Preliminary Site Investigation with Supplementary Sampling

1 Bilambee Lane
Bilgola Plateau
NSW 2107

Prepared for
DreamBuild
(On behalf of others)

July 2020

New South Wales

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Acknowledgements and Copyright

The following imagery and documentation are attributed to and gratefully acknowledged:

Location Map: Google Maps

Aerial Photography: NSW Department of Land Property Information
Google Earth Pro, Google Maps

All other sources are referenced as footnotes within the document.

1 Executive Summary

Canopy Enterprises Pty Ltd (Canopy) was engaged by Peter Brush of DreamBuild Pty Ltd (Client) to undertake a Preliminary Site Investigation with supplementary sampling (PSI-SS) at the property located at 1 Bilambee Lane, Bilgola Plateau NSW 2107 (Site).

Canopy understands that a PSI-SS is required to facilitate the DA process with Council for a proposed commercial development with full shop front, two-story basement and two-story unit block above the shops. Details are contained in Table 1 of Section 3.1 and provided in Appendix A. Groundwater Technology Pty Ltd undertook a contamination investigation Ref: S8710 in January 1996.

This investigation has been undertaken in consideration of, and generally in accordance with, the relevant guidelines and regulatory documents with regard for the site-specific circumstances, as presented in Section 9 (among others). In particular, the Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites (EPA 2020) (Reporting Guidelines) and SEPP 55.

The full suite of findings and conclusions and recommendations are outlined in Section 8, however the salient points can be summarised as follows:

1. The Site operated as a service station until 1994 and since then as a car mechanic's workshop;
2. A 1996 investigation conducted by Groundwater Technologies Australia concluded that USTs had been removed from the Site and that no petroleum hydrocarbon or lead contamination had been identified on the Site. A soil vapour survey at the time showed low concentrations of volatile organic compounds in the subsurface of the Site;
3. Five boreholes were drilled across the Site as part of this investigation's supplementary sampling program which reached a depth of 11.6 m;
4. Groundwater (believed to be non-continuous) was encountered in Boring B2 at a depth of approximately 6.6 m;
5. Results of the laboratory analysis undertaken showed concentrations of all analytes to be well below the adopted site criteria for the proposed land use;
6. The area under the workshop and service station building was unable to accessed, however given the consistency of results across the Site and noting that the material will be disposed of off-site it is not considered necessary to undertake a further assessment of the area;
7. A Construction Environmental Management Plan (CEMP) (or equivalent document) should be implemented which includes an 'unexpected finds' protocol;
8. Should any evidence become apparent during site/earth works that unexpected contamination evidenced by unusual soil discolouring and/or odours is encountered, work should stop until an experienced Suitably Qualified Environmental Consultant (SQEC) has been able to assess the situation and given advice on how to proceed. The same is valid should asbestos or asbestos fragments, USTs, pits, hoists or other contaminants or contamination sources be encountered;

9. Waste classification must be undertaken of any soil material to be disposed of off-site in accordance with the NSW EPA (2014) Waste Classification Guidelines Part 1, Classifying Waste. The fill layer soils sourced from underneath the workshop structures and service station building and the former bowser area must be separately stockpiled from the remainder of the site soils and the separate stockpiles independently tested and classified under supervision of a SQEC; and
10. Subject to the recommendations as outlined in Section 8 being satisfactorily implemented, Canopy considers the Site to be suitable for the proposed land use without further environmental assessment.

2 Project Introduction

Canopy Enterprises Pty Ltd (Canopy) was engaged by Peter Brush of DreamBuild Pty Ltd (Client) to undertake a Preliminary Site Investigation with supplementary sampling (PSI-SS) at the property located at 1 Bilambee Lane, Bilgola Plateau NSW 2107 (Site).

Canopy understands that a PSI-SS is required to facilitate the DA to Council for a proposed commercial development with full shop front, two-story car parking basement and two-story unit block above the shops. Details are contained in Table 1 of Section 3.1 and provided in Appendix A.

This investigation has been undertaken in consideration of and generally in accordance with the guidelines and regulatory documents as presented in Section 9 (among others) including in particular the Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites (EPA 2020) (Reporting Guidelines).

2.1 Previous Investigation

Groundwater Technology Australia Pert Ltd (GTA) conducted an Environmental Site Assessment at the Site in January 1996 and presented their findings in a report titled *Environmental Site Assessment* 1/1 Bilambee Rd Bilgola Plateau NSW 2107 with Ref: S8710 dated 25 January 1996 (GTA Report). The GTA Report concluded:

- *Laboratory results have revealed that concentrations of TPH and BTEX compounds were not detected (above the practical quantitation limit) within in any of the soil analyses at the site. All concentrations were therefore below the NSW EPA (1994) guidelines for sensitive land use.*
- *Total lead was below the NSW EPA (1994) guidelines in each of the soil samples analysed.*
- *GTA concludes from the available subsurface data that no petroleum hydrocarbon or lead contamination has been identified on the site. The site therefore meets the NSW EPA (1994) guidelines for sensitive landuse.*

2.2 Scope of Work

The scope of works for this assessment includes:

- A thorough review of the GTA Report;
- Review of information relating to the current Site condition, including:
  - Geological maps of the area;
  - Groundwater data; and
  - Acid Sulfate Soil Risk Map.

- Site history review comprising:
    - Historical aerial photography;
    - Historical Land Title Search;
    - NSW Environmental Protection Authority (EPA) Contaminated Land Searches;
    - Historical contamination assessments (if any); and
    - Historical information available under reasonable endeavour.
- Development of a conceptual site model (CSM);
- Identify potential areas of environmental concern (AECs) and associated contaminants of potential concern (COPCs);
- A detailed site inspection of the Site including drilling and sampling of soils;
- Laboratory analysis of select samples for COPCs; and
- Preparation of this Report.

It is noted that a temporary Groundwater Monitoring Well (GMW) was installed by STS Geotechnics as part of the Geotechnical works which allowed for Canopy to undertake sampling and analysis of the groundwater which was intercepted as part of the revised Scope.

3 Site Information and Surroundings

3.1 Site Identification

The Site details are summarised in Table 1 below:

Table 1: Summary of Site Details

Subject	Description
Site description (The Site)	Lot 5 in DP 229309 1 Bilambee Lane Bilgola Plateau NSW 2107
Site Area approximately	900 m^2
The Client:	C/o Peter Brush DreamBuild 6/37A King Road Hornsby NSW 2077 (On behalf of others)
Council and LEP	Northern Beaches Council Pittwater LEP 2014 (Updated 2020)
Present and proposed zoning	B1 – Neighbourhood Centre
Reason for Assessment	Proposed commercial development with full shop front, two-story basement and two-story unit block above the shops.
Approximate AHD	147 m AHD
Acid Sulfate Soil Class and Risk Profile	Pittwater LEP Part 7.1; ASS Map Index ASS_016.
Requirement as per Table 2.1 of the Acid Sulfate Soils Assessment Guidelines (1998) for this Class and the LEP Clause 6.1 (2)	*Class 5 Acid Sulfate Soils* *Works within 500 m of adjacent Class 1, 2, 3 or 4 land that is below 5 m AHD; and* *Works by which the watertable is likely to be lowered below 1 m AHD on adjacent Class 1, 2, 3 or 4 land.* Class 5 works are generally considered to be low risk for disturbance of potential or actual acid sulfate soils.
Supporting relevant information provided to Canopy:	Historic Environmental Site Assessment was prepared by Groundwater Technology Pty Ltd, Ref: S8710 dated 25 January 1996 (GT Report). Survey prepared by Bee & Lethbridge Pty Ltd Ref: 21601 Sheets: 1 dated 11 March 2020
Additional Information	This assessment has been undertaken by suitably qualified personnel with reference to the relevant Guidelines and Regulations in particular the Reporting Guidelines.

