ /t	5	Inorg-068	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Liming rate	kg $CaCO_3$ /t	0.75	Inorg-068	<0.75	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
a-Net Acidity without ANCE	moles H^+ /t	5	Inorg-068	<5	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Liming rate without ANCE	kg $CaCO_3$ /t	0.75	Inorg-068	<0.75	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
s-Net Acidity without ANCE	%w/w S	0.005	Inorg-068	<0.005	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

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Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total Coliform	Feacal Coliform	HUB							Notes/preservation
TP120/0.0-0.1	1	28/07/20	S	G										
TP120/0.5-0.6	2	28/07/20	S	G										
TP120/1.0-1.1	3	28/07/20	S	G	x	x	x							
TP120/1.5-1.6	4	28/07/20	S	G&P										
TP120/2.0-2.1	5	28/07/20	S	G&P										
TP120/2.5-2.6	6	28/07/20	S	G	x	x	x							
TP120/2.9-3.0	7	28/07/20	S	G&P										
TP125/0.0-0.1	8	28/07/20	S	G										
TP125/0.2-0.3	9	28/07/20	S	G										
TP125/0.8-0.9	10	28/07/20	S	G&P										
TP125/1.6-1.7	11	28/07/20	S	G&P										
TP125/2.3-2.4	12	28/07/20	S	G&P										
TP125/2.9-3.0	13	28/07/20	S	G&P										
TP125/3.4-3.5	14	28/07/20	S	G&P										
TP125/3.9-4.0	15	28/07/20	S	G&P			x							
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH, 09:50 29/7/20 **Received by:** **Date & Time:**

Douglas Partners
Geotechnics / Environment / Groundwater

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Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total Coliform	Feacal Coliform	HUB							Notes/preservation
TP125/4.0-4.1	16	28/07/20	S	G&P										
TP125/4.4-4.5	17	28/07/20	S	G&P										
TP125/4.9-5.0	18	28/07/20	S	G&P										
TP126/0.1-0.2	19	28/07/20	S	G										
TP126/0.4-0.5	20	28/07/20	S	G										
TP126/0.9-1.0	21	28/07/20	S	G&P										
TP126/1.5-1.6	22	28/07/20	S	G&P										
TP126/2.0-2.1	23	28/07/20	S	G&P										
TP126/2.5-2.6	24	28/07/20	S	G&P										
TP126/2.7-2.8	25	28/07/20	S	G&P			x							
TP126/3.4-3.5	26	28/07/20	S	G&P										
TP126/4.0-4.1	27	28/07/20	S	G&P										
TP126/4.5-4.6	28	28/07/20	S	G&P										
TP126/4.9-5.0	29	28/07/20	S	G&P										
TP127/0.0-0.1	30	28/07/20	S	G										
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container:	**Relinquished by:** AS	**Transported to laboratory by:**	DP
Send Results to: Douglas Partners Pty Ltd	**Address**	**Phone:**	**Fax:**
Signed: DIH, 09:50 29/7/20	**Received by:**	**Date & Time:**	

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total Coliform	Feacal Coliform	HUB							Notes/preservation
TP127/0.3-0.4	31	28/07/20	S	G										
TP127/0.9-1.0	32	28/07/20	S	G										
TP127/1.4-1.5	33	28/07/20	S	G&P										
TP127/1.9-2.0	34	28/07/20	S	G										
TP127/2.4-2.5	35	28/07/20	S	G&P										
TP127/2.9-3.0	36	28/07/20	S	G										
TP127/3.4-3.5	37	28/07/20	S	G										
TP127/3.9-4.0	38	28/07/20	S	G&P										
TP127/4.4-4.5	39	28/07/20	S	G										
TP127/4.9-5.0	40	28/07/20	S	G&P										
TP128/0.1-0.2	41	28/07/20	S	G										
TP128/0.4-0.5	42	28/07/20	S	G										
TP128/0.9-1.0	43	28/07/20	S	G			x							
TP128/1.4-1.5	44	28/07/20	S	G&P										
TP128/2.0-2.1	45	28/07/20	S	G										
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container:	**Relinquished by:** AS	**Transported to laboratory by:**	DP
Send Results to: Douglas Partners Pty Ltd	**Address**	**Phone:**	**Fax:**
Signed: DIH, 09:50 29/7/20	**Received by:**	**Date & Time:**	

Douglas Partners
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CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total Coliform	Feacal Coliform	HUB							Notes/preservation
TP128/2.6-2.7	46	28/07/20	S	G&P										
TP129/0.1-0.2	47	28/07/20	S	G										
TP129/0.4-0.5	48	28/07/20	S	G										
TP129/0.8-0.9	49	28/07/20	S	G&P										
TP129/1.4-1.5	50	28/07/20	S	G										
TP129/1.9-2.0	51	28/07/20	S	G	x	x	x							
TP129/2.4-2.5	52	28/07/20	S	G&P										
TP129/2.9-3.0	53	28/07/20	S	G										
TP130/0.0-0.1	54	28/07/20	S	G										
TP130/0.6-0.7	55	28/07/20	S	G	x	x	x							
TP130/1.1-1.2	56	28/07/20	S	G&P										
TP130/1.5-1.6	57	28/07/20	S	G										
TP130/2.1-2.2	58	28/07/20	S	G										
TP130/2.7-2.8	59	28/07/20	S	G&P	x	x	x							
BD1/20200728	60	28/07/20	S	G										
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH, 09:50 29/7/20 **Received by:** **Date & Time:**

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.:**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Total Coliform	Feacal Coliform	HUB							Notes/preservation
BD2/20200728	61	28/07/20	S	G										
BD3/20200728	62	28/07/20	S	G										
BD4/20200728	63	28/07/20	S	G										
BD5/20200728	64	28/07/20	S	G										
Trip Spike	65	28/07/20	S	G										
Trip Blank	66	28/07/20	S	G										
~~TP128~~	~~67~~	~~0.4-0.5~~	S											
~~TP129~~	~~68~~	~~0.6-0.7~~	R											
TP129	67	0.6-0.7		CM										
TP123	68	2.9-3.0		CM.										
PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH, 09:50 29/7/20 **Received by:** **Date & Time:**

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden

Sample Login Details

Your reference	99751.00, Carss Park Swimming Pool
Envirolab Reference	247934
Date Sample Received	29/07/2020
Date Instructions Received	29/07/2020
Date Results Expected to be Reported	05/08/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	68 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	11.2
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
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Sample ID	Micro testing in soil	On Hold
TP120/0.0-0.1		✓
TP120/0.5-0.6		✓
TP120/1.0-1.1	✓	
TP120/1.5-1.6		✓
TP120/2.0-2.1		✓
TP120/2.5-2.6	✓	
TP120/2.9-3.0		✓
TP125/0.0-0.1		✓
TP125/0.2-0.3		✓
TP125/0.8-0.9		✓
TP125/1.6-1.7		✓
TP125/2.3-2.4		✓
TP125/2.9-3.0		✓
TP125/3.4-3.5		✓
TP125/3.9-4.0	✓	
TP125/4.0-4.1		✓
TP125/4.4-4.5		✓
TP125/4.9-5.0		✓
TP126/0.1-0.2		✓
TP126/0.4-0.5		✓
TP126/0.9-1.0		✓
TP126/1.5-1.6		✓
TP126/2.0-2.1		✓
TP126/2.5-2.6		✓
TP126/2.7-2.8	✓	
TP126/3.4-3.5		✓
TP126/4.0-4.1		✓
TP126/4.5-4.6		✓
TP126/4.9-5.0		✓
TP127/0.0-0.1		✓
TP127/0.3-0.4		✓
TP127/0.9-1.0		✓

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Sample ID	Micro testing in soil	On Hold
TP127/1.4-1.5		✓
TP127/1.9-2.0		✓
TP127/2.4-2.5		✓
TP127/2.9-3.0		✓
TP127/3.4-3.5		✓
TP127/3.9-4.0		✓
TP127/4.4-4.5		✓
TP127/4.9-5.0		✓
TP128/0.1-0.2		✓
TP128/0.4-0.5		✓
TP128/0.9-1.0	✓	
TP128/1.4-1.5		✓
TP128/2.0-2.1		✓
TP128/2.6-2.7		✓
TP129/0.1-0.2		✓
TP129/0.4-0.5		✓
TP129/0.8-0.9		✓
TP129/1.4-1.5		✓
TP129/1.9-2.0	✓	
TP129/2.4-2.5		✓
TP129/2.9-3.0		✓
TP130/0.0-0.1		✓
TP130/0.6-0.7	✓	
TP130/1.1-1.2		✓
TP130/1.5-1.6		✓
TP130/2.1-2.2		✓
TP130/2.7-2.8	✓	
BD1/20200728		✓
BD2/20200728		✓
BD3/20200728		✓
BD4/20200728		✓
BD5/20200728		✓

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Sample ID	Micro testing in soil	On Hold
Trip Spike		✓
Trip Blank		✓
TP129/0.6-0.7		✓
TP123/2.9/3.0		✓

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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CERTIFICATE OF ANALYSIS 247980

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	8 water
Date samples received	29/07/2020
Date completed instructions received	29/07/2020

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	04/08/2020
Date of Issue	06/08/2020

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Results Approved By
Diego Bigolin, Team Leader, Inorganics
Dragana Tomas, Senior Chemist
Ken Nguyen, Reporting Supervisor
Loren Bardwell, Senior Chemist
Phalak Inthakesone, Organics Development Manager, Sydney
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

VOCs in water						
Our Reference		247980-1	247980-2	247980-3	247980-4	247980-5
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water	water	water
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
Chlorobenzene	µg/L	2	2	<1	10	3
Ethylbenzene	µg/L	<1	<1	<1	<1	<1

VOCs in water						
Our Reference		247980-1	247980-2	247980-3	247980-4	247980-5
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water	water	water
Bromoform	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1	<1
Isopropylbenzene	µg/L	1	1	<1	2	1
Bromobenzene	µg/L	<1	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	4	1
2-chlorotoluene	µg/L	<1	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	2	<1
1,4-dichlorobenzene	µg/L	2	2	<1	2	<1
4-isopropyl toluene	µg/L	<1	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	2	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	116	119	120	121	119
Surrogate toluene-d8	%	94	94	92	93	91
Surrogate 4-BFB	%	88	93	89	91	90

vTRH(C6-C10)/BTEXN in Water						
Our Reference		247980-1	247980-2	247980-3	247980-4	247980-5
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water	water	water
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
TRH C_6 - C_9	µg/L	<10	<10	<10	15	<10
TRH C_6 - C_{10}	µg/L	<10	12	<10	33	13
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	12	<10	33	13
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	116	119	120	121	119
Surrogate toluene-d8	%	94	94	92	93	91
Surrogate 4-BFB	%	88	93	89	91	90

vTRH(C6-C10)/BTEXN in Water				
Our Reference		247980-6	247980-7	247980-8
Your Reference	UNITS	BD1/20200729	Trip Spike	Trip Blank
Date Sampled		29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water
Date extracted	-	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020
TRH C_6 - C_9	µg/L	14	[NA]	<10
TRH C_6 - C_{10}	µg/L	32	[NA]	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	32	[NA]	<10
Benzene	µg/L	<1	112%	<1
Toluene	µg/L	<1	103%	<1
Ethylbenzene	µg/L	<1	99%	<1
m+p-xylene	µg/L	<2	106%	<2
o-xylene	µg/L	<1	105%	<1
Naphthalene	µg/L	<1	[NA]	<1
Surrogate Dibromofluoromethane	%	121	112	116
Surrogate toluene-d8	%	93	95	93
Surrogate 4-BFB	%	94	100	87

svTRH (C10-C40) in Water						
Our Reference		247980-1	247980-2	247980-3	247980-4	247980-5
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water	water	water
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	01/08/2020	01/08/2020	01/08/2020	01/08/2020	01/08/2020
TRH C_{10} - C_{14}	µg/L	65	58	<50	120	69
TRH C_{15} - C_{28}	µg/L	130	120	<100	<100	110
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
TRH >C_{10} - C_{16}	µg/L	71	61	<50	110	66
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	71	61	<50	110	66
TRH >C_{16} - C_{34}	µg/L	150	130	<100	<100	130
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	80	86	81	101	91

svTRH (C10-C40) in Water		
Our Reference		247980-6
Your Reference	UNITS	BD1/20200729
Date Sampled		29/07/2020
Type of sample		water
Date extracted	-	31/07/2020
Date analysed	-	01/08/2020
TRH C_{10} - C_{14}	µg/L	87
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
TRH >C_{10} - C_{16}	µg/L	81
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	81
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Surrogate o-Terphenyl	%	86

PAHs in Water - Low Level						
Our Reference		247980-1	247980-2	247980-3	247980-4	247980-5
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water	water	water
Date extracted	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	01/08/2020	01/08/2020	01/08/2020	01/08/2020	01/08/2020
Naphthalene	µg/L	<0.2	<0.2	<0.2	0.2	0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.3	0.5	<0.1	0.8	0.3
Fluorene	µg/L	0.2	0.4	<0.1	0.4	<0.1
Phenanthrene	µg/L	0.2	<0.1	<0.1	1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	0.2	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	0.80	0.89	<0.1	2.8	0.49
Surrogate p-Terphenyl-d14	%	73	83	79	90	97