Figure 1 Location Map
1 Bilambee Lane Bilgola Plateau NSW 2107 (Source: Google Maps)

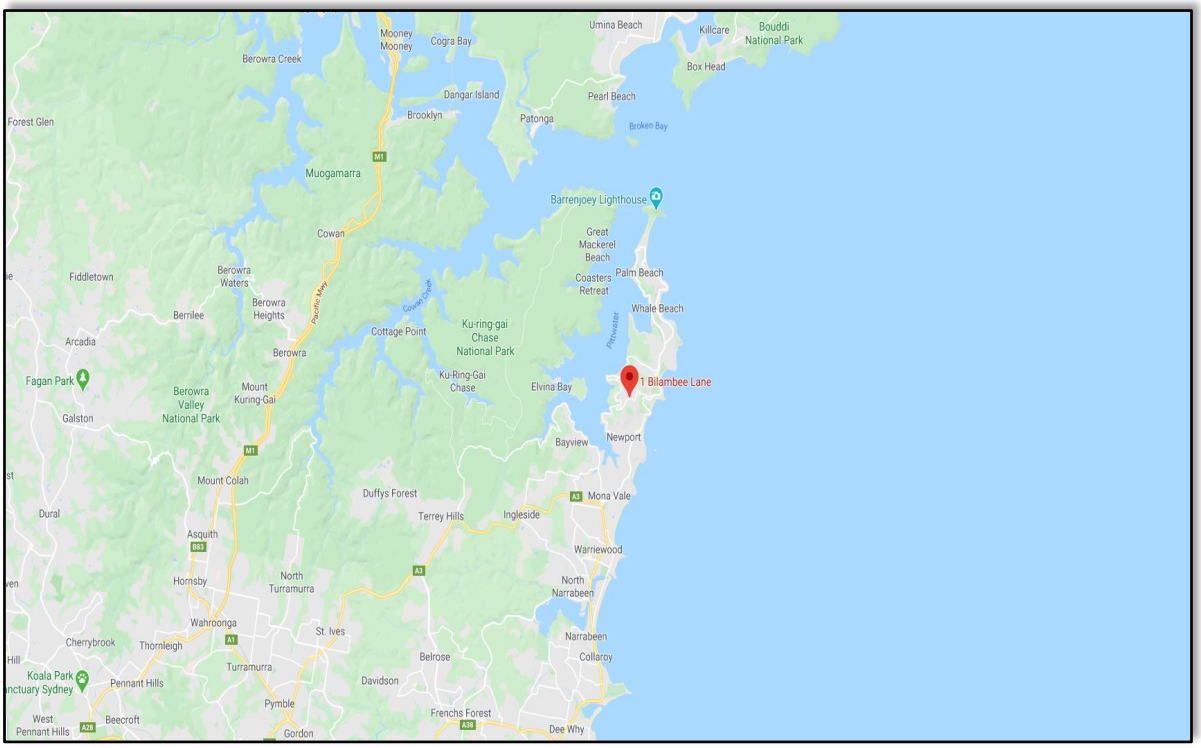
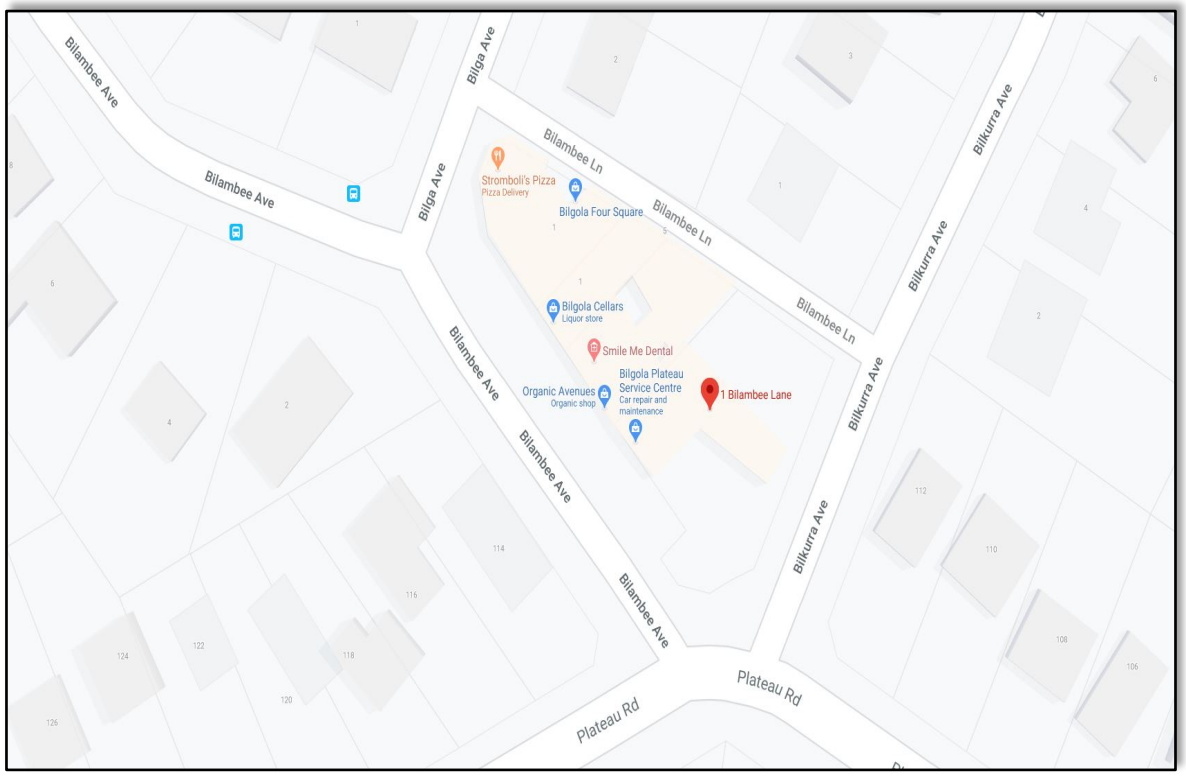


Figure 2 Location Map Close-Up
1 Bilambee Lane Bilgola Plateau NSW 2107 (Source: Google Maps)



3.2 Site Description / Land Use

The Site consists of an irregularly shaped block of land that is currently being used for commercial purposes as a workshop and associated car park. The Site has previously been used as a BP petrol station (prior to 1994). Bilambee Lane runs along the rear of the Site, tending to the north.

Residential housing predominantly surrounds the site. Site photographs are provided in Appendix B.

3.3 Topography

Review of the regional topographic maps from SIX Maps[1] and Free Map Tools[2] indicated that the site is located at approximately 147 m AHD.

The GTA Report summarises the topography as follows:

"The Site slopes generally to the north away from the pump islands with a gradient of approximately 2-3 degrees."

3.4 Hydrology and Hydrogeology

The GTA Report summarises the Hydrology and Hydrogeology as follows:

"Borehole data obtained from the Land and Water Conservation indicates there are four registered bores within 1km radius of the site. Depths to the aquifer range from 5.4 metres to 36.6 metres. The closest borehole is located approximately 0.9 km away to the south and extends to 10 m depth into fractured sandstone bedrock. No depth to aquifer information was provided for this borehole, however, GT considers that the borehole will not be impacted in any way by the site given both the geology of the area and the distance from the site."

"The nearest surface water is Pittwater situated 1.0 km to the east of the site. Bilgola Beach is located approximately 1.2 km southeast of the site. These waters are not likely to be impacted by any groundwater from the site."

3.5 Geology and Soils

The GTA Report summarises the Geology and Soil as following:

"The Sydney Sheet S1 56-5 1:250,00 regional geological map indicates that the site is located on a plateau underlain by the Quaternary sands of the Hawksbury Sandstone.

Underlying the concrete forecourt is an orange brown sand unit which becomes highly weathered with varying clay and silt content to 5.0m below the surface. In the area where the tank pits are located, is a layer of fill 2.8m depth. The fill layer is predominantly a medium grained sand."

[1] http://maps.six.nsw.gov.au/

[2] https://www.freemaptools.com/elevation-finder.htm

3.6 Acid Sulfate Soil Risk

The Site is located at approximately 146 m AHD and is not within 500 m of another ASS Class, hence an Acid Sulfate Soil Assessment in not considered necessary.

3.7 Per and Poly-Fluoroalkyl Substances (PFAS)

Information published by NSW Health[3] provides the following information:

NSW Environment Protection Authority (EPA) has established a PFAS investigation program and is prioritising sites around NSW where PFASs were used in significant quantities. The investigation is focussing on airports, firefighting training facilities and some industrial sites, particularly those sites where it is determined that there are exposure pathways to these chemicals through bore water usage, surface water usage or fishing.

It also appears that the main concern regarding pathways of this contaminant are centred around groundwater movement from or to a site.

The detailed historical research program described in Section 4 did not indicate that the Site would be a candidate for possible PFAS impact, therefore PFAS impact on the Site appears unlikely.

[3] http://www.health.nsw.gov.au/environment/factsheets/Pages/pfos.aspx

4 History

4.1 General History

The Canopy Report summarises the historical information, including Land Titles and aerial photography searches, as follows:

> *'The site was operational as a mechanic's workshop when the assessment was conducted on 14 December 1995.'*
>
> *'A background history search conducted on the site has revealed that all fuel tanks were removed from the site approximately two years ago and the site has been dormant since, operating only as a mechanic's workshop. A further site history investigation which involved searching through Pittwater Council records failed to reveal any prior history on the service station whilst it was active. All council records were destroyed by fire in 1963. Only anecdotal evidence was available from the Council which revealed that the site was operational from the late 1950's or early 1960's.'*

Sources and supporting information are provided in Appendix G.

4.2 Heritage Registers

The Site or any of its structures were not listed (at the time of preparation of this report) as a heritage item under Australian and NSW Heritage registers or under Schedule 5 of Council's LEP. The search did not identify the presence of any items of national or state significance in the vicinity of the Site.

The results of the heritage database search are provided in Appendix D.

4.3 EPA Records

Search of the NSW EPA's public register under the Protection of the Environment Operations Act 1997 (POEO Act) was undertaken (Appendix E).

The search identified there were no records in the database for the Site.

A search was conducted of the EPA's public contaminated land register (Appendix E). The search showed no entry for the Site.

4.4 SafeWork NSW Records

Due to time constraints of the investigation, a search of records of Safe Work NSW was not conducted.

4.5 Historical Land Title Search

Canopy undertook a search of Land Titles since 1996 for the Site. The results are summarised in Table 3 below:

Table 2: Summary of Historical Land Titles Information

Land Title Certificate Approximate Transfer Date To:	Purchaser/Leasers /Activity
Transfer 29 July 1988 Dealing No. X792159	John Francis & Patricia Adrienne Monaghan
Transfer 13 May 1996 Dealing No. 2206859	Dean William & Michele Marie Massey
Transfer 18 July 2019 Dealing No. AP401681J	Massey Super Property Pty Ltd
Transfer 30 June 2020 Dealing No. AQ213229	The Boss NSW Pty Ltd (present owner)

Note: Reasonable effort has been made to ensure titling accuracy to the extent practicable of the landowner/ ID, approximate date of land transfer and previous land sizes and format. However, the sole purpose and intent of the searches is to establish either general or any specific activities on the subject Site which may have a reflection on the potential for contaminated land. Therefore, information herein should not be relied upon for titling or any other purposes whatsoever.

The title certificates revealed that the Site has been owned by various commercial (Mechanic's workshop) entities since 1996. There are no indicators that the Site has been used for intensive industrial practices within this time period.

Copies of the detailed historical land title certificates obtained are included in Appendix F.

4.6 Aerial Photographs

Historical aerial photographs were sourced from Google Earth Pro. All historic photographs are shown in Appendix G, a summary of the findings is provided below.

Table 3: Summary of Historical Aerial Photograph Information

Year	Site Description and Surrounding Area
1971	The aerial photo is of poor quality. The Site itself appears to be a service station/ vehicle repair. Surrounding the Site is residential housing.
2003	Aerial photo quality is poor. The Site appears to feature a building and attached awning with a metal roof located to the west of the Site. This building appears to be attached to a building to the west. A driveway encapsulates the eastern section of the property. Surrounding the property is predominantly residential housing.
2009	The image quality is good. The Site and its structures appear to be primarily similar. Multiple motor vehicles can be seen within the driveway of the property. The area surrounding the Site remains more or less unchanged.
2014	The Site and its surroundings remain predominantly unchanged.
2018	The Site and its surroundings remain predominantly unchanged.

Note: Additional aerials are available on request

4.7 Summary of Historical Research

The information obtained from historical sources (GTA report and Canopy) reviewed has been found to be in general agreement with other sources. The Site's history can reasonably be summarised as land that was utilised as a service station and mechanic's workshop since the 1950s or early 1960s. In approximately 1994 USTs were removed from the Site. The Site has been utilised primarily as a mechanic's workshop until present.

5 Field Works and Supplementary Sampling Program

5.1 Site Inspection and Sampling

Two site inspections were undertaken by Dr Gunnar Haid, Canopy's Senior Environmental Engineer, on 12 June 2020 and 19 June 2020. The Site consists of an irregularly shaped block of land presently being used for commercial purposes as a workshop and associated car park. The Site is part of a commercial neighbourhood centre consisting of several small shops and local businesses. The Site had previously been used as a BP petrol station (prior to 1994).

The on-site structures consisted of a workshop/garage, the sales room and canopy of the former service stations. GTA reports that all Underground Storage Tanks (USTs) and fuel bowsers had been removed prior to their 1996 assessment. The area of the former tank pit has been re-surfaced with road base south of the canopy. The rest of the Site is concrete-covered with the concrete surface being in average condition showing some cracks and signs of previous repair work. The area in front of the workshop entry shows two rectangularly shaped concrete slabs that indicate that small UST's may have been, or still are, present in that area.

Pipework leading from the former tank pit to the bowsers appear to be still in place in the areas of the former bowsers.