PAHs in Water - Low Level		
Our Reference		247980-6
Your Reference	UNITS	BD1/20200729
Date Sampled		29/07/2020
Type of sample		water
Date extracted	-	31/07/2020
Date analysed	-	01/08/2020
Naphthalene	µg/L	<0.2
Acenaphthylene	µg/L	<0.1
Acenaphthene	µg/L	0.7
Fluorene	µg/L	0.4
Phenanthrene	µg/L	0.9
Anthracene	µg/L	0.2
Fluoranthene	µg/L	0.2
Pyrene	µg/L	0.1
Benzo(a)anthracene	µg/L	<0.1
Chrysene	µg/L	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2
Benzo(a)pyrene	µg/L	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5
Total +ve PAH's	µg/L	2.4
Surrogate p-Terphenyl-d14	%	88

Total Phenolics in Water						
Our Reference		247980-1	247980-2	247980-3	247980-4	247980-5
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water	water	water
Date extracted	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05

Total Phenolics in Water		
Our Reference		247980-6
Your Reference	UNITS	BD1/20200729
Date Sampled		29/07/2020
Type of sample		water
Date extracted	-	30/07/2020
Date analysed	-	30/07/2020
Total Phenolics (as Phenol)	mg/L	<0.05

OCPs in Water - Trace Level				
Our Reference		247980-1	247980-3	247980-5
Your Reference	UNITS	BH106	BH108	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water
Date extracted	-	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	04/08/2020	04/08/2020	04/08/2020
alpha-BHC	µg/L	<0.001	<0.001	<0.001
HCB	µg/L	<0.001	<0.001	<0.001
beta-BHC	µg/L	0.040	<0.001	<0.001
gamma-BHC	µg/L	<0.001	<0.001	<0.001
Heptachlor	µg/L	<0.001	<0.001	<0.001
delta-BHC	µg/L	<0.001	<0.001	<0.001
Aldrin	µg/L	<0.001	<0.001	<0.001
Heptachlor Epoxide	µg/L	<0.001	<0.001	<0.001
gamma-Chlordane	µg/L	<0.001	<0.001	<0.001
alpha-Chlordane	µg/L	<0.001	<0.001	<0.001
Endosulfan I	µg/L	<0.002	<0.002	<0.002
pp-DDE	µg/L	<0.001	<0.001	<0.001
Dieldrin	µg/L	<0.001	<0.001	<0.001
Endrin	µg/L	<0.001	<0.001	<0.001
Endosulfan II	µg/L	<0.002	<0.002	<0.002
pp-DDD	µg/L	<0.001	<0.001	<0.001
Endrin Aldehyde	µg/L	<0.001	<0.001	<0.001
pp-DDT	µg/L	<0.001	<0.001	<0.001
Endosulfan Sulphate	µg/L	<0.001	<0.001	<0.001
Methoxychlor	µg/L	<0.001	<0.001	<0.001
Surrogate TCMX	%	91	94	99

OP in water Trace ANZECCF/ADWG				
Our Reference		247980-1	247980-3	247980-5
Your Reference	UNITS	BH106	BH108	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water
Date extracted	-	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	04/08/2020	04/08/2020	04/08/2020
Dichlorovos	µg/L	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.15	<0.15	<0.15
Diazinon	µg/L	<0.01	<0.01	<0.01
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2
Methyl Parathion	µg/L	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2
Malathion	µg/L	<0.05	<0.05	<0.05
Chlorpyriphos	µg/L	<0.009	<0.009	<0.009
Parathion	µg/L	<0.004	<0.004	<0.004
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.02	<0.02	<0.02
Surrogate TCMX	%	91	94	99

PCBs in Water - Trace Level				
Our Reference		247980-1	247980-3	247980-5
Your Reference	UNITS	BH106	BH108	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water
Date extracted	-	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	04/08/2020	04/08/2020	04/08/2020
Aroclor 1016	µg/L	<0.01	<0.01	<0.01
Aroclor 1221	µg/L	<0.01	<0.01	<0.01
Aroclor 1232	µg/L	<0.01	<0.01	<0.01
Aroclor 1242	µg/L	<0.01	<0.01	<0.01
Aroclor 1248	µg/L	<0.01	<0.01	<0.01
Aroclor 1254	µg/L	<0.01	<0.01	<0.01
Aroclor 1260	µg/L	<0.01	<0.01	<0.01
Surrogate TCMX	%	91	94	99

PFAS in Water LOW LEVEL Short				
Our Reference		247980-1	247980-3	247980-5
Your Reference	UNITS	BH106	BH108	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water
Date prepared	-	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.049	0.001	0.012
Perfluorooctanesulfonic acid PFOS	µg/L	0.13	0.002	0.012
Perfluorooctanoic acid PFOA	µg/L	0.015	0.005	0.011
6:2 FTS	µg/L	<0.001	<0.001	<0.001
8:2 FTS	µg/L	<0.002	<0.002	<0.002
Surrogate $^{13}C_8$ *PFOS*	%	102	104	105
Surrogate $^{13}C_2$ *PFOA*	%	103	101	106
Extracted ISTD $^{18}O_2$ *PFHxS*	%	91	93	93
Extracted ISTD $^{13}C_4$ *PFOS*	%	57	57	56
Extracted ISTD $^{13}C_4$ *PFOA*	%	107	120	111
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	#	151	#
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	#	118	172
Total Positive PFHxS & PFOS	µg/L	0.18	0.003	0.024
Total Positive PFOA & PFOS	µg/L	0.15	0.006	0.023
Total Positive PFAS	µg/L	0.20	0.007	0.034

HM in water - dissolved						
Our Reference		247980-1	247980-2	247980-3	247980-4	247980-5
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water	water	water
Date prepared	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Date analysed	-	31/07/2020	31/07/2020	31/07/2020	31/07/2020	31/07/2020
Arsenic-Dissolved	µg/L	<1	<1	3	1	1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	1	<1	<1	<1	<1
Copper-Dissolved	µg/L	3	<1	15	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	4	2	2	1	1
Zinc-Dissolved	µg/L	20	16	22	10	38

HM in water - dissolved		
Our Reference		247980-6
Your Reference	UNITS	BD1/20200729
Date Sampled		29/07/2020
Type of sample		water
Date prepared	-	31/07/2020
Date analysed	-	31/07/2020
Arsenic-Dissolved	µg/L	1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	<1
Zinc-Dissolved	µg/L	13

Miscellaneous Inorganics						
Our Reference		247980-1	247980-2	247980-3	247980-4	247980-5
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water	water	water
Date prepared	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Date analysed	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
BOD	mg/L	18	23	18	9	12
COD	mg O_2 /L	90	70	70	50	90
Chloride, Cl	mg/L	93	100	69	120	1,200
Ammonia as N in water	mg/L	20	12	1.5	5.0	9.4
Nitrate as N in water	mg/L	0.01	0.005	0.01	0.007	<0.005
Nitrite as N in water	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005

Miscellaneous Inorganics		
Our Reference		247980-6
Your Reference	UNITS	BD1/20200729
Date Sampled		29/07/2020
Type of sample		water
Date prepared	-	04/08/2020
Date analysed	-	04/08/2020
Chloride, Cl	mg/L	130

Microbiologocal Testing						
Our Reference		247980-1	247980-2	247980-3	247980-4	247980-5
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water	water	water
Date of testing	-	30/07/2020	30/07/2020	30/07/2020	30/07/2020	30/07/2020
Total Coliforms	cfu/100mL	<20	[NA]	50	110	170
Faecal Coliforms	cfu/100mL	<20	[NA]	80	<20	20
Pseudomonas Aeruginosa	cfu/100mL	<100	<100	<100	<100	<100

Method ID	Methodology Summary
Ext-008	Subcontracted to Sonic Food & Water Testing. NATA Accreditation No. 4034.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-067	Samples are digested in acid with a known excess of potassium dichromate then titrated against ammonium ferrous sulphate in accordance with APHA latest edition 5220 C.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Inorg-091	BOD - Analysed in accordance with APHA latest edition 5210 D and in house INORG-091.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	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-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	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.

Method ID	Methodology Summary
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			31/07/2020	4	31/07/2020	31/07/2020		31/07/2020	[NT]
Date analysed	-			31/07/2020	4	31/07/2020	31/07/2020		31/07/2020	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	4	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	4	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	4	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	4	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	4	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	4	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	4	<1	<1	0	96	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	4	<1	<1	0	96	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	4	<1	<1	0	102	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	4	<1	<1	0	93	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	4	<1	<1	0	105	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	4	<1	<1	0	91	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	4	<1	<1	0	82	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	4	<1	<1	0	99	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	4	10	9	11	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	4	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
o-xylene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	4	2	2	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	4	4	3	29	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	4	2	2	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	4	2	2	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	4	2	2	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	111	4	121	124	2	98	[NT]
Surrogate toluene-d8	%		Org-023	93	4	93	94	1	92	[NT]
Surrogate 4-BFB	%		Org-023	87	4	91	94	3	115	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			31/07/2020	4	31/07/2020	31/07/2020		31/07/2020	[NT]
Date analysed	-			31/07/2020	4	31/07/2020	31/07/2020		31/07/2020	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	4	15	11	31	103	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	4	33	32	3	103	[NT]
Benzene	µg/L	1	Org-023	<1	4	<1	<1	0	101	[NT]
Toluene	µg/L	1	Org-023	<1	4	<1	<1	0	93	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	4	<1	<1	0	101	[NT]
m+p-xylene	µg/L	2	Org-023	<2	4	<2	<2	0	110	[NT]
o-xylene	µg/L	1	Org-023	<1	4	<1	<1	0	111	[NT]
Naphthalene	µg/L	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	111	4	121	124	2	98	[NT]
Surrogate toluene-d8	%		Org-023	93	4	93	94	1	92	[NT]
Surrogate 4-BFB	%		Org-023	87	4	91	94	3	115	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			31/07/2020	[NT]	[NT]	[NT]	[NT]	31/07/2020	[NT]
Date analysed	-			01/08/2020	[NT]	[NT]	[NT]	[NT]	01/08/2020	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	91	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	75	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	87	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	91	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	75	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	87	[NT]
Surrogate o-Terphenyl	%		Org-020	85	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			31/07/2020	[NT]	[NT]	[NT]	[NT]	31/07/2020	[NT]
Date analysed	-			01/08/2020	[NT]	[NT]	[NT]	[NT]	01/08/2020	[NT]
Naphthalene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	76	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	74	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	76	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	75	[NT]	[NT]	[NT]	[NT]	86	[NT]

QUALITY CONTROL: Total Phenolics in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	247980-2
Date extracted	-			30/07/2020	1	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Date analysed	-			30/07/2020	1	30/07/2020	30/07/2020		30/07/2020	30/07/2020
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	1	<0.05	<0.05	0	101	94

QUALITY CONTROL: OCPs in Water - Trace Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			31/07/2020	[NT]	[NT]	[NT]	[NT]	31/07/2020	[NT]
Date analysed	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
alpha-BHC	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	94	[NT]
HCB	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	88	[NT]
gamma-BHC	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	86	[NT]
delta-BHC	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	108	[NT]
Heptachlor Epoxide	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	88	[NT]
gamma-Chlordane	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dieldrin	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	86	[NT]
Endosulfan II	µg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	90	[NT]
Endrin Aldehyde	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	96	[NT]
Methoxychlor	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	87	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: OP in water Trace ANZECCF/ADWG					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			31/07/2020	[NT]	[NT]	[NT]	[NT]	31/07/2020	[NT]
Date analysed	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Dichlorovos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	116	[NT]
Dimethoate	µg/L	0.15	Org-022/025	<0.15	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methyl Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	100	[NT]
Malathion	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	81	[NT]
Chlorpyriphos	µg/L	0.009	Org-022/025	<0.009	[NT]	[NT]	[NT]	[NT]	94	[NT]
Parathion	µg/L	0.004	Org-022/025	<0.004	[NT]	[NT]	[NT]	[NT]	112	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	98	[NT]
Azinphos-methyl (Guthion)	µg/L	0.02	Org-022/025	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	87	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PCBs in Water - Trace Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			31/07/2020	[NT]	[NT]	[NT]	[NT]	31/07/2020	[NT]
Date analysed	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Aroclor 1016	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	83	[NT]
Aroclor 1260	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	87	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PFAS in Water LOW LEVEL Short						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			31/07/2020	[NT]	[NT]	[NT]	[NT]	31/07/2020	[NT]
Date analysed	-			31/07/2020	[NT]	[NT]	[NT]	[NT]	31/07/2020	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	91	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	90	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	89	[NT]
6:2 FTS	µg/L	0.001	Org-029	<0.001	[NT]	[NT]	[NT]	[NT]	114	[NT]
8:2 FTS	µg/L	0.002	Org-029	<0.002	[NT]	[NT]	[NT]	[NT]	70	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	100	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	100	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	108	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	117	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	85	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date prepared	-			31/07/2020	1	31/07/2020	31/07/2020		31/07/2020	[NT]
Date analysed	-			31/07/2020	1	31/07/2020	31/07/2020		31/07/2020	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	92	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	98	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	1	1	0	101	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	3	3	0	102	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	103	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	105	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	4	4	0	93	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	20	20	0	97	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			30/07/2020	1	30/07/2020	30/07/2020		30/07/2020	[NT]
Date analysed	-			30/07/2020	1	30/07/2020	30/07/2020		30/07/2020	[NT]
BOD	mg/L	5	Inorg-091	<5	1	18	[NT]		88	[NT]
COD	mg O_2 /L	50	Inorg-067	<50	1	90	100	11	94	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	1	93	[NT]		88	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	20	[NT]		94	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	0.01	[NT]		112	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		111	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Pseudomonas Aeruginosa (Samples 1-5) analysed by Sonic Food & Water Testing. Report No's W2015593, W2015594, W2015595, W2015596 & W2015597