There is a small metal shed located north-east of the firmer sales room. The former service station building and the neighbouring building to the north form the boundary to the north. The rest of the Site is not fenced and is readily accessible to the public. (Site photographs are provided in Appendix B)

There is no vegetation on the Site other than poorly maintained grass and small bushes in small garden beds along the eastern and southern borders.

The Site is approximately 900 m^2 in size. The NSW EPA Sampling Design Guidelines state a minimum of five to six borehole locations are required to be drilled (across the subject site) to satisfactorily characterise a site of that size.

The desktop research program had indicated two areas of potential environmental concern (see Section 6.1). One was the possible presence of a layer of imported fill material of unknown origin at the Site, the other was the use of the Site as a service station (until 1994) and a car repair workshop since then.

It is Canopy's opinion that these areas of concern can adequately be addressed by limited sampling carried out supplementary to a thorough desktop research program. The advancement of five boreholes using a truck-mounted drill rig allowed toa check for the presence of fill material in the area across the Site and also for select soil samples to be submitted for CoPC. The borehole locations are shown in the Site Map as contained within Appendix B.

Soil sampling was conducted by sampling at five borehole locations (B1–B5). The locations for drilling were cleared of underground utilities before carrying out the drilling activities. Samples were obtained directly from the auger by hand for shallow samples, and via a split spoon sampling tool for deeper samples, using disposable gloves ensuring to the extent possible that cross contamination between layers and boreholes was avoided.

Water sampling in the temporary monitor well installed in Boring B2 was conducted by developing the well on the day of installation using a disposable bailer and by sampling the well seven days later again using a disposable bailer. The well was purged prior to sampling to ensure that no water that had possibly been in contact with the headspace inside the well was sampled.

All sample containers were fully filled in an attempt to minimise head space and immediately placed in an electrically (battery and/or mains) powered portable refrigeration unit for storage during field work and for transport to the laboratory. A chain of custody (CoC) form was filled in with the sample names, sampling date and required analyses. This documentation and the samples were then sent to the laboratory for analysis. CoC documentation is presented in Appendix H.

The subsurface of the Site consisted broadly speaking of a layer of orange brown silty clay and silty sandy clay. Fill material was encountered in Boring B3 to a depth of 0.5 m. Boring B2 was drilled in the south-eastern corner of the former tank pit and fill material consisting of medium-grained sand used to backfill the excavated tank pit was encountered to a depth of 2.9 m. Bore logs detailing the subsurface conditions are provided in Appendix I.

No staining or other abnormal soil discolouring was encountered in any of the bore holes. No odours typically associated with hydrocarbon impact was noted. Groundwater was not intercepted in Boring B2 at a depth of approximately 6.5 m. The deepest hole reached a depth of 11.6 m.

A total of 13 primary soil samples were collected from soils at various depths and submitted to the laboratory for analysis. One water sample (Sample WB2) was obtained from a temporary monitor well installed in Boring B2.

Samples were submitted to NATA accredited laboratory Envirolab Services in Chatswood, NSW. Analytical methods complied with NEPM and NSW EPA requirements, with Practical Quantitation Limits (PQLs) used in the laboratory tests less than the adopted site investigation criteria.

The surface of the Site and all soil from the boreholes were inspected for the presence of ACM. No signs of ACM sheets or fragments thereof were noticed on the surface or in any of the soil samples.

Samples were analysed in accordance with the analytical schedule summarised in the below table.

Table 4: Analytical Schedule

Matrix type	Sample ID	TRH/ BTEX	PAH	Metals (8)	PCB	OC/OP
Soil	B1 1.0m	X	X	X	X	X
Soil	B1 2.0m	X	-	X (Lead)	-	-
Soil	B1 3.0m	X	-	X (Lead)	-	-
Soil	B2 1.0m	X	X	X	X	X
Soil	B2 3.0m	X	-	X (Lead)	-	-
Soil	B2 6.5m	X	-	X (Lead)	-	-
Soil	B3 1.0m	X	-	X (Lead)	-	-
Soil	B3 2.5m	X	-	X (Lead)	-	-
Soil	B4 1.0m	X	-	X (Lead)	-	-
Soil	B4 2.5m	X	-	X (Lead)	-	-
Soil	B4 8.5m	X	-	X (Lead)	-	-
Soil	B5 0.5m	X	-	X (Lead)	-	-
Soil	B5 2.5m	X	-	X (Lead)	-	-
Soil	D1	X	-	X (Lead)	-	-
Water	WB2	X	-	X (Lead)	-	-

5.2 Assessment Criteria

Assessment criteria relevant to residential (low density) land uses were selected from Schedule B1 Guidelines on Investigation Levels for Soil and Groundwater (National Environment Protection (Assessment of Site Contamination) Measure 1999, amended 2013.

Additional screening criteria were adopted from the Cooperative Research Centre for Contaminant Assessment and Remediation of the Environment (CRC CARE) Health screening levels (HSLs) for Petroleum Hydrocarbons in Soil and Groundwater (Friebel & Nadebaum, 2011).

The CRC CARE guidance provides the latest approach for assessing the risks of petroleum mixtures for a variety of land use scenarios, and in particular the evaluation of the direct contact and vapour migration intrusion pathways. Consistent with CRC CARE (2013) Petroleum Vapour Intrusion guidance, soil HSLs were applied to the Site, as detailed below.

The guidelines selected as relevant screening criteria for soil include those designed for the inhalation of vapour and for direct contact, considering:

- Health Investigation levels (HILs) for soil contaminants — Residential A (HIL-A);
- Soil HSL D for Vapour Intrusion for soil specific to the Site (sand <1 m); and
- Soil HSL for Direct Contact (CRC Care 2011).

Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for soil were used for an 'urban residential and public open space' exposure scenario as outlined in NEPM (2013) and adjusted for the soil type.

EILs for selected metals were calculated based on the most conservative added contaminant limit (ACL) values presented in Schedule B (1) of NEPM (2013) and published ambient background concentration (ABC) values[4]. For ease of comparison, the same conservative EIL levels have been adopted as used in the JKE Report (25th percentile for background levels in old suburbs with high traffic).

Groundwater data were compared to relevant Tier 1 screening criteria in accordance with NEPM (2013). Groundwater HSL A/B for vapour intrusion (4 – 8 m) were used for organics.

5.3 Sample Results

A summary of laboratory results from the investigation is provided in Table 7 and Appendix H, the reports as provided by the laboratory are included in Appendix H. The following key findings were reported by the laboratory:

- BTEX / TRH:

  All samples (soil and groundwater) reported concentrations below the adopted site criteria.
- Eight Priority Heavy Metals:

  All samples reported concentrations below the adopted site criteria.
- PAHs:

  All samples reported concentrations below the adopted site criteria.
- OCP, OPP & PCBs:

  All samples reported concentrations below the adopted site criteria.

[4] Olszowy, H, Torr, P, Imray, P 1995, Trace element concentrations in soils from rural and urban areas of Australia, Contaminated sites monograph no. 4, South Australian Health Commission

A summary of the results and investigation criteria applied to this investigation is provided below.

Table 5: Assessment Criteria and Results Summary

Analyte	Criteria	Maximum Concentration [mg/kg]	Exceedance	Samples exceeding criteria
Arsenic	100[1]	<4	No	NA
Cadmium	20[1]	<0.4	No	NA
Chromium	100[1]	58	No	NA
Copper	6000[1]	2	No	NA
Lead	300[1]	21	No	NA
Mercury	40[1]	<0.1	No	NA
Nickel	400[1]	2	No	NA
Zinc	7400[1]	25	No	NA
F1 (TRH C6-C10 less BTEX)	45[2]	<25	No	NA
F1 (Groundwater) (TRH C6-C10 less BTEX))	600 [ug/L]	<10	No	NA
F2 (TRH C10-C16 less Naphthalene)	110[2]	<50	No	NA
C10 – C16	3300[3]	<50	No	NA
C16 – C34	4500[3]	<100	No	NA
C34 – C40	6300[3]	<100	No	NA
Benzene	0.5[2]	<0.2	No	NA
Benzene (Groundwater)	500[4] [ug/L]	<1	No	NA
Ethyl benzene	55[2]	<1	No	NA
Toluene	160[2]	<0.5	No	NA
Xylene	40[2]	<1	No	NA
Naphthalene	3[2]	<1	No	NA
Total PAH	300[1]	3.7	No	NA
PAHs (as BaP TEQ)	3[1]	<0.5	No	NA
PCBs	1[1]	<0.1	No	NA
OCP	See summary table in Appendix	BDL	No	NA
OP		BDL	No	NA

BDL = Below Detection Limit

1 Health Investigation Levels (HIL) for soil contaminants – Residential A (HIL-A)

2 Health Screening Levels (HSL) for soil contaminants in sand and at a depth of 0 m <1 m

3 Soil Health Screening Levels for Direct Contact HSL-A Low Density Residential (CRC Care 2011)

4 Groundwater Health Screening Levels HSL A/B for vapour intrusion in silt (4 – 8 m)

6 Conceptual Site Model

Based on the information presented above, the following Conceptual Site Model is presented:

6.1 Potential Areas and Contaminants of Concern

Based on the Site history review and the observations made during the Site visit, potential Areas of Environmental Concern (AECs) associated with Contaminants of Potential Concern (CoPCs) that have been identified to potentially be present on-site are summarised as follows:

Table 6: Summary of AEC

Potential AECs / Activity	Contaminants of Potential Concern
Possible fill layer present across the Site and/or underneath buildings.	Heavy metals, TRH/BTEX, PAHs, OC/OPs, PCBs, Asbestos
Long history of commercial or industrial land use	Heavy metals, TRH/BTEX, PAHs, OC/Ops, PCBs, Asbestos
Use as a service station prior to 1994	BTEX/TRH, Lead, PAH

Based on the site history review and the observations made during the field work, it is difficult to target any specific CoPC. In such cases it is customary to analyse samples for a broad range of the most commonly encountered substances in an attempt to cover a wide range of potential impacts.

Such analysis includes Polycyclic Aromatic Hydrocarbons (PAH), Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Organochlorine Pesticides (OC) and Organophosphorus Pesticides (OP), heavy metals, and Polychlorinated Biphenyls (PCB). This set of analytes is commonly used to ensure to the extent practicable that there have been no impacts from a range of past activities that may have occurred on (or near) a Site (to the extent the historic activities became known under research or could otherwise be reasonably suspected) or if there is fill material of unknown origin present at a Site.

The presence of fill materials can often only be determined by the inclusion of foreign objects (e.g. bricks, steel etc.) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials also depends on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably determine the extent of the fill.

6.2 Potential Impact Areas

Due to the Site having been used as a service station prior to 1994, sources of contaminants are not limited to activities conducted on the surface of the Site but may also be caused by subsurface sources such as leaks from the previous USTs and associated pipework.

Materials commonly present in imported fill can be used as an indication of the depth of disturbance. Where fill materials impacted with certain contaminants are found to be present, these contaminants have the potential to migrate deeper into natural soils or sometimes off-site (transported via groundwater flow).

Areas most likely to be potentially impacted would be downgradient from the former bowsers or where USTs were present or may still be present. In particular, the fill material near the base of the UST pit. If impact is found, it may have potential to leach or migrate deeper into the soil profile or be transported via groundwater, hence these areas were targeted by the sampling program.

The GTA reports states that all USTs had been removed from the Site but it must be noted that the workshop areas were inaccessible at the time of this assessment and that there is a possibility for potential sources of contamination to be present in that area. The most common sources in workshops include aboveground and underground tanks for the storage of waste oil, hydraulic hoists, drum storage areas and separator pits. During an interview, the current operator of the workshop indicated that neither of the above-mentioned items were present in the workshop.

Waste oil and hydraulic hoist fluids are of high viscosity and typically do not cause wide-spread impact if accidentally released. This is particularly the case in low permeability soils with a deep (believed to be non-continuous) water as encountered at the Site.

It is further noted that during decommissioning of service stations it is not uncommon that previously unknown and unexpected USTs are encountered despite the service station having been decommissioned and the known USTs having been removed.

No contaminants were detected at the Site despite areas of high likelihood of being impacted having been targeted (including during the 1996 GTA investigation). Based on the above, the Site is considered to present a low likelihood of contamination to be present at concentrations of concern.

6.3 Potential Off-Site Migration

There are a number of ways contaminants can migrate from a site. Usually off-site migration is caused by combination of dust (wind), surface water runoff, surface water seeping into the groundwater or groundwater migration. The following properties influence the potential for contaminants to migrate off-site:

- Type of contaminant (solid/liquid, solubility, volatility, general mobility);
- The vertical location of the contaminants;
- The amount (concentration) of contaminants;
- The extent of the contaminants (widespread, localised); and
- The site topography, geology, hydrology and hydrogeology (see sections above).

The CoPC identified at the Site as outlined in Table 6 are solid (e.g. heavy metals), liquid (e.g. TPH, PAH, PCBs dissolved in transformer oils) and potentially volatile (BTEX).

The ground surface of the Site is mostly covered by concrete or grassed areas, hence the potential for windblown contaminants to migrate from the Site is considered to be relatively low.

Given the fact that groundwater was only encountered in one soil boring (B2), water encountered at the Site is believed to be perched water and not part of a continuous aquifer table in the area. In combination with the silty low permeability soil profile, the encountered water is not considered to pose a risk for contamination to migrate off-site. No contaminants were detected at the Site at levels of concern and the site is considered to present a low risk for contamination to migrate off-site.

6.4 Potential Receptors

Based on the information available to date, the potential receptors of concern are as follows:

- Site occupants, workers or the public;
- Future users of the Site; and
- Personnel undertaking the excavation of the Site (or other site works).

Potential receptors may be exposed to CoPCs through direct contact with impacted soils and/or ingestion and/or inhalation of dusts / fibres associated with impacted soils or groundwater. No contaminants were detected at the Site at levels of concern and the site is considered to present a low risk for potential receptors.

6.5 Potential Contaminant Pathways

Preferential pathways at the Site have been identified as natural and/or man-made pathways that can result in the preferential migration of CoPCs as either liquids or gasses.

Preferential pathways at the Site have been identified as natural and/or man-made pathways that result in the preferential migration of CoPCs as either liquids or gasses.

Man-made preferential pathways may also be present at the site. Shallow fill material is often considered to have higher permeability relative to more compacted natural deeper soils. Subsurface utilities and pipes, especially the fill material surrounding them is also a common preferential pathway that may be present at this Site.