Faceal Coliform & Total Coliform (Samples 1,3,4,5) analysed by Sonic Food & Water Testing. Report No W2015525

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CERTIFICATE OF ANALYSIS 247980-A

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	8 water
Date samples received	29/07/2020
Date completed instructions received	03/08/2020

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	06/08/2020
Date of Issue	06/08/2020

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Results Approved By
Dragana Tomas, Senior Chemist
Josh Williams, Senior Chemist
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

sTPH in Water (C10-C40) NEPM Silica gel					
Our Reference		247980-A-1	247980-A-2	247980-A-4	247980-A-5
Your Reference	UNITS	BH106	BH107	BH109	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water	water
Date extracted	-	04/08/2020	04/08/2020	04/08/2020	04/08/2020
Date analysed	-	04/08/2020	04/08/2020	04/08/2020	04/08/2020
TPH C_{10} - C_{14}	µg/L	<50	<50	<50	<50
TPH C_{15} - C_{28}	µg/L	<100	<100	<100	<100
TPH C_{29} - C_{36}	µg/L	<100	<100	<100	<100
TPH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50
TPH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100
TPH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100
Surrogate o-Terphenyl	%	97	76	73	74

OCPs in Water - Trace Level		
Our Reference		247980-A-2
Your Reference	UNITS	BH107
Date Sampled		29/07/2020
Type of sample		water
Date extracted	-	04/08/2020
Date analysed	-	04/08/2020
alpha-BHC	µg/L	<0.001
HCB	µg/L	<0.001
beta-BHC	µg/L	<0.001
gamma-BHC	µg/L	<0.001
Heptachlor	µg/L	<0.001
delta-BHC	µg/L	<0.001
Aldrin	µg/L	<0.001
Heptachlor Epoxide	µg/L	<0.001
gamma-Chlordane	µg/L	<0.001
alpha-Chlordane	µg/L	<0.001
Endosulfan I	µg/L	<0.002
pp-DDE	µg/L	<0.001
Dieldrin	µg/L	<0.001
Endrin	µg/L	<0.001
Endosulfan II	µg/L	<0.002
pp-DDD	µg/L	<0.001
Endrin Aldehyde	µg/L	<0.001
pp-DDT	µg/L	<0.001
Endosulfan Sulphate	µg/L	<0.001
Methoxychlor	µg/L	<0.001
Surrogate TCMX	%	110

OP in water Trace ANZECCF/ADWG		
Our Reference		247980-A-2
Your Reference	UNITS	BH107
Date Sampled		29/07/2020
Type of sample		water
Date extracted	-	04/08/2020
Date analysed	-	04/08/2020
Dichlorovos	µg/L	<0.2
Dimethoate	µg/L	<0.15
Diazinon	µg/L	<0.01
Chlorpyriphos-methyl	µg/L	<0.2
Methyl Parathion	µg/L	<0.2
Ronnel	µg/L	<0.2
Fenitrothion	µg/L	<0.2
Malathion	µg/L	<0.05
Chlorpyriphos	µg/L	<0.009
Parathion	µg/L	<0.004
Bromophos ethyl	µg/L	<0.2
Ethion	µg/L	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.02
Surrogate TCMX	%	110

PCBs in Water - Trace Level		
Our Reference		247980-A-2
Your Reference	UNITS	BH107
Date Sampled		29/07/2020
Type of sample		water
Date extracted	-	04/08/2020
Date analysed	-	04/08/2020
Aroclor 1016	µg/L	<0.01
Aroclor 1221	µg/L	<0.01
Aroclor 1232	µg/L	<0.01
Aroclor 1242	µg/L	<0.01
Aroclor 1248	µg/L	<0.01
Aroclor 1254	µg/L	<0.01
Aroclor 1260	µg/L	<0.01
Surrogate TCMX	%	110

Ion Balance						
Our Reference		247980-A-1	247980-A-2	247980-A-3	247980-A-4	247980-A-5
Your Reference	UNITS	BH106	BH107	BH108	BH109	BH110
Date Sampled		29/07/2020	29/07/2020	29/07/2020	29/07/2020	29/07/2020
Type of sample		water	water	water	water	water
Date prepared	-	03/08/2020	03/08/2020	03/08/2020	03/08/2020	03/08/2020
Date analysed	-	03/08/2020	03/08/2020	03/08/2020	03/08/2020	03/08/2020
Calcium - Dissolved	mg/L	130	150	78	94	180
Potassium - Dissolved	mg/L	15	18	3.8	6.7	27
Sodium - Dissolved	mg/L	72	73	87	130	830
Magnesium - Dissolved	mg/L	15	18	8.0	11	58
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Bicarbonate Alkalinity as $CaCO_3$	mg/L	580	550	280	470	600
Carbonate Alkalinity as $CaCO_3$	mg/L	<5	<5	<5	<5	<5
Total Alkalinity as $CaCO_3$	mg/L	580	550	280	470	600
Sulphate, SO4	mg/L	<1	31	26	1	17
Chloride, Cl	mg/L	93	100	69	120	1,200
Ionic Balance	%	-12	-7.0	2.0	-5.0	6.0

Method ID	Methodology Summary
Inorg-006	Alkalinity - determined titrimetrically in accordance with APHA latest edition, 2320-B.
Inorg-040	The concentrations of the major ions (mg/L) are converted to milliequivalents and summed. The ionic balance should be within +/- 10% ie total anions = total cations +/-10%.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020	Determination of various metals by ICP-AES.
Org-020	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-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.

QUALITY CONTROL: sTPH in Water (C10-C40) NEPM Silica gel						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Date analysed	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
TPH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	102	[NT]
TPH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TPH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	84	[NT]
TPH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	102	[NT]
TPH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TPH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	84	[NT]
Surrogate o-Terphenyl	%		Org-020	90	[NT]	[NT]	[NT]	[NT]	121	[NT]

QUALITY CONTROL: OCPs in Water - Trace Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Date analysed	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
alpha-BHC	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	100	[NT]
HCB	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	62	[NT]
gamma-BHC	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
delta-BHC	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
Heptachlor Epoxide	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	90	[NT]
gamma-Chlordane	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	104	[NT]
Dieldrin	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
Endrin	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
Endosulfan II	µg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	104	[NT]
Endrin Aldehyde	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	112	[NT]
Methoxychlor	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	110	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: OP in water Trace ANZECCF/ADWG						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Date analysed	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Dichlorovos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	130	[NT]
Dimethoate	µg/L	0.15	Org-022/025	<0.15	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methyl Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	114	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	114	[NT]
Malathion	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	98	[NT]
Chlorpyriphos	µg/L	0.009	Org-022/025	<0.009	[NT]	[NT]	[NT]	[NT]	112	[NT]
Parathion	µg/L	0.004	Org-022/025	<0.004	[NT]	[NT]	[NT]	[NT]	118	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	112	[NT]
Azinphos-methyl (Guthion)	µg/L	0.02	Org-022/025	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	110	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: PCBs in Water - Trace Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Date analysed	-			04/08/2020	[NT]	[NT]	[NT]	[NT]	04/08/2020	[NT]
Aroclor 1016	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	112	[NT]
Aroclor 1260	µg/L	0.01	Org-021	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	110	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: Ion Balance						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	247980-A-2
Date prepared	-			03/08/2020	1	03/08/2020	03/08/2020		03/08/2020	03/08/2020
Date analysed	-			03/08/2020	1	03/08/2020	03/08/2020		03/08/2020	03/08/2020
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	130	130	0	99	#
Potassium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	15	15	0	100	82
Sodium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	72	71	1	110	#
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	1	15	15	0	95	86
Hydroxide Alkalinity (OH^-) as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		<5	[NT]
Bicarbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	580	[NT]		<5	[NT]
Carbonate Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	<5	[NT]		<5	[NT]
Total Alkalinity as $CaCO_3$	mg/L	5	Inorg-006	<5	1	580	[NT]		102	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	<1	[NT]		103	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	1	93	[NT]		87	[NT]
Ionic Balance	%		Inorg-040	[NT]	1	-12	[NT]		[NT]	[NT]

Result Definitions

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

Quality Control Definitions

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

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

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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 (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Ion Balance - # Percent recovery is not possible to report due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Updated COC

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**EIS Quote**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 4L, Chloride	OCP, OPP, PCB (trace)	VOC	Nitrogen (ammonia, nirtate, nitrite)	BOD and COD	Total Coliform and Faecal Coliform	Hydrocarbon utilising bacteria	PFAS Short Suite (low level)	TRH/BTEX	Notes/preservation
BH106	1	29/07/20	W	G&P	X	X	X	X	X	X	X	x		
BH107	2	29/07/20	W	G&P	X		x	X	x		X			
BH108	3	29/07/20	W	G&P	X	X	X	X	X	X	X	x		
BH109	4	29/07/20	W	G&P	X		x	X	X	X	X			
BH110	5	29/07/20	W	G&P	X	X	X	X	X	X	X	x		
BD1/20200729	6	29/07/20	W	G&P	X									
Trip Spike	7	29/07/20	W	G									x	
Trip Blank	8	29/07/20	W	G									x	
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 247980
Date Received: 28/07/2020
Time Received: 17:00
~~Received By:~~
~~Temp: Cool/Ambient~~
Cooling: Ice/~~Icepack~~
~~Security: Intact/Broken/None~~

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: **Received by:** Envirolab 29/07/2020 17pm Nanay Zhang **Date & Time:**

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Tom Graham, David Holden

Sample Login Details

Your reference	99751.00, Carss Park Swimming Pool
Envirolab Reference	247980
Date Sample Received	29/07/2020
Date Instructions Received	29/07/2020
Date Results Expected to be Reported	04/08/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	8 water
Turnaround Time Requested	3 days
Temperature on Receipt (°C)	12.6
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

micro results may be ready in 3 days

Please direct any queries to:

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

Analysis Underway, details on the following page:

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

Sample ID	VOCs in water	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water - Low Level	Total Phenolicsin Water	OCPs in Water - Trace Level	OP in water Trace ANZECCF/ADWG	PCBs in Water - Trace Level	PFAS in Water LOW LEVEL Short	HM in water - dissolved	BOD	COD	Chloride, Cl	Ammonia as N in water	Nitrate as N in water	Nitrite as N in water	Microbiologocal Testing
BH106	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH107	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓
BH108	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH109	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓
BH110	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BD1/20200729		✓	✓	✓	✓					✓			✓				✓
Trip Spike		✓															
Trip Blank		✓															

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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

CERTIFICATE OF ANALYSIS 248153

Client Details

Client	Douglas Partners Pty Ltd
Attention	Tom Graham
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	92 Soil
Date samples received	31/07/2020
Date completed instructions received	31/07/2020

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	05/08/2020
Date of Issue	05/08/2020

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

Asbestos Approved By
Analysed by Asbestos Approved Identifier: Panika Wongchanda, Nyovan Moonean
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Lucy Zhu, Asbestos Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

Asbestos ID - soils NEPM						
Our Reference		248153-2	248153-5	248153-6	248153-8	248153-9
Your Reference	UNITS	TP120/0.5-0.6	TP120/2.0-2.1	TP121/0.1-0.2	TP121/0.6-0.7	TP121/1.2-1.3
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20
Sample mass tested	g	1,131.74	549.11	1,102.7	1,046.96	1,206.27
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected Synthetic mineral fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	Amosite	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	0.0001	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		248153-12	248153-13	248153-17	248153-19	248153-22
Your Reference	UNITS	TP122/0.3-0.4	TP122/0.8-0.9	TP123/0.1-0.2	TP123/0.6-0.7	TP123/2.4-2.5
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20
Sample mass tested	g	865.29	1,543.7	1,108	850.47	944.4
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		248153-24	248153-26	248153-28	248153-30	248153-31
Your Reference	UNITS	TP124/0.3-0.4	TP124/1.3-1.4	TP124/2.6-2.7	TP124/4.5-4.6	TP125/0.0-0.1
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20
Sample mass tested	g	1,144.98	704.72	969.71	922.87	808.13
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	Chrysotile	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	0.0021	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		248153-33	248153-36	248153-38	248153-42	248153-45
Your Reference	UNITS	TP125/0.8-0.9	TP125/2.9-3.0	TP125/3.9-4.0	TP126/0.1-0.2	TP126/1.5-1.6
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20
Sample mass tested	g	993.99	1,437.65	1,268.59	1,122.95	1,214.07
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		248153-49	248153-53	248153-55	248153-64	248153-65
Your Reference	UNITS	TP126/3.4-3.5	TP127/0.0-0.1	TP127/0.9-1.0	TP128/0.1-0.2	TP128/0.4-0.5
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20
Sample mass tested	g	1,120.46	1,238.96	975.14	1,146.95	1,110.25
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		248153-66	248153-70	248153-71	248153-72	248153-73
Your Reference	UNITS	TP128/0.91.0	TP129/0.1-0.2	TP129/0.4-0.5	TP129/0.8-0.9	TP129/1.4-1.5
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20
Sample mass tested	g	1,058.39	1,386.66	1,211.92	1,198	1,288.51
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		248153-77	248153-78	248153-80	248153-83	248153-84
Your Reference	UNITS	TP130/0.0-0.1	TP130/0.6-0.7	TP130/1.5-1.6	BH101/0.1-0.6	BH102/0.1-0.7
Date Sampled		28/07/2020	28/07/2020	28/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20
Sample mass tested	g	1,373.47	1,491.75	994.5	1,383.03	1,255.73
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected Synthetic mineral fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM						
Our Reference		248153-85	248153-86	248153-87	248153-88	248153-89
Your Reference	UNITS	BH103/0.0-0.5	BH103/1.0-1.5	BH104/0.1-0.8	BH104/1.0-1.6	BH105/0.0-0.6
Date Sampled		27/07/2020	27/07/2020	27/07/2020	27/07/2020	27/07/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20	03-05/08/20
Sample mass tested	g	1,431.92	1,144.97	1,248.53	1,171.12	1,293.63
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	Chrysotile	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	0.0055	–	–
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM		
Our Reference		248153-90
Your Reference	UNITS	BH106/0.1-0.7
Date Sampled		27/07/2020
Type of sample		Soil
Date analysed	-	03-05/08/20
Sample mass tested	g	1,320.94
Sample Description	-	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected
Total Asbestos#1	g/kg	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected
ACM >7mm Estimation*	g	–
FA and AF Estimation*	g	–
FA and AF Estimation*#2	%(w/w)	<0.001

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.