No contaminants were detected at the Site at levels of concern and as a result there is a low risk for contamination to migrate off-site via these preferential pathways.

7 Quality Control and Quality Assurance

7.1 Field QC Samples

Intra-laboratory field duplicate (blind or field duplicates) samples are used to determine the precision associated with all or part of the sample collection and measurement process. They also provide an indication of heterogeneity of the sample matrix. They are two independent samples collected as nearly as possible, from the same point in space and time. The two samples are collected from the same source using the same type of sampling equipment. Each field duplicate is collected and stored in separate sample containers and transported in the same shipping container[5].

The results of the analyses on blind duplicate sample pairs are assessed by calculating the Relative Percent Differences (RPDs) between the results. The RPD is calculated as the difference between the results divided by their mean value and expressed as a percentage. If the RPD exceeds the value adopted for any analytes, additional investigation will be required, or justification provided for not conducting additional investigation.

RPD values are considered acceptable if they are less than:

- 30% for inorganics and 50% for organics for results greater than ten times the laboratory's practical quantitation limit (PQL);
- 50% for inorganics and 70% for organics for results between five and ten times the PQL;
- 100% for results less than five times the PQL.

The RPDs obtained as a result of this investigation are summarised as follows:

Table 7: Calculated RPDs for Intra Laboratory Blind Duplicates

Analyte	Parent	Dupl i-cate	PQL [mg/kg]	Parent [mg/kg]	Duplicate [mg/kg]	Accepted RPD %	RPD % [rounded]
Benzene	B5, 0.5 m	D1	0.2	BDL	BDL	-	NA*
Toluene	B5, 0.5 m	D1	0.5	BDL	BDL	-	NA*
Ethylbenzene	B5, 0.5 m	D1	1	BDL	BDL	-	NA*
Xylenes	B5, 0.5 m	D1	3	BDL	BDL	-	NA*
All TRH	B5, 0.5 m	D1	NA	BDL	BDL	-	NA*
* RPD values are only calculates where both results are above the laboratory Practical Quantitation Limit (PQL)							

The above RPDs all fall within the acceptable levels and results are hence considered acceptable for the purpose of this investigation.

[5] Lee, C. Environmental Engineering Dictionary. 4th ed., Government Institutes, 2005.

Inter-laboratory duplicate samples are field duplicate samples submitted to two different laboratories to provide a check of the analytical performance of the primary laboratory and specifically, the reproducibility of primary laboratory data.

The laboratory chosen for the analysis of all samples is NATA registered and has a rigorous quality program in place (See laboratory reports in Appendix H). It is regularly audited as part of the NATA registration.

It is Canopy's opinion that the quality control implemented by the laboratory is sufficiently rigorous for this type of investigation, hence inter-laboratory duplicate samples, trip blanks and trip spikes were not submitted as part of this investigation.

Potential cross-contamination between sampling locations can be an issue at contamination assessments. Rinsate samples are used to assess the effectiveness of decontamination procedures. Levels of contaminants resulting from cross-contamination between sample locations would in all likelihood overestimate site impact rather than mask the presence of contaminants. No rinsate samples were submitted as part of this investigation which was, for the reasons given above, considered acceptable for this investigation.

7.2 Laboratory Quality Program

Laboratory QA/QC is provided in the laboratory reports in Appendix H. Laboratory QC analytical results are summarised below:

- Laboratory analysis of soil samples was undertaken by a NATA accredited environmental testing laboratory.
- All soil samples were extracted and analysed within holding times.
- No target analytes were detected in any of the method blanks.
- RPDs for the laboratory duplicate soil samples were within the acceptable range for all samples.
- Percentage recovery results for laboratory control samples were within the acceptable range for all samples.
- Percentage recovery results for surrogate samples were within the acceptable range for all samples.
- Percentage recovery results for matrix spikes were within the acceptable range for all samples.

8 Findings and Conclusions

Based on the results of the investigation and subject to the limitations in Section 11 (noting the investigation is concerned with soils only) the following conclusions are made:

1. The Site is located in a predominantly suburban residential area. It has a size of approximately 900 m^2;

2. The Site operated as a service station until 1994 and since then as a car mechanic's workshop;

3. A 1996 investigation conducted by Groundwater Technologies Australia concluded that USTs had been removed from the Site and that no petroleum hydrocarbon or lead contamination had been identified on the Site. A soil vapour survey at the time showed low concentrations of volatile organic compounds in the subsurface of the Site;

4. Five boreholes were drilled across the Site as part of this investigation's supplementary sampling program which reached a depth of 11.6 m;

5. The subsurface of the Site was found to contain silty clay and silty sandy clay; Imported fill was only encountered in Borehole B1 near the eastern boundary to a depth of 0.5 m and in the former tank pit to a depth of 2.9 m;

6. Groundwater (believed to be non-continuous) was encountered in Boring B2 at a depth of approximately 6.6 m;

7. A total of 13 primary soil samples and one water sample were submitted to the laboratory and select samples were analysed for a range of analytes as part of the investigation;

8. Results of the laboratory analysis undertaken showed concentrations of all analytes to be well below the adopted site criteria for g the proposed land use;

9. Visible assessment of samples did not indicate the presence of asbestos in soils, and in particular in the two borings where imported fill was encountered;

10. The area under the workshop and service station building was unable to accessed, however given the consistency of results across the Site and noting that the material will be disposed of off-site it is not considered necessary to undertake a further assessment of the area (see Recommendations); and

11. Based on the above and subject to the recommendations as stated below being satisfactorily implemented, Canopy considers the Site to be suitable for the proposed land use without further environmental assessment.

8.1 Recommendations

Based on the above information, Canopy recommends that:

1. All precautions and requirements should be managed in conjunction with the redevelopment and in accordance with the presumed forthcoming Construction Environmental Management Plan (CEMP) (or equivalent document). The CEMP should include an 'unexpected finds' protocol;

2. Should any evidence become apparent during site/earth works that unexpected contamination evidenced by unusual soil discolouring and/or odours is encountered, work should stop until an experienced Suitably Qualified Environmental Consultant (SQEC) has been able to assess the situation and given advice on how to proceed. The same is valid should asbestos or asbestos fragments, USTs, pits, hoists or other contaminants or contamination sources be encountered;

3. Waste classification must be undertaken of any soil material to be disposed of off-site in accordance with the NSW EPA (2014) Waste Classification Guidelines Part 1, Classifying Waste. The fill layer soils sourced from underneath the workshop structures and service station building and the former bowser area must be separately stockpiled from the remainder of the site soils and the separate stockpiles independently tested and classified under supervision of a SQEC;

The conclusions and recommendations should be read together in conjunction with the full report and the Limitations.

9 List of Key Guidelines and Regulations

- National Environment Protection Council (NEPC), (2013). National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No 1);
- NSW EPA Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites (April 2020);
- Contaminated Sites: Sampling Design Guidelines, NSW EPA, 1995 (EPA 1995);
- State Environmental Planning Policy No. 55;
- EPA Waste Guidelines Part 1: Classifying Waste (2014);
- Ahern C R, Stone, Y, and Blunden B (1998). Acid Sulfate Soils Assessment Guidelines Published by the Acid Sulfate Soil Management Advisory Committee, Wollongbar, NSW, Australia (Acid Sulfate Soils Guidelines);
- CRC CARE 2017, Risk-based management and remediation guidance for benzo(a)pyrene, CRC CARE Technical Report no. 39, CRC for Contamination Assessment and Remediation of the Environment, Newcastle, Australia;
- Olszowy, H, Torr, P, Imray, P 1995, Trace element concentrations in soils from rural and urban areas of Australia, Contaminated sites monograph no. 4, South Australian Health Commission.

10 List of Abbreviations

A list of the common abbreviations that may be used throughout this report is provided below.

ACM	Asbestos Containing Material
AEC	Area of Environmental Concern
AHD	Australian Height Datum
B(a)P	Benzo(a)pyrene
bgl	Below Ground Level
BTEX	Benzene, toluene, ethylbenzene and xylenes
CEMP	Construction Environmental Management Plan
CoPCs	Contaminants of Potential Concern
CoC	Chain of Custody
CRC CARE	Cooperative Research Centre for Contaminant Assessment and Remediation of the Environment
CSM	Conceptual Site Model
DA	Development Application
DP	Deposited Plan
DQOs	Data Quality Objectives
DSI	Detailed Site Investigation
EMP	Environmental Management Plan
EPA	NSW Environment Protection Authority
ha	Hectare
HIL	Health based investigation level
HSL	Health screening levels
LOR	Limit of Reporting
NEPM	National Environment Protection Measures
NHMRC	National Health and Medical Research Council
OC	Organochlorine Pesticides
PAHs	Polycyclic Aromatic Hydrocarbons
PFAS	Per- and Poly-Fluoroalkyl Substances
PCB	Polychlorinated Biphenyl
PQL	Practical Quantification Limit
RAP	Remedial Action Plan
RPD	Relative Percentage Difference
PSI	Preliminary Site Investigation
SAP	Sampling Analysis Plan
TCLP	Toxic Characteristic Leaching Potential
VOC	Volatile Organic Compounds
TRH	Total Recoverable Hydrocarbons

11 Limitations

The findings of this Report are based on the Scope of Work as defined herein noting the investigation is limited to the site soils (notwithstanding limited observations of structures if relevant due to the potential for the presence of ACMs). Canopy Enterprises Pty Ltd (Canopy) performed services in a manner consistent with industry standards for the undertaking similar works. The assessment was undertaken with regard to the proposed development and land use.

It is not possible to identify all hazardous or toxic materials which may be present on the Site and this assessment should not be interpreted as a guarantee that hazardous or toxic materials (including any hazardous or toxic materials not referred to) do not exist across the Site or between sampling points of the identified Areas of Environmental Concern (AEC).

Canopy accepts no liability for use or interpretation by any person or entity other than reasonable use and interpretation by the Client or their representative who engaged the works or relevant third parties and which relates directly to the intended purposes of the investigation.

All conclusions and considerations regarding this property represent the professional opinions of Canopy's personnel involved with the project and should not be considered a strictly legal interpretation of existing environmental guidelines or regulations.

Canopy assumes no responsibility or liability for errors in the public data utilised, statements from sources outside of Canopy or any consequential developments arising outside of the scope of this project. In the unlikely event however that Canopy was proven to be in error, given the nature, scale and cost of the assessment in comparison to the costs of the underlying works Canopy's liability for consequential damage is limited to the value of Canopy's engagement to the extent the law permits.

This Report may only be used for the specific purposes for which it was commissioned and in accordance with the terms of engagement. Canopy retains unfettered ownership of the Report, and its contents, to the extent the law permits, until all payment obligations have been fulfilled. In the unlikely event that any outstanding debts are referred to a third- party debt collector all additional costs associated with the collection of the debt will be borne by the Client, including any commission payable by Canopy or any unawarded legal expenses.

The Report should not be reproduced in part or full without joint authorisation from the Client and Canopy unless related to its intended purposes, in which case all relevant acknowledgements should be included.

Appendix A
Architecturals


Bilga Ave
Bilambee Ln
Stromboli's Pizza
Pizza Delivery
Bilgola Four Square
Bilambee Ln
Bilkurra Ave
Bilgola Cellars
Bilambee Ln
Bilambee Ave
Smile Me Bondi
Organic Avenue
PROPOSED SITE
Bilgola Plateau
Bilkurra Ave
Bilambee Ave
Bilkurra Ave
Bilambee Ave
Plateau Rd

NOTES:

1) CAUTION: SHOULD ANY DEVELOPMENT OR CONSTRUCTION BE PLANNED ON OR NEAR THE BOUNDARIES, THE BOUNDARIES SHOULD BE CLEARLY MARKED ON SITE.

2) AREA AND DIMENSIONS HAVE BEEN SURVEYED FROM PLANS MADE AVAILABLE AT LAND REGISTRY SERVICES.

3) ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM P.M. 51491 RL 141.332 A.H.D.

4) TREE SPREADS ARE DIAGRAMMATIC ONLY AND ARE NOT SYMMETRICAL.

5) UNDERGROUND (NON VISIBLE) SERVICE LINES HAVE BEEN SHOWN FROM "DIAL BEFORE YOU DIG" SERVICE AUTHORITY RECORDS & ARE DIAGRAMMATIC ONLY IN REGARD TO THEIR POSITION & WIDTH UNLESS STATED OTHERWISE.

6) SPOT LEVELS ARE ACCURATE.

7) BEARINGS SHOWN ARE ON MAGNETIC MERIDIAN.

8) CONTOUR INTERVAL 0.25 METRE.