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

Report Comments

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

449395 99751.00		**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**Order Number**			12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Bulk Bag/esky	Do samples contain 'potential' HBM?	Yes		

	Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: AF/FA									Notes/preservation
1	TP120/0.0-0.1		28/07/20	S	P										
2	TP120/0.5-0.6		28/07/20	S	P	x									
3	TP120/1.0-1.1		28/07/20	S	P										
4	TP120/1.5-1.6		28/07/20	S	P										
5	TP120/2.0-2.1		28/07/20	S	P	x									
6	TP121/0.1-0.2		28/07/20	S	P	x									
7	TP121/0.2-0.3		28/07/20	S	P										
8	TP121/0.6-0.7		28/07/20	S	P	x									
9	TP121/1.2-1.3		28/07/20	S	P	x									
10	TP121/1.9-2.0		28/07/20	S	P										
11	TP122/0.0-0.1		28/07/20	S	P										
12	TP122/0.3-0.4		28/07/20	S	P	x									
13	TP122/0.8-0.9		28/07/20	S	P	x									
14	TP122/1.4-1.5		28/07/20	S	P										
15	TP122/1.8-1.9		28/07/20	S	P										
	PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
ENVIROLAB GROUP
Job No: 249815.3
Date Received: 31/07/2020
Time Received: 15.30
Received By: RL
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH 14:00, 31/7/20 **Received by:** **Date & Time:**

ELS Sydney.
Sample received: 15.00. (30/07/2020) CoC received: 15.30. (31/07/2020)
R.L

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

449395 99751.00		**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**Order Number**			12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Bulk Bag/esky	Do samples contain 'potential' HBM?	Yes		

	Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: AF/FA									Notes/preservation
16	TP122/2.4-2.5		28/07/20	S	P										
17	TP123/0.1-0.2		28/07/20	S	P	x									
18	TP123/0.3-0.4		28/07/20	S	P										
19	TP123/0.6-0.7		28/07/20	S	P	x									
20	TP123/1.3-1.4		28/07/20	S	P										
21	TP123/1.9-2.0		28/07/20	S	P										
22	TP123/2.4-2.5		28/07/20	S	P	x									
23	TP124/0.1-0.2		28/07/20	S	P										
24	TP124/0.3-0.4		28/07/20	S	P	x									
25	TP124/0.8-0.9		28/07/20	S	P										
26	TP124/1.3-1.4		28/07/20	S	P	x									
27	TP124/1.9-2.0		28/07/20	S	P										
28	TP124/2.6-2.7		28/07/20	S	P	x									
29	TP124/3.4-3.5		28/07/20	S	P										
30	TP124/4.5-4.6		28/07/20	S	P	x									
	PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes** ☐

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH 14:00, 31/7/20 **Received by:** **Date & Time:**

R.L 31/07/2020

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

449395 99751.00		**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**Order Number**			12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Bulk Bag/esky	Do samples contain 'potential' HBM?	Yes		

	Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: AF/FA									Notes/preservation
31	TP125/0.0-0.1		28/07/20	S	P	x									
32	TP125/0.2-0.3		28/07/20	S	P										
33	TP125/0.8-0.9		28/07/20	S	P	x									
34	TP125/1.6-1.7		28/07/20	S	P										
35	TP125/2.3-2.4		28/07/20	S	P										
36	TP125/2.9-3.0		28/07/20	S	P	x									
37	TP125/3.4-3.5		28/07/20	S	P										
38	TP125/3.9-4.0		28/07/20	S	P	x									
39	TP125/4.0-4.1		28/07/20	S	P										
40	TP125/4.4-4.5		28/07/20	S	P										
41	TP125/4.9-5.0		28/07/20	S	P										
42	TP126/0.1-0.2		28/07/20	S	P	x									
43	TP126/0.4-0.5		28/07/20	S	P										
44	TP126/0.9-1.0		28/07/20	S	P										
45	TP126/1.5-1.6		28/07/20	S	P	x									
	PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH 14:00, 31/7/20 **Received by:** **Date & Time:**

R. L. 30/07/2020

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

449395 99751.00		**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**Order Number**			12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Bulk Bag/esky	Do samples contain 'potential' HBM?	Yes		

	Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: AF/FA									Notes/preservation
46	TP126/2.0-2.1		28/07/20	S	P										
47	TP126/2.5-2.6		28/07/20	S	P										
48	TP126/2.7-2.8		28/07/20	S	P										
49	TP126/3.4-3.5		28/07/20	S	P	x									
50	TP126/4.0-4.1		28/07/20	S	P										
51	TP126/4.5-4.6		28/07/20	S	P										
52	TP126/4.9-5.0		28/07/20	S	P										
53	TP127/0.0-0.1		28/07/20	S	P	x									
54	TP127/0.3-0.4		28/07/20	S	P										
55	TP127/0.9-1.0		28/07/20	S	P	x									
56	TP127/1.4-1.5		28/07/20	S	P										
57	TP127/1.9-2.0		28/07/20	S	P										
58	TP127/2.4-2.5		28/07/20	S	P										
59	TP127/2.9-3.0		28/07/20	S	P										
60	TP127/3.4-3.5		28/07/20	S	P										
	PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** []	

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH 14:00, 31/7/20 **Received by:** **Date & Time:**

R.L (31/07/2020).

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

449395 99751.00		**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**Order Number**			12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Bulk Bag/esky	Do samples contain 'potential' HBM?	Yes		

	Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: AF/FA									Notes/preservation
61	TP127/3.9-4.0		28/07/20	S	P										
62	TP127/4.4-4.5		28/07/20	S	G										
63	TP127/4.9-5.0		28/07/20	S	G										
64	TP128/0.1-0.2		28/07/20	S	G	x									
65	TP128/0.4-0.5		28/07/20	S	G	x									
66	TP128/0.9-1.0		28/07/20	S	G	x									
67	TP128/1.4-1.5		28/07/20	S	G										
68	TP128/2.0-2.1		28/07/20	S	G										
69	TP128/2.6-2.7		28/07/20	S	G										
70	TP129/0.1-0.2		28/07/20	S	G	x									
71	TP129/0.4-0.5		28/07/20	S	G	x									
72	TP129/0.8-0.9		28/07/20	S	G	x									
73	TP129/1.4-1.5		28/07/20	S	G	x									
74	TP129/1.9-2.0		28/07/20	S	G										
75	TP129/2.4-2.5		28/07/20	S	G										
	PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH 14:00, 31/7/20 **Received by:** **Date & Time:**

R.L (31/07/2020)

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

449395 99751.00		**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**Order Number**			12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Bulk Bag/esky	Do samples contain 'potential' HBM?	Yes		

	Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: AF/FA									Notes/preservation
76	TP129/2.9-3.0		28/07/20	S	P										
77	TP130/0.0-0.1		28/07/20	S	P	x									
78	TP130/0.6-0.7		28/07/20	S	P	x									
79	TP130/1.1-1.2		28/07/20	S	P										
80	TP130/1.5-1.6		28/07/20	S	P	x									
81	TP130/2.1-2.2		28/07/20	S	P										
82	TP130/2.7-2.8		28/07/20	S	P										
83	BH101/0.1-0.6		27/07/20	S	P	x									
84	BH102/0.1-0.7		27/07/20	S	P	x									
85	BH103/0.0-0.5		27/07/20	S	P	x									
86	BH103/1.0-1.5		27/07/20	S	P	x									
87	BH104/0.1-0.8		27/07/20	S	P	x									
88	BH104/1.0-1.6		27/07/20	S	P	x									
89	BH105/0.0-0.6		27/07/20	S	P	x									
90	BH106/0.1-0.7		27/07/20	S	P	x									
	PQL (S) mg/kg													**ANZECC PQLs req'd for all water analytes** ☐	

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

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

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

Signed: DIH 14:00, 31/7/20 **Received by:** **Date & Time:**

91 TP 03 - 2.9-3.0
92 TP 120. - 2.9 - 3.0

RL (31.07/2020)

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Tom Graham

Sample Login Details

Your reference	99751.00, Carss Park Swimming Pool
Envirolab Reference	248153
Date Sample Received	31/07/2020
Date Instructions Received	31/07/2020
Date Results Expected to be Reported	05/08/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	92 Soil
Turnaround Time Requested	3 days
Temperature on Receipt (°C)	15
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

TP128 0.1-0.2 missing - received TP128 0-0.1 instead.

Extra samples placed on hold.

TP03 2.9-3.0
TP120 2.9-3.0

Please direct any queries to:

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

Analysis Underway, details on the following page:

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

Sample ID	Asbestos ID - soils NEPM	On Hold
TP120/0.0-0.1		✓
TP120/0.5-0.6	✓	
TP120/1.0-1.1		✓
TP120/1.5-1.6		✓
TP120/2.0-2.1	✓	
TP121/0.1-0.2	✓	
TP121/0.2-0.3		✓
TP121/0.6-0.7	✓	
TP121/1.2-1.3	✓	
TP121/1.9-2.0		✓
TP122/0.0-0.1		✓
TP122/0.3-0.4	✓	
TP122/0.8-0.9	✓	
TP122/1.4-1.5		✓
TP122/1.8-1.9		✓
TP122/2.4-2.5		✓
TP123/0.1-0.2	✓	
TP123/0.3-0.4		✓
TP123/0.6-0.7	✓	
TP123/1.3-1.4		✓
TP123/1.9-2.0		✓
TP123/2.4-2.5	✓	
TP124/0.1-0.2		✓
TP124/0.3-0.4	✓	
TP124/0.8-0.9		✓
TP124/1.3-1.4	✓	
TP124/1.9-2.0		✓
TP124/2.6-2.7	✓	
TP124/3.4-3.5		✓
TP124/4.5-4.6	✓	
TP125/0.0-0.1	✓	
TP125/0.2-0.3		✓

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customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	Asbestos ID - soils NEPM	On Hold
TP125/0.8-0.9	✓	
TP125/1.6-1.7		✓
TP125/2.3-2.4		✓
TP125/2.9-3.0	✓	
TP125/3.4-3.5		✓
TP125/3.9-4.0	✓	
TP125/4.0-4.1		✓
TP125/4.4-4.5		✓
TP125/4.9-5.0		✓
TP126/0.1-0.2	✓	
TP126/0.4-0.5		✓
TP126/0.9-1.0		✓
TP126/1.5-1.6	✓	
TP126/2.0-2.1		✓
TP126/2.5-2.6		✓
TP126/2.7-2.8		✓
TP126/3.4-3.5	✓	
TP126/4.0-4.1		✓
TP126/4.5-4.6		✓
TP126/4.9-5.0		✓
TP127/0.0-0.1	✓	
TP127/0.3-0.4		✓
TP127/0.9-1.0	✓	
TP127/1.4-1.5		✓
TP127/1.9-2.0		✓
TP127/2.4-2.5		✓
TP127/2.9-3.0		✓
TP127/3.4-3.5		✓
TP127/3.9-4.0		✓
TP127/4.4-4.5		✓
TP127/4.9-5.0		✓
TP128/0.1-0.2	✓	

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12 Ashley St Chatswood NSW 2067
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www.envirolab.com.au

Sample ID	Asbestos ID - soils NEPM	On Hold
TP128/0.4-0.5	✓	
TP128/0.91.0	✓	
TP128/1.4-1.5		✓
TP128/2.0-2.1		✓
TP128/2.6-2.7		✓
TP129/0.1-0.2	✓	
TP129/0.4-0.5	✓	
TP129/0.8-0.9	✓	
TP129/1.4-1.5	✓	
TP129/1.9-2.0		✓
TP129/2.4-2.5		✓
TP129/2.9-3.0		✓
TP130/0.0-0.1	✓	
TP130/0.6-0.7	✓	
TP130/1.1-1.2		✓
TP130/1.5-1.6	✓	
TP130/2.1-2.2		✓
TP130/2.7-2.8		✓
BH101/0.1-0.6	✓	
BH102/0.1-0.7	✓	
BH103/0.0-0.5	✓	
BH103/1.0-1.5	✓	
BH104/0.1-0.8	✓	
BH104/1.0-1.6	✓	
BH105/0.0-0.6	✓	
BH106/0.1-0.7	✓	
TP03/2.9-3.0		✓
TP120/2.9-3.0		✓

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

Envirolab Services Pty Ltd
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www.envirolab.com.au

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 248956

Client Details

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

Sample Details

Your Reference	**99751.00, Carss Park Swimming Pool**
Number of Samples	5 Material
Date samples received	13/08/2020
Date completed instructions received	13/08/2020

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	18/08/2020
Date of Issue	17/08/2020

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Asbestos Approved By
Analysed by Asbestos Approved Identifier: Panika Wongchanda
Authorised by Asbestos Approved Signatory: Lucy Zhu
Results Approved By
Lucy Zhu, Asbestos Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

Asbestos ID - materials						
Our Reference		248956-1	248956-2	248956-3	248956-4	248956-5
Your Reference	UNITS	TP121/0.6-0.7	TP125/0.2-0.3	TP127/0.9-1.0	TP128/0.9-1.0	TP129/0.4-0.5
Type of sample		Material	Material	Material	Material	Material
Date Sampled		28/07/2020	28/07/2020	28/07/2020	28/07/2020	28/07/2020
Date analysed	-	14/08/2020	14/08/2020	14/08/2020	14/08/2020	14/08/2020
Mass / Dimension of Sample	-	75x30x5mm	80x60x5mm	125x35x5mm	90x45x5mm	45x30x5mm
Sample Description	-	Grey fibre cement material	Grey fibre cement material	Grey fibre cement material	Grey fibre cement material	Beige fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected	Chrysotile asbestos detected	Chrysotile asbestos detected	Chrysotile asbestos detected Amosite asbestos detected Crocidolite asbestos detected	Chrysotile asbestos detected
Trace Analysis	-	[NT]	[NT]	[NT]	[NT]	[NT]

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.

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

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

449395 99751.00		**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**Order Number**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 day			**Email:**	ahie@envirolab.com.au
Prior Storage:	ASB Bag		Do samples contain 'potential' HBM? Yes		

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Asbestos in Material									Notes/preservation
TP121/0.6-0.7	1	27/07/20		P	X									
TP125/0.2-0.3	2	28/07/20		P	X									
TP127/0.9-1.0	3	28/07/20		P	X									
TP128/0.9-1.0	4	28/07/20		P	X									
TP129/0.4-0.5	5	28/07/20		P	X									
PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes** ☐

ENVIROLAB GROUP
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 248956
Date Received: 13/8/2020
Time Received: 1459
Received By: PR
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container: 5 **Relinquished by:** **Transported to laboratory by:**

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

Signed: TG11:30; 13/8/20 **Received by:** Ray **Date & Time:** 13/8/2020 1459

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Tom Graham, David Holden

Sample Login Details

Your reference	Carss Park Swimming Pool
Envirolab Reference	248956
Date Sample Received	13/08/2020
Date Instructions Received	13/08/2020
Date Results Expected to be Reported	18/08/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	5 Material
Turnaround Time Requested	3 days
Temperature on Receipt (°C)	19.1
Cooling Method	None
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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

Sample ID	Asbestos ID - materials
TP121/0.6-0.7	✓
TP125/0.2-0.3	✓
TP127/0.9-1.0	✓
TP128/0.9-1.0	✓
TP129/0.4-0.5	✓

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

CERTIFICATE OF ANALYSIS

Work Order	: **ES2025802**	Page	: 1 of 6
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID HOLDEN	Contact	: Customer Services ES
Address	: 1/28 KESSLING AVENUE KUNDA PARK QLD 4556	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9809 0666	Telephone	: +61-2-8784 8555
Project	: Carss Park Swimming Pool - 99751.00	Date Samples Received	: 27-Jul-2020 16:20
Order number	: ----	Date Analysis Commenced	: 28-Jul-2020
C-O-C number	: ----	Issue Date	: 30-Jul-2020 14:23
Sampler	: TOM GRAHAM		
Site	: Carss Park		
Quote number	: EN/222		
No. of samples received	: 2		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BD1/020200723	BD3/020200723	----	----	----
			Client sampling date / time	23-Jul-2020 00:00	23-Jul-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2025802-001	ES2025802-002	--------	--------	--------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	6.0	10.4	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	7	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	5	12	----	----	----
Copper	7440-50-8	5	mg/kg	17	32	----	----	----
Lead	7439-92-1	5	mg/kg	49	100	----	----	----
Nickel	7440-02-0	2	mg/kg	4	8	----	----	----
Zinc	7440-66-6	5	mg/kg	69	171	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.2	0.3	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BD1/020200723	BD3/020200723	----	----	----
			Client sampling date / time	23-Jul-2020 00:00	23-Jul-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2025802-001	ES2025802-002	--------	--------	--------
				Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**87.1**	**96.2**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**95.3**	**97.3**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**89.0**	**76.1**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**111**	**102**	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**111**	**99.2**	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**105**	**98.6**	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**100**	**116**	----	----	----
Toluene-D8	2037-26-5	0.2	%	**101**	**123**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BD1/020200723	BD3/020200723	----	----	----
			Client sampling date / time	23-Jul-2020 00:00	23-Jul-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2025802-001	ES2025802-002	--------	--------	--------
				Result	Result	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	90.8	123	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2025802**	Page	: 1 of 6
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID HOLDEN	Contact	: Customer Services ES
Address	: 1/28 KESSLING AVENUE KUNDA PARK QLD 4556	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9809 0666	Telephone	: +61-2-8784 8555
Project	: Carss Park Swimming Pool - 99751.00	Date Samples Received	: 27-Jul-2020
Order number	: ----	Date Analysis Commenced	: 28-Jul-2020
C-O-C number	: ----	Issue Date	: 30-Jul-2020
Sampler	: TOM GRAHAM		
Site	: Carss Park		
Quote number	: EN/222		
No. of samples received	: 2		
No. of samples analysed	: 2		

ilac-MRA NATA

Accreditation No. 825
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3166211)									
ES2025275-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	17	18	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	24	25	0.00	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	8	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	206	224	8.37	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	564	572	1.42	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	743	738	0.583	0% - 20%
ES2025802-001	BD1/020200723	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	5	4	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	17	14	15.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	49	49	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	69	69	0.00	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3166215)									
ES2025279-001	Anonymous	EA055: Moisture Content	----	0.1	%	35.0	36.2	3.53	0% - 20%
WN2006570-001	Anonymous	EA055: Moisture Content	----	0.1	%	<1.0	<1.0	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3166212)									
ES2025802-001	BD1/020200723	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3164574)									
ES2025802-001	BD1/020200723	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3164574) - continued									
ES2025802-001	BD1/020200723	EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3164573)									
ES2025802-001	BD1/020200723	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
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3164788)									
ES2025718-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3164573)									
ES2025802-001	BD1/020200723	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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3164788)									
ES2025718-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 3164788)									
ES2025718-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3166211)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	98 mg/kg	118	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	83.0	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	15.4 mg/kg	121	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	48 mg/kg	108	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	50 mg/kg	114	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	12.4 mg/kg	111	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	115 mg/kg	108	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3166212)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.0847 mg/kg	75.2	70.0	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3164574)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	105	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	105	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	106	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	105	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	115	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	115	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	113	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	113	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	102	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	111	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	98.2	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	109	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	102	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	100	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	99.2	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	97.0	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164573)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	97.9	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	92.1	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	90.5	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164788)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	93.0	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3164573)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3164573) - continued								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	93.3	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	89.2	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	79.4	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3164788)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	87.6	68.4	128
EP080: BTEXN (QCLot: 3164788)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	90.4	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	91.4	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	94.0	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	87.9	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	93.9	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	100	63.0	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3166211)							
ES2025802-001	BD1/020200723	EG005T: Arsenic	7440-38-2	50 mg/kg	97.2	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.1	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	96.8	70.0	130
		EG005T: Copper	7440-50-8	250 mg/kg	97.1	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	97.2	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	106	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	95.4	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3166212)							
ES2025802-001	BD1/020200723	EG035T: Mercury	7439-97-6	5 mg/kg	83.5	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3164574)							
ES2025802-001	BD1/020200723	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	94.0	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	96.6	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164573)							
ES2025802-001	BD1/020200723	EP071: C10 - C14 Fraction	----	523 mg/kg	85.7	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	79.4	53.0	131

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164573) - continued							
ES2025802-001	BD1/020200723	EP071: C29 - C36 Fraction	----	1714 mg/kg	73.1	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3164788)							
ES2025718-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	108	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3164573)							
ES2025802-001	BD1/020200723	EP071: >C10 - C16 Fraction	----	860 mg/kg	89.6	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	77.5	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	57.0	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3164788)							
ES2025718-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	89.9	70.0	130
EP080: BTEXN (QCLot: 3164788)							
ES2025718-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	83.4	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	81.6	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.2	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	74.5	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	90.0	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	73.5	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2025802**	Page	: 1 of 4
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID HOLDEN	Telephone	: +61-2-8784 8555
Project	: Carss Park Swimming Pool - 99751.00	Date Samples Received	: 27-Jul-2020
Site	: Carss Park	Issue Date	: 30-Jul-2020
Sampler	: TOM GRAHAM	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
BD1/020200723,	BD3/020200723	**23-Jul-2020**	**----**	----	----	**28-Jul-2020**	06-Aug-2020	✓
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
BD1/020200723,	BD3/020200723	**23-Jul-2020**	**28-Jul-2020**	19-Jan-2021	✓	**29-Jul-2020**	19-Jan-2021	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
BD1/020200723,	BD3/020200723	**23-Jul-2020**	**28-Jul-2020**	20-Aug-2020	✓	**29-Jul-2020**	20-Aug-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
BD1/020200723,	BD3/020200723	**23-Jul-2020**	**28-Jul-2020**	06-Aug-2020	✓	**28-Jul-2020**	06-Sep-2020	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071)								
BD1/020200723,	BD3/020200723	**23-Jul-2020**	**28-Jul-2020**	06-Aug-2020	✓	**28-Jul-2020**	06-Sep-2020	✓
Soil Glass Jar - Unpreserved (EP080)								
BD1/020200723,	BD3/020200723	**23-Jul-2020**	**28-Jul-2020**	06-Aug-2020	✓	**29-Jul-2020**	06-Aug-2020	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP071)								
BD1/020200723,	BD3/020200723	**23-Jul-2020**	**28-Jul-2020**	06-Aug-2020	✓	**28-Jul-2020**	06-Sep-2020	✓
Soil Glass Jar - Unpreserved (EP080)								
BD1/020200723,	BD3/020200723	**23-Jul-2020**	**28-Jul-2020**	06-Aug-2020	✓	**29-Jul-2020**	06-Aug-2020	✓
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
BD1/020200723,	BD3/020200723	**23-Jul-2020**	**28-Jul-2020**	06-Aug-2020	✓	**29-Jul-2020**	06-Aug-2020	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**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	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**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	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**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	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	4	**25.00**	**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 6.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270E. 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 - 8260D. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky		Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

TAT

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Combo 8a	Combo 3a	Combo 8	Combo 3	AF/FA	ph, CEC	ASS			Notes/Preservation
BH101/0.1-0.2	1	23/07/20	S	G	x									Relinquished by Elsayd C. Mayen 27/7/20 830 CM
BH101/0.3-0.5	2	23/07/20	S	G		x				x				
BH101/0.7-0.8	3	23/07/20	S	G										
BH101/1.4-1.6	4	23/07/20	S	G&P		x								
BH101/2.1-2.2	5	23/07/20	S	G										
BH102/0.1-0.2	6	23/07/20	S	G										
BH102/0.2-0.3	7	23/07/20	S	G		x								
BH102/0.4-0.6	8	23/07/20	S	G&P	x					x				
BH102/0.8-1.0	9	23/07/20	S	G										
BH102/1.6-2.0	10	23/07/20	S	G&P										
BH102/2.5-3.0	11	23/07/20	S	G&P		x								
BH103/0.1-0.2	12	23/07/20	S	G	x									
BH103/0.4-0.5	13	23/07/20	S	G		x				x				
BH103/0.9-1.0	14	23/07/20	S	G										
BH103/1.4-1.6	15	23/07/20	S	G&P							x			
PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes**

Environmental Division
Sydney
Work Order Reference
ES2025802

Telephone : + 61-2-8784 8555

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

Lab Report/Reference No:

Metals to Analyse: 8HM unless specified here:

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

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

Signed: DIH, 24/7/2020, 11:30 **Received by:** KG **Date & Time:** 24/7/20 0900

rec: FAZ: 27/7/20 4:20

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8a	Combo 3a	Combo 8	Combo 3	AF/FA	ph, CEC	ASS			Notes/preservation
BH118/0.2-0.3	61	22/07/20	S	G&P				x			x			
BH118/0.4-0.5	62	22/07/20	S	P					x					Relinquished by ELS and
BH118/0.7-0.8	63	22/07/20	S	G&P							x			e. mulent
BH118/0.8-0.9	64	22/07/20	S	P										27/7/20 8:30
BH118/0.9-1.0	65	22/07/20	S	G&P							x			
BH118/1.2-1.3	66	22/07/20	S	P					x					
BH118/1.4-1.5	67	22/07/20	S	G&P			x			x	x			
BH118/1.7-1.8	68	22/07/20	S	P										
BH118/1.9-2.0	69	22/07/20	S	G&P							x			
(1) BD1/020200723	70	23/07/20	S	G				x						Please forward for inter lab
BD2/020200723	71	23/07/20	S	G										
(2) BD3/020200723	72	23/07/20	S	G				x						Please forward for inter lab
BD4/020200723	73	23/07/20	S	G				x						
BD5/020200723	74	23/07/20	S	G										
BD1/020200722	75	22/07/20	S	G			x							
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes**		

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

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No: 247691

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

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

Signed: DIH, 24/7/2020, 11:30 **Received by:** KG **Date & Time:** 24/7/20 0900

rec: FAX 27/7/20 4:20pm

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2025998**	Page	: 1 of 6
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID HOLDEN	Contact	: Customer Services ES
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	: +61-2-8784 8555
Project	: 99751.00 Carss Park Swimming Pool	Date Samples Received	: 28-Jul-2020 16:31
Order number	: ----	Date Analysis Commenced	: 29-Jul-2020
C-O-C number	: ----	Issue Date	: 31-Jul-2020 16:14
Sampler	: TOM GRAHAM		
Site	: Carss Park		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BD2/20200724	----	----	----	----
			Client sampling date / time	24-Jul-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2025998-001	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**3.5**	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**6**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**7**	----	----	----	----
Copper	7440-50-8	5	mg/kg	<5	----	----	----	----
Lead	7439-92-1	5	mg/kg	**8**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**6**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BD2/20200724	----	----	----	----
			Client sampling date / time	24-Jul-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2025998-001	--------	--------	--------	--------
				Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**70.6**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**78.9**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**65.4**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**94.8**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**101**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**91.5**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**84.5**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**89.9**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BD2/20200724	----	----	----	----
			Client sampling date / time	24-Jul-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2025998-001	--------	--------	--------	--------
				Result	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**92.1**	**----**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **SOIL**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

QUALITY CONTROL REPORT

Work Order	: **ES2025998**	Page	: 1 of 6
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID HOLDEN	Contact	: Customer Services ES
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	: +61-2-8784 8555
Project	: 99751.00 Carss Park Swimming Pool	Date Samples Received	: 28-Jul-2020
Order number	: ----	Date Analysis Commenced	: 29-Jul-2020
C-O-C number	: ----	Issue Date	: 31-Jul-2020
Sampler	: TOM GRAHAM		
Site	: Carss Park		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3168575)									
ES2025818-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12700	11100	13.4	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	107	107	0.00	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	8	11.7	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	224	214	4.81	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	15100	15800	4.14	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	9170	8230	10.8	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3168586)									
ES2025875-001	Anonymous	EA055: Moisture Content	----	0.1	%	29.4	28.7	2.24	0% - 20%
ES2025998-001	BD2/20200724	EA055: Moisture Content	----	0.1	%	3.5	3.3	5.75	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3168576)									
ES2025818-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3169777)									
ES2025998-001	BD2/20200724	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3169777) - continued									
ES2025998-001	BD2/20200724	EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3167255)									
ES2025964-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3169778)									
ES2025998-001	BD2/20200724	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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3167255)									
ES2025964-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3169778)									
ES2025998-001	BD2/20200724	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
EP080: BTEXN (QC Lot: 3167255)									
ES2025964-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3168575)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	98 mg/kg	126	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	103	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	15.4 mg/kg	130	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	48 mg/kg	118	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	50 mg/kg	121	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	12.4 mg/kg	124	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	115 mg/kg	114	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3168576)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.0847 mg/kg	79.2	70.0	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3169777)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	102	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	103	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	107	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	107	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	111	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	112	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	113	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	112	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	95.0	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	107	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	91.9	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	108	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	105	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	101	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	97.0	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	99.3	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3167255)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	101	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3169778)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	101	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	91.9	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	87.9	71.0	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3167255)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3167255) - continued								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	100	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3169778)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	94.5	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	89.3	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	85.0	63.0	131
EP080: BTEXN (QCLot: 3167255)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	82.1	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	91.7	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	91.2	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	90.8	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	95.5	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	97.3	63.0	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3168575)							
ES2025818-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	83.3	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.1	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	# Not Determined	70.0	130
		EG005T: Copper	7440-50-8	250 mg/kg	102	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	# Not Determined	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	101	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	# Not Determined	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3168576)							
ES2025818-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	87.9	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3169777)							
ES2025998-001	BD2/20200724	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	102	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	105	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3167255)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3167255) - continued							
ES2025964-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	103	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3169778)							
ES2025998-001	BD2/20200724	EP071: C10 - C14 Fraction	----	523 mg/kg	100	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	108	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	116	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3167255)							
ES2025964-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	103	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3169778)							
ES2025998-001	BD2/20200724	EP071: >C10 - C16 Fraction	----	860 mg/kg	111	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	118	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	109	52.0	132
EP080: BTEXN (QCLot: 3167255)							
ES2025964-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	79.4	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	85.8	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	85.1	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	87.0	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	87.0	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	87.3	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2025998**	Page	: 1 of 5
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID HOLDEN	Telephone	: +61-2-8784 8555
Project	: 99751.00 Carss Park Swimming Pool	Date Samples Received	: 28-Jul-2020
Site	: Carss Park	Issue Date	: 31-Jul-2020
Sampler	: TOM GRAHAM	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005(ED093)T: Total Metals by ICP-AES	ES2025818--001	Anonymous	**Chromium**	7440-47-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	ES2025818--001	Anonymous	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005(ED093)T: Total Metals by ICP-AES	ES2025818--001	Anonymous	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / ***Container*** / *Client Sample ID(s)*	***Sample Date***	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) BD2/20200724	**24-Jul-2020**	**----**	----	----	**29-Jul-2020**	07-Aug-2020	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) BD2/20200724	**24-Jul-2020**	**29-Jul-2020**	20-Jan-2021	✓	**30-Jul-2020**	20-Jan-2021	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) BD2/20200724	**24-Jul-2020**	**29-Jul-2020**	21-Aug-2020	✓	**30-Jul-2020**	21-Aug-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) BD2/20200724	**24-Jul-2020**	**30-Jul-2020**	07-Aug-2020	✓	**30-Jul-2020**	08-Sep-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) BD2/20200724	**24-Jul-2020**	**29-Jul-2020**	07-Aug-2020	✓	**29-Jul-2020**	07-Aug-2020	✓
Soil Glass Jar - Unpreserved (EP071) BD2/20200724	**24-Jul-2020**	**30-Jul-2020**	07-Aug-2020	✓	**30-Jul-2020**	08-Sep-2020	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
BD2/20200724	**24-Jul-2020**	**29-Jul-2020**	07-Aug-2020	✓	**29-Jul-2020**	07-Aug-2020	✓
Soil Glass Jar - Unpreserved (EP071)							
BD2/20200724	**24-Jul-2020**	**30-Jul-2020**	07-Aug-2020	✓	**30-Jul-2020**	08-Sep-2020	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
BD2/20200724	**24-Jul-2020**	**29-Jul-2020**	07-Aug-2020	✓	**29-Jul-2020**	07-Aug-2020	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	33.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	9	11.11	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 6.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270E. 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 - 8260D. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 day			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐	No ☐	(If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Combo 8a	Combo 3a	Combo 8	Combo 3	AF/FA	ph, CEC	TRH/BTEX			Notes/preservation
BD1/20200724	42	24/07/20	S	G										
BD2/20200724	43	24/07/20	S	G				x						Forward for inter lab
BD3/20200724	44	24/07/20	S	G				x						
Trip Spike	45	24/07/20	S	G							x			
Trip Blank	46	24/07/20	S	G							x			
BH104 TSA	47													
PQL (S) mg/kg														

(1)

Environmental Division Sydney
Work Order Reference
ES2025998
Telephone : + 61-2-8784 8555

TAT

ANZECC PQLs req'd for all water analytes

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

Lab Report/Reference No:

Metals to Analyse: 8HM unless specified here:

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

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

Signed: DIH, 27/7/2020, 13:30 **Received by:** **Date & Time:**

Relinquished: ELS Syd K-Lore 28/7/20

Rec: [illegible] 28/7/20 [illegible]

FPM - ENVID/Form COC 02

Rev4/October2016

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2026404**	Page	: 1 of 6
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID HOLDEN	Contact	: Customer Services ES
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	: +61-2-8784 8555
Project	: 99751.00 Carss Park Swimming Pool	Date Samples Received	: 30-Jul-2020 16:42
Order number	: ----	Date Analysis Commenced	: 31-Jul-2020
C-O-C number	: ----	Issue Date	: 04-Aug-2020 16:57
Sampler	: TOM GRAHAM		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG035: Positive Hg result ES2026404 #1 has been confirmed by reanalysis.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BD2/20200727	----	----	----	----
			Client sampling date / time	27-Jul-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2026404-001	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**15.9**	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**6**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**7**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**19**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**129**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**5**	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**100**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**2.0**	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	**0.6**	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	**1.1**	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	**1.1**	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	**2.8**	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BD2/20200727	----	----	----	----
			Client sampling date / time	27-Jul-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2026404-001	--------	--------	--------	--------
				Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**97.3**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**94.2**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**77.6**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**96.0**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**96.6**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**92.6**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**81.0**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	**102**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	BD2/20200727	----	----	----	----
			Client sampling date / time	27-Jul-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2026404-001	--------	--------	--------	--------
				Result	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**109**	**----**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

QUALITY CONTROL REPORT

Work Order	: **ES2026404**	Page	: 1 of 7
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID HOLDEN	Contact	: Customer Services ES
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	: +61-2-8784 8555
Project	: 99751.00 Carss Park Swimming Pool	Date Samples Received	: 30-Jul-2020
Order number	: ----	Date Analysis Commenced	: 31-Jul-2020
C-O-C number	: ----	Issue Date	: 04-Aug-2020
Sampler	: TOM GRAHAM		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3173593)									
ES2026288-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	4	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	9	50.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	21	25	16.3	No Limit
ES2026517-006	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	9	9	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	9	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	25	5.31	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	15	10.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	75	78	4.16	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3173608)									
ES2026288-001	Anonymous	EA055: Moisture Content	----	0.1	%	11.1	10.8	3.15	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3173591)									
ES2026288-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2026517-006	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3172839)									
ES2025929-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	13.7	14.6	6.44	0% - 20%
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3172839) - continued									
ES2025929-001	Anonymous	EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	0.6	0.6	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.6	0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	14.9	15.7	5.23	0% - 20%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES2026288-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3172692)									
ES2025420-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES2026064-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	40	43	8.94	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3172840)									

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3172840) - continued									
ES2025929-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	2800	2930	4.35	0% - 20%
		EP071: C29 - C36 Fraction	----	100	mg/kg	2210	2260	2.08	0% - 20%
		EP071: C10 - C14 Fraction	----	50	mg/kg	1070	1080	0.00	0% - 20%
ES2026288-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3172692)									
ES2025420-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2026064-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	90	95	4.68	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3172840)									
ES2025929-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	3710	4020	8.13	0% - 20%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	3370	3030	10.4	0% - 20%
		EP071: >C10 - C16 Fraction	----	50	mg/kg	1400	1400	0.00	0% - 20%
ES2026288-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 3172692)									
ES2025420-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES2026064-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	0.6	0.8	17.5	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	3.2	3.6	13.7	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	3.0	3.2	9.01	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	4	4	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3173593)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	98 mg/kg	115	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	105	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	15.4 mg/kg	127	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	48 mg/kg	107	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	50 mg/kg	113	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	12.4 mg/kg	112	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	115 mg/kg	104	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3173591)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.0847 mg/kg	84.9	70.0	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3172839)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	95.2	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	93.6	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	95.1	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	95.9	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	104	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	103	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	102	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	102	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	91.1	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	98.3	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	87.7	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	98.0	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	90.7	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	93.3	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	89.7	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	90.2	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172692)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	84.4	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172840)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	95.7	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	99.3	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	94.4	71.0	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3172692)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3172692) - continued								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	87.3	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3172840)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	94.7	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	100.0	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	94.8	63.0	131
EP080: BTEXN (QCLot: 3172692)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	80.5	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	94.4	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	94.6	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	96.6	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	97.0	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	83.5	63.0	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	Recovery Limits (%) High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3173593)							
ES2026288-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	102	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.8	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	103	70.0	130
		EG005T: Copper	7440-50-8	250 mg/kg	99.7	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	101	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	100	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3173591)							
ES2026288-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	72.4	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3172839)							
ES2026288-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	104	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	110	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172692)							
ES2025420-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	104	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172840)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3172840) - continued							
ES2026288-001	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	84.7	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	93.8	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	110	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3172692)							
ES2025420-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	98.1	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3172840)							
ES2026288-001	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	94.3	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	101	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	114	52.0	132
EP080: BTEXN (QCLot: 3172692)							
ES2025420-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	80.7	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	92.1	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	92.6	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	92.8	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	91.6	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	79.6	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2026404**	Page	: 1 of 4
Client	: **DOUGLAS PARTNERS PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR DAVID HOLDEN	Telephone	: +61-2-8784 8555
Project	: 99751.00 Carss Park Swimming Pool	Date Samples Received	: 30-Jul-2020
Site	: ----	Issue Date	: 04-Aug-2020
Sampler	: TOM GRAHAM	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
BD2/20200727	**27-Jul-2020**	**----**	----	----	**31-Jul-2020**	10-Aug-2020	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
BD2/20200727	**27-Jul-2020**	**31-Jul-2020**	23-Jan-2021	✓	**03-Aug-2020**	23-Jan-2021	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
BD2/20200727	**27-Jul-2020**	**31-Jul-2020**	24-Aug-2020	✓	**03-Aug-2020**	24-Aug-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BD2/20200727	**27-Jul-2020**	**31-Jul-2020**	10-Aug-2020	✓	**03-Aug-2020**	09-Sep-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071)							
BD2/20200727	**27-Jul-2020**	**31-Jul-2020**	10-Aug-2020	✓	**03-Aug-2020**	09-Sep-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
BD2/20200727	**27-Jul-2020**	**31-Jul-2020**	10-Aug-2020	✓	**31-Jul-2020**	10-Aug-2020	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071)							
BD2/20200727	**27-Jul-2020**	**31-Jul-2020**	10-Aug-2020	✓	**03-Aug-2020**	09-Sep-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
BD2/20200727	**27-Jul-2020**	**31-Jul-2020**	10-Aug-2020	✓	**31-Jul-2020**	10-Aug-2020	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
BD2/20200727	**27-Jul-2020**	**31-Jul-2020**	10-Aug-2020	✓	**31-Jul-2020**	10-Aug-2020	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	9	**22.22**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**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 Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. 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 Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

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 Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	72 hrs			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐	No ☐	(If YES, then handle, transport and store in a

Environmental Division Sydney
Work Order Reference
ES2026404
Telephone : + 61-2-8784 8555

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Combo 8a	Combo 3a	Combo 8	Combo 3	AF/FA	ph, CEC	TRH/BTEX			No
BH107/2.5-3.0	31	24/07/20	S	G&P										
BH107/3.0-3.5	32	24/07/20	S	G&P				x						
BH107/4.5-5.0	33	24/07/20	S	G&P										
BD1/20200727	34	27/07/20	S	G				x						
BD2/20200727	35	27/07/20	S	G				x						Please formward for inter analysis
Trip Spike	36	27/07/20	S	G							x			
Trip Blank	37	27/07/20	S	G							x			
Relinquished by ELS Syd														

Send Results to	Douglas Partners Pty Ltd	**Address**		**Phone:**	**Fax:**
Signed:	DIH, 11:30 28/07/2020	**Received by:**		**Date & Time:**	

rec: Tom

247934.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99751.00	**Suburb:**	Carss Park	**To:**	Envirolab Services
Project Name:	Carss Park Swimming Pool	**ELS Quote No.**	20SY255		12 Ashley St, Chatswood NSW 2067
Project Manager:	David Holden	**Sampler:**	Tom Graham	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au		tom.graham@douglaspartners.com.au	**Phone:**	9910 6200
Date Required:	3 days			**Email:**	ahie@envirolab.com.au
Prior Storage:	Esky	Do samples contain 'potential' HBM?	Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Combo 8a	Combo 3a	Combo 8	Combo 3	AF/FA	ph, CEC	TRH/BTEX			Notes/preservation
BD2/20200728	61	28/07/20	S	G										TAT
BD3/20200728	62	28/07/20	S	G										
BD4/20200728	63	28/07/20	S	G				x						
(1) BD5/20200728	64	28/07/20	S	G				x	TPH BTEX PAH 8 metals					Please forward for interlab
Trip Spike	65	28/07/20	S	G							x			
Trip Blank	66	28/07/20	S	G							x			
PQL (S) mg/kg														ANZECC PQLs req'd for all water analytes ☐

Relinquished by AS
C. Mullen
30/7/20 9:30 am

Environmental Division Sydney
Work Order Reference
ES2026540

Telephone : +61-2-8784 8555

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

Lab Report/Reference No: 247934-A

Metals to Analyse: 8HM unless specified here:

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

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

Signed: DIH, 11:30 29/7/20 **Received by:** **Date & Time:**

rec: TAND 31/7/20 7:34

Appendix J

Statistical Analysis

	B	C	D	E	F	G	H	I	J	K	L	M
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.125/08/2020 5:20:45 PM								
5	From File			WorkSheet.xls								
6	Full Precision			ON								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	Lead											
11	General Statistics											
12	Total Number of Observations					89.000000	Number of Distinct Observations					60.000000
13	Number of Detects					88.000000	Number of Non-Detects					1.0000000
14	Number of Distinct Detects					59.000000	Number of Distinct Non-Detects					1.0000000
15	Minimum Detect					2.0000000	Minimum Non-Detect					1.0000000
16	Maximum Detect					1600.0000	Maximum Non-Detect					1.0000000
17	Variance Detects					36455.994	Percent Non-Detects					1.1235955%
18	Mean Detects					86.670455	SD Detects					190.93453
19	Median Detects					42.000000	CV Detects					2.2029944
20	Skewness Detects					6.3486406	Kurtosis Detects					47.098313
21	Mean of Logged Detects					3.5551917	SD of Logged Detects					1.3556619
22												
23	Normal GOF Test on Detects Only											
24	Shapiro Wilk Test Statistic					0.4066132	Normal GOF Test on Detected Observations Only					
25	5% Shapiro Wilk P Value					0	Detected Data Not Normal at 5% Significance Level					
26	Lilliefors Test Statistic					0.3287191	Lilliefors GOF Test					
27	5% Lilliefors Critical Value					0.0946158	Detected Data Not Normal at 5% Significance Level					
28	Detected Data Not Normal at 5% Significance Level											
29												
30	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
31	KM Mean					85.707865	KM Standard Error of Mean					20.148006
32	KM SD					188.99285	95% KM (BCA) UCL					130.87640
33	95% KM (t) UCL					119.20099	95% KM (Percentile Bootstrap) UCL					120.60674
34	95% KM (z) UCL					118.84839	95% KM Bootstrap t UCL					160.22893
35	90% KM Chebyshev UCL					146.15188	95% KM Chebyshev UCL					173.53099
36	97.5% KM Chebyshev UCL					211.53212	99% KM Chebyshev UCL					286.17800
37												
38	Gamma GOF Tests on Detected Observations Only											
39	A-D Test Statistic					1.7633240	Anderson-Darling GOF Test					
40	5% A-D Critical Value					0.8014507	Detected Data Not Gamma Distributed at 5% Significance Level					
41	K-S Test Statistic					0.1085017	Kolmogorov-Smirnov GOF					
42	5% K-S Critical Value					0.0996249	Detected Data Not Gamma Distributed at 5% Significance Level					
43	Detected Data Not Gamma Distributed at 5% Significance Level											
44												
45	Gamma Statistics on Detected Data Only											
46	k hat (MLE)					0.6704292	k star (bias corrected MLE)					0.6551494
47	Theta hat (MLE)					129.27608	Theta star (bias corrected MLE)					132.29113
48	nu hat (MLE)					117.99554	nu star (bias corrected)					115.30629
49	Mean (detects)					86.670455						
50												

	B	C	D	E	F	G	H	I	J	K	L	M
51	**Gamma ROS Statistics using Imputed Non-Detects**											
52	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
53	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
54	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
55	This is especially true when the sample size is small.											
56	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
57					Minimum	0.0100000				Mean		85.696742
58					Maximum	1600.0000				Median		42.000000
59					SD	190.06868				CV		2.2179219
60					k hat (MLE)	0.6224534				k star (bias corrected MLE)		0.6089625
61					Theta hat (MLE)	137.67575				Theta star (bias corrected MLE)		140.72582
62					nu hat (MLE)	110.79671				nu star (bias corrected)		108.39532
63					Adjusted Level of Significance (β)	0.0473034						
64					Approximate Chi Square Value (108.40, α)	85.365936				Adjusted Chi Square Value (108.40, β)		85.031132
65					95% Gamma Approximate UCL (use when n>=50)	108.81537				95% Gamma Adjusted UCL (use when n<50)		109.24382
66												
67	**Estimates of Gamma Parameters using KM Estimates**											
68					Mean (KM)	85.707865				SD (KM)		188.99285
69					Variance (KM)	35718.297				SE of Mean (KM)		20.148006
70					k hat (KM)	0.2056604				k star (KM)		0.2062186
71					nu hat (KM)	36.607546				nu star (KM)		36.706917
72					theta hat (KM)	416.74468				theta star (KM)		415.61649
73					80% gamma percentile (KM)	114.72101				90% gamma percentile (KM)		259.22438
74					95% gamma percentile (KM)	438.07404				99% gamma percentile (KM)		928.03525
75												
76	**Gamma Kaplan-Meier (KM) Statistics**											
77					Approximate Chi Square Value (36.71, α)	23.838434				Adjusted Chi Square Value (36.71, β)		23.667766
78					95% Gamma Approximate KM-UCL (use when n>=50)	131.97476				95% Gamma Adjusted KM-UCL (use when n<50)		132.92643
79												
80	**Lognormal GOF Test on Detected Observations Only**											
81					Shapiro Wilk Approximate Test Statistic	0.9738484				**Shapiro Wilk GOF Test**		
82					5% Shapiro Wilk P Value	0.2919111				Detected Data appear Lognormal at 5% Significance Level		
83					Lilliefors Test Statistic	0.0818131				**Lilliefors GOF Test**		
84					5% Lilliefors Critical Value	0.0946158				Detected Data appear Lognormal at 5% Significance Level		
85	**Detected Data appear Lognormal at 5% Significance Level**											
86												
87	**Lognormal ROS Statistics Using Imputed Non-Detects**											
88					Mean in Original Scale	85.706560				Mean in Log Scale		3.5138585
89					SD in Original Scale	190.06423				SD in Log Scale		1.4032055
90					95% t UCL (assumes normality of ROS data)	119.19762				95% Percentile Bootstrap UCL		121.97753
91					95% BCA Bootstrap UCL	138.85995				95% Bootstrap t UCL		166.12397
92					95% H-UCL (Log ROS)	133.89159						
93												
94	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
95					KM Mean (logged)	3.5152457				KM Geo Mean		33.624190
96					KM SD (logged)	1.3917398				95% Critical H Value (KM-Log)		2.6524087
97					KM Standard Error of Mean (logged)	0.1483695				95% H-UCL (KM -Log)		131.26614
98					KM SD (logged)	1.3917398				95% Critical H Value (KM-Log)		2.6524087
99					KM Standard Error of Mean (logged)	0.1483695						
100												

	B	C	D	E	F	G	H	I	J	K	L	M
101	**DL/2 Statistics**											
102	**DL/2 Normal**						**DL/2 Log-Transformed**					
103					Mean in Original Scale	85.702247				Mean in Log Scale		3.5074576
104					SD in Original Scale	190.06618				SD in Log Scale		1.4211705
105					95% t UCL (Assumes normality)	119.19365				95% H-Stat UCL		137.57589
106	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
107												
108	**Nonparametric Distribution Free UCL Statistics**											
109	**Detected Data appear Lognormal Distributed at 5% Significance Level**											
110												
111	**Suggested UCL to Use**											
112					KM H-UCL	131.26614						
113												
114	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
115	Recommendations are based upon data size, data distribution, and skewness.											
116	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
117	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
118												

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects (excluding hotspots)								
2			User Selected Options									
3			From File	WorkSheet.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	BaP_TEQ											
10												
11				General Statistics								
12			Number of Valid Observations	88					Number of Distinct Observations	11		
13												
14			Raw Statistics						Log-transformed Statistics			
15			Minimum	0.5					Minimum of Log Data	-0.693		
16			Maximum	5					Maximum of Log Data	1.609		
17			Mean	0.73					Mean of log Data	-0.521		
18			Geometric Mean	0.594					SD of log Data	0.495		
19			Median	0.5								
20			SD	0.793								
21			Std. Error of Mean	0.0845								
22			Coefficient of Variation	1.087								
23			Skewness	4.164								
24												
25				Relevant UCL Statistics								
26			Normal Distribution Test						Lognormal Distribution Test			
27			Lilliefors Test Statistic	0.455					Lilliefors Test Statistic	0.477		
28			Lilliefors Critical Value	0.0944					Lilliefors Critical Value	0.0944		
29			Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level			
30												
31			Assuming Normal Distribution						Assuming Lognormal Distribution			
32			95% Student's-t UCL	0.87					95% H-UCL	0.741		
33			95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL	0.833		
34			95% Adjusted-CLT UCL (Chen-1995)	0.909					97.5% Chebyshev (MVUE) UCL	0.904		
35			95% Modified-t UCL (Johnson-1978)	0.876					99% Chebyshev (MVUE) UCL	1.042		
36												
37			Gamma Distribution Test						Data Distribution			
38			k star (bias corrected)	2.51					Data do not follow a Discernable Distribution (0.05)			
39			Theta Star	0.291								
40			MLE of Mean	0.73								
41			MLE of Standard Deviation	0.46								
42			nu star	441.7								
43			Approximate Chi Square Value (.05)	394					Nonparametric Statistics			
44			Adjusted Level of Significance	0.0473					95% CLT UCL	0.869		
45			Adjusted Chi Square Value	393.3					95% Jackknife UCL	0.87		
46									95% Standard Bootstrap UCL	0.863		
47			Anderson-Darling Test Statistic	24.79					95% Bootstrap-t UCL	0.965		
48			Anderson-Darling 5% Critical Value	0.761					95% Hall's Bootstrap UCL	0.876		
49			Kolmogorov-Smirnov Test Statistic	0.481					95% Percentile Bootstrap UCL	0.874		
50			Kolmogorov-Smirnov 5% Critical Value	0.0962					95% BCA Bootstrap UCL	0.908		
51			Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL	1.098		
52									97.5% Chebyshev(Mean, Sd) UCL	1.257		
53			Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL	1.57		

	A	B	C	D	E	F	G	H	I	J	K	L
54	95% Approximate Gamma UCL (Use when n >= 40)					0.818						
55	95% Adjusted Gamma UCL (Use when n < 40)					0.819						
56												
57	**Potential UCL to Use**						Use 95% Student's-t UCL					0.87
58							or 95% Modified-t UCL					0.876
59												
60	**Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.**											
61	**These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)**											
62	**and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.**											
63												

	B	C	D	E	F	G	H	I	J	K	L	M
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.125/08/2020 5:18:30 PM								
5	From File			WorkSheet.xls								
6	Full Precision			ON								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	Copper											
11												
12	General Statistics											
13	Total Number of Observations					89.000000		Number of Distinct Observations				55.000000
14	Number of Detects					85.000000		Number of Non-Detects				4.0000000
15	Number of Distinct Detects					54.000000		Number of Distinct Non-Detects				1.0000000
16	Minimum Detect					2.0000000		Minimum Non-Detect				1.0000000
17	Maximum Detect					270.00000		Maximum Non-Detect				1.0000000
18	Variance Detects					2344.3451		Percent Non-Detects				4.4943820%
19	Mean Detects					39.811765		SD Detects				48.418438
20	Median Detects					24.000000		CV Detects				1.2161842
21	Skewness Detects					2.8121457		Kurtosis Detects				9.6939432
22	Mean of Logged Detects					3.0774981		SD of Logged Detects				1.1822495
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic					0.6991807		Normal GOF Test on Detected Observations Only				
26	5% Shapiro Wilk P Value					0		Detected Data Not Normal at 5% Significance Level				
27	Lilliefors Test Statistic					0.2174197		Lilliefors GOF Test				
28	5% Lilliefors Critical Value					0.0962410		Detected Data Not Normal at 5% Significance Level				
29	Detected Data Not Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean					38.067416		KM Standard Error of Mean				5.0884420
33	KM SD					47.721052		95% KM (BCA) UCL				46.505618
34	95% KM (t) UCL					46.526208		95% KM (Percentile Bootstrap) UCL				46.876404
35	95% KM (z) UCL					46.437158		95% KM Bootstrap t UCL				49.112824
36	90% KM Chebyshev UCL					53.332742		95% KM Chebyshev UCL				60.247420
37	97.5% KM Chebyshev UCL					69.844726		99% KM Chebyshev UCL				88.696774
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic					0.5902759		Anderson-Darling GOF Test				
41	5% A-D Critical Value					0.7842995		Detected data appear Gamma Distributed at 5% Significance Level				
42	K-S Test Statistic					0.0785798		Kolmogorov-Smirnov GOF				
43	5% K-S Critical Value					0.1000229		Detected data appear Gamma Distributed at 5% Significance Level				
44	Detected data appear Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)					0.9564986		k star (bias corrected MLE)				0.9305830
48	Theta hat (MLE)					41.622398		Theta star (bias corrected MLE)				42.781532
49	nu hat (MLE)					162.60476		nu star (bias corrected)				158.19910
50	Mean (detects)					39.811765						
51												

	B	C	D	E	F	G	H	I	J	K	L	M
52	**Gamma ROS Statistics using Imputed Non-Detects**											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58					Minimum	0.0100000				Mean		38.022921
59					Maximum	270.00000				Median		23.000000
60					SD	48.026616				CV		1.2630964
61					k hat (MLE)	0.6710395				k star (bias corrected MLE)		0.6559108
62					Theta hat (MLE)	56.662719				Theta star (bias corrected MLE)		57.969653
63					nu hat (MLE)	119.44503				nu star (bias corrected)		116.75212
64					Adjusted Level of Significance (β)	0.0473034						
65					Approximate Chi Square Value (116.75, α)	92.804645				Adjusted Chi Square Value (116.75, β)		92.454968
66					95% Gamma Approximate UCL (use when n>=50)	47.834425				95% Gamma Adjusted UCL (use when n<50)		48.015340
67												
68	**Estimates of Gamma Parameters using KM Estimates**											
69					Mean (KM)	38.067416				SD (KM)		47.721052
70					Variance (KM)	2277.2988				SE of Mean (KM)		5.0884420
71					k hat (KM)	0.6363364				k star (KM)		0.6223775
72					nu hat (KM)	113.26788				nu star (KM)		110.78319
73					theta hat (KM)	59.822785				theta star (KM)		61.164512
74					80% gamma percentile (KM)	62.733408				90% gamma percentile (KM)		98.190932
75					95% gamma percentile (KM)	135.18408				99% gamma percentile (KM)		224.37232
76												
77	**Gamma Kaplan-Meier (KM) Statistics**											
78					Approximate Chi Square Value (110.78, α)	87.487954				Adjusted Chi Square Value (110.78, β)		87.148843
79					95% Gamma Approximate KM-UCL (use when n>=50)	48.203550				95% Gamma Adjusted KM-UCL (use when n<50)		48.391118
80												
81	**Lognormal GOF Test on Detected Observations Only**											
82					Shapiro Wilk Approximate Test Statistic	0.9614087				**Shapiro Wilk GOF Test**		
83					5% Shapiro Wilk P Value	0.0504351				Detected Data appear Lognormal at 5% Significance Level		
84					Lilliefors Test Statistic	0.0724122				**Lilliefors GOF Test**		
85					5% Lilliefors Critical Value	0.0962410				Detected Data appear Lognormal at 5% Significance Level		
86	**Detected Data appear Lognormal at 5% Significance Level**											
87												
88	**Lognormal ROS Statistics Using Imputed Non-Detects**											
89					Mean in Original Scale	38.081853				Mean in Log Scale		2.9500094
90					SD in Original Scale	47.980253				SD in Log Scale		1.2988759
91					95% t UCL (assumes normality of ROS data)	46.536414				95% Percentile Bootstrap UCL		47.016775
92					95% BCA Bootstrap UCL	47.820525				95% Bootstrap t UCL		48.932742
93					95% H-UCL (Log ROS)	63.219983						
94												
95	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
96					KM Mean (logged)	2.9391836				KM Geo Mean		18.900409
97					KM SD (logged)	1.3136675				95% Critical H Value (KM-Log)		2.5660733
98					KM Standard Error of Mean (logged)	0.1400749				95% H-UCL (KM -Log)		64.160710
99					KM SD (logged)	1.3136675				95% Critical H Value (KM-Log)		2.5660733
100					KM Standard Error of Mean (logged)	0.1400749						
101												
102	**DL/2 Statistics**											
103	**DL/2 Normal**						**DL/2 Log-Transformed**					
104					Mean in Original Scale	38.044944				Mean in Log Scale		2.9080309
105					SD in Original Scale	48.009092				SD in Log Scale		1.3969245
106					95% t UCL (Assumes normality)	46.504587				95% H-Stat UCL		72.209612

	B	C	D	E	F	G	H	I	J	K	L	M
107	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
108												
109	**Nonparametric Distribution Free UCL Statistics**											
110	**Detected Data appear Gamma Distributed at 5% Significance Level**											
111												
112	**Suggested UCL to Use**											
113				95% KM Approximate Gamma UCL		48.203550						
114												
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
119												

	B	C	D	E	F	G	H	I	J	K	L	M
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.125/08/2020 5:16:15 PM								
5	From File			WorkSheet.xls								
6	Full Precision			ON								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	F3											
11												
12	General Statistics											
13	Total Number of Observations					89.000000	Number of Distinct Observations					18.000000
14	Number of Detects					21.000000	Number of Non-Detects					68.000000
15	Number of Distinct Detects					17.000000	Number of Distinct Non-Detects					1.0000000
16	Minimum Detect					110.00000	Minimum Non-Detect					100.00000
17	Maximum Detect					2100.0000	Maximum Non-Detect					100.00000
18	Variance Detects					337045.71	Percent Non-Detects					76.404494%
19	Mean Detects					534.28571	SD Detects					580.55638
20	Median Detects					270.00000	CV Detects					1.0866029
21	Skewness Detects					1.6482650	Kurtosis Detects					1.7450594
22	Mean of Logged Detects					5.8246613	SD of Logged Detects					0.9321291
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic					0.7271990	Shapiro Wilk GOF Test					
26	5% Shapiro Wilk Critical Value					0.9080000	Detected Data Not Normal at 5% Significance Level					
27	Lilliefors Test Statistic					0.3322752	Lilliefors GOF Test					
28	5% Lilliefors Critical Value					0.1881000	Detected Data Not Normal at 5% Significance Level					
29	Detected Data Not Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean					202.47191	KM Standard Error of Mean					35.982098
33	KM SD					331.27361	95% KM (BCA) UCL					270.22472
34	95% KM (t) UCL					262.28690	95% KM (Percentile Bootstrap) UCL					264.71910
35	95% KM (z) UCL					261.65720	95% KM Bootstrap t UCL					294.74713
36	90% KM Chebyshev UCL					310.41821	95% KM Chebyshev UCL					359.31424
37	97.5% KM Chebyshev UCL					427.18004	99% KM Chebyshev UCL					560.48927
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic					1.3236110	Anderson-Darling GOF Test					
41	5% A-D Critical Value					0.7642321	Detected Data Not Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic					0.2543354	Kolmogorov-Smirnov GOF					
43	5% K-S Critical Value					0.1938851	Detected Data Not Gamma Distributed at 5% Significance Level					
44	Detected Data Not Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)					1.2358979	k star (bias corrected MLE)					1.0910871
48	Theta hat (MLE)					432.30572	Theta star (bias corrected MLE)					489.68202
49	nu hat (MLE)					51.907711	nu star (bias corrected)					45.825657
50	Mean (detects)					534.28571						

	B	C	D	E	F	G	H	I	J	K	L	M
51												
52	**Gamma ROS Statistics using Imputed Non-Detects**											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58					Minimum	0.0100000				Mean		126.07506
59					Maximum	2100.0000				Median		0.0100000
60					SD	358.67420				CV		2.8449260
61					k hat (MLE)	0.1143339				k star (bias corrected MLE)		0.1179706
62					Theta hat (MLE)	1102.6914				Theta star (bias corrected MLE)		1068.6987
63					nu hat (MLE)	20.351443				nu star (bias corrected)		20.998772
64					Adjusted Level of Significance (β)	0.0473034						
65					Approximate Chi Square Value (21.00, α)	11.590688				Adjusted Chi Square Value (21.00, β)		11.475424
66					95% Gamma Approximate UCL (use when n>=50)	228.40933				95% Gamma Adjusted UCL (use when n<50)		230.70357
67												
68	**Estimates of Gamma Parameters using KM Estimates**											
69					Mean (KM)	202.47191				SD (KM)		331.27361
70					Variance (KM)	109742.20				SE of Mean (KM)		35.982098
71					k hat (KM)	0.3735561				k star (KM)		0.3684550
72					nu hat (KM)	66.492993				nu star (KM)		65.584990
73					theta hat (KM)	542.01200				theta star (KM)		549.51598
74					80% gamma percentile (KM)	323.23867				90% gamma percentile (KM)		579.94783
75					95% gamma percentile (KM)	865.28284				99% gamma percentile (KM)		1589.2163
76												
77	**Gamma Kaplan-Meier (KM) Statistics**											
78					Approximate Chi Square Value (65.58, α)	47.950106				Adjusted Chi Square Value (65.58, β)		47.702586
79					95% Gamma Approximate KM-UCL (use when n>=50)	276.93616				95% Gamma Adjusted KM-UCL (use when n<50)		278.37313
80												
81	**Lognormal GOF Test on Detected Observations Only**											
82					Shapiro Wilk Test Statistic	0.9011505				**Shapiro Wilk GOF Test**		
83					5% Shapiro Wilk Critical Value	0.9080000				Detected Data Not Lognormal at 5% Significance Level		
84					Lilliefors Test Statistic	0.1880078				**Lilliefors GOF Test**		
85					5% Lilliefors Critical Value	0.1881000				Detected Data appear Lognormal at 5% Significance Level		
86	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
87												
88	**Lognormal ROS Statistics Using Imputed Non-Detects**											
89					Mean in Original Scale	142.53372				Mean in Log Scale		3.0900439
90					SD in Original Scale	353.52693				SD in Log Scale		2.0734989
91					95% t UCL (assumes normality of ROS data)	204.82841				95% Percentile Bootstrap UCL		210.54442
92					95% BCA Bootstrap UCL	219.20161				95% Bootstrap t UCL		240.91456
93					95% H-UCL (Log ROS)	406.86040						
94												
95	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
96					KM Mean (logged)	4.8929153				KM Geo Mean		133.34174
97					KM SD (logged)	0.6807024				95% Critical H Value (KM-Log)		1.9898468
98					KM Standard Error of Mean (logged)	0.0739362				95% H-UCL (KM -Log)		194.21828
99					KM SD (logged)	0.6807024				95% Critical H Value (KM-Log)		1.9898468
100					KM Standard Error of Mean (logged)	0.0739362						
101												

	B	C	D	E	F	G	H	I	J	K	L	M
102	DL/2 Statistics											
103	DL/2 Normal						DL/2 Log-Transformed					
104					Mean in Original Scale	164.26966				Mean in Log Scale		4.3633197
105					SD in Original Scale	345.49006				SD in Log Scale		0.9297645
106					95% t UCL (Assumes normality)	225.14818				95% H-Stat UCL		150.10896
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Approximate Lognormal Distributed at 5% Significance Level											
111												
112	Suggested UCL to Use											
113					KM H-UCL	194.21828						
114												
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
119												