9) CONTOURS ARE INDICATIVE OF GROUND FORM ONLY. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

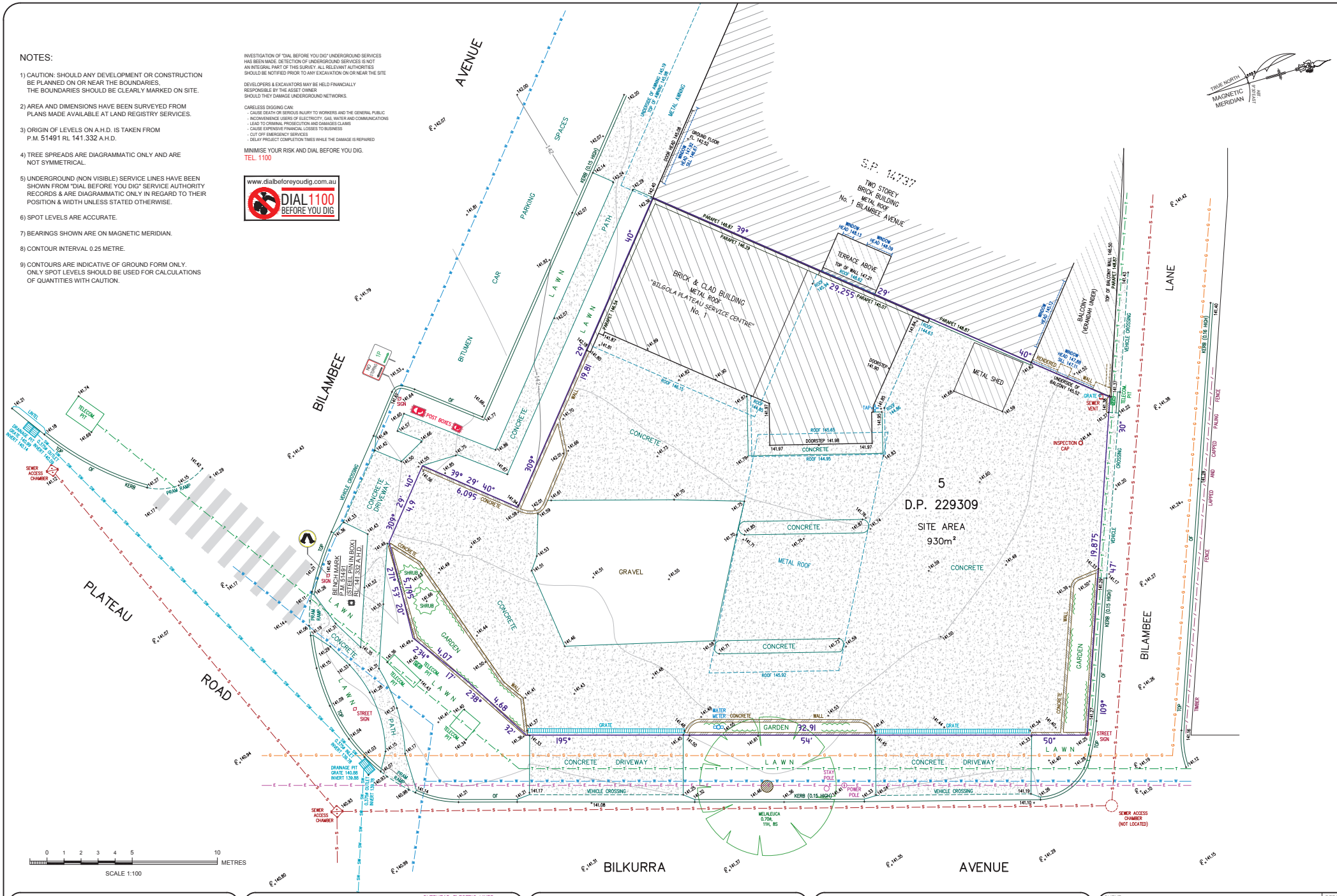
INVESTIGATION OF "DIAL BEFORE YOU DIG" UNDERGROUND SERVICES HAS BEEN MADE. DETECTION OF UNDERGROUND SERVICES IS NOT AN INTEGRAL PART OF THIS SURVEY. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE

DEVELOPERS & EXCAVATORS MAY BE HELD FINANCIALLY RESPONSIBLE BY THE ASSET OWNER SHOULD THEY DAMAGE UNDERGROUND NETWORKS.

CARELESS DIGGING CAN:
- CAUSE DEATH OR SERIOUS INJURY TO WORKERS AND THE GENERAL PUBLIC
- INCONVENIENCE USERS OF ELECTRICITY, GAS, WATER AND COMMUNICATIONS
- LEAD TO CRIMINAL PROSECUTION AND DAMAGES CLAIMS
- CAUSE EXPENSIVE FINANCIAL LOSSES TO BUSINESS
- CUT OFF EMERGENCY SERVICES
- DELAY PROJECT COMPLETION TIMES WHILE THE DAMAGE IS REPAIRED

MINIMISE YOUR RISK AND DIAL BEFORE YOU DIG.
TEL. 1100

www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG



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Bee & Lethbridge
Quality Surveying & Development Solutions

LEGEND

TREE 0.10ø, 9H, 4S	DENOTES APPROX. 0.10m DIAMETER OF TREE; DENOTES APPROX. 9m HEIGHT OF TREE; DENOTES APPROX. 4m SPREAD OF TREE
℄	DENOTES CENTRE LINE OF ROAD
GUTTER	DENOTES TOP OF GUTTER
TOW	DENOTES TOP OF WALL
OVERHEAD ELECTRIC LINES	E E E E E E E E
BOARDS SEWER	S S S S S S S
TELECOMMUNICATION LINES	T T T T T T T
WATER LINES	W W W W W W W
GAS LINES	G G G G G G G
STORMWATER LINES	SW SW SW SW SW

WARREN L. BEE
REGISTERED SURVEYOR N.S.W.
IDENTIFICATION No. 448

PLAN SHOWING BOUNDARIES, RELATIVE HEIGHTS & PHYSICAL FEATURES OVER LOT 5 IN D.P. 229309 KNOWN AS No. 1 BILAMBEE LANE, BILGOLA PLATEAU.

L.G.A.: NORTHERN BEACHES

CLIENT	DREAMBUILD			REF No.	21601
PROPERTY	No. 1 BILAMBEE LANE, BILGOLA PLATEAU				
DATUM	A.H.D.	SCALE	1:100 @ A1	DATE	11/03/2020
SURVEYED	W.B./S.P.	DRAWN	R.M.	DWG No.	21601
				SHEET No.	1 of 1
				REV No.	00

Appendix B
Site Map, Sampling Locations, Site Photographs

Site Map

Note: Red line is the approximate boundary of Site, red dots show approximate sampling locations

Source: Near Map

Photo 1:
Site as seen from across Bilkurra Ave looking North

Photo 2:
Close-up of the former bowser area

Photo 3:
The former tank pit is visible as the un-paved area

Photo 4:
Area in front of the worksop

Photo 5:

Split spoon sampling

Appendix C
Groundwater Borehole Search Results

WaterNSW
Work Summary

GW019922

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): GENERAL USE

Work Type: Bore open thru rock
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 01/01/1962

Final Depth: 10.00 m
Drilled Depth: 10.05 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property:

Standing Water Level (m):

GWMA:
GW Zone:

Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	NARRABEEN	20
Licensed:			

Region: 10 - Sydney South Coast
River Basin: 212 - HAWKESBURY RIVER
Area/District:

CMA Map: 9130-1S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)

Northing: 6275420.000
Easting: 343609.000

Latitude: 33°38'58.5"S
Longitude: 151°18'48.6"E

GS Map: -

MGA Zone: 56

Coordinate Source: GD.,PR. MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Corrugated Galvan	-0.60	1.20	152			Driven into Hole
1	1	Casing	Drilled	1.20	10.00	127			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.60	0.60	Soil	Soil	
0.60	10.05	9.45	Sandstone	Sandstone	

Remarks

24/11/1981: LOT 175A YORK TERRACE NEWPORT

Appendix D
Heritage Register Search Results

Heritage NSW

Search for NSW Heritage

Return to search page where you can refine/broaden your search.

Statutory listed items

Information and items listed in the State Heritage Inventory come from a number of sources. This means that there may be several entries for the same heritage item in the database. For clarity, the search results have been divided into three sections.

- **Section 1** - contains Aboriginal Places declared by the **Minister for the Environment** under the National Parks and Wildlife Act. This information is provided by Heritage NSW.
- **Section 2** - contains heritage items listed by the **Heritage Council of NSW** under the Heritage Act. This includes listing on the State Heritage Register, an Interim Heritage Order or protected under section 136 of the Heritage Act. This information is provided by Heritage NSW.
- **Section 3** - contains items listed by **local councils** on Local Environmental Plans under the Environmental Planning and Assessment Act and **State government agencies** under s.170 of the Heritage Act. This information is provided by local councils and State government agencies.

Section 1. Aboriginal Places listed under the National Parks and Wildlife Act.

Your search did not return any matching results.

Section 2. Items listed under the Heritage Act.

Your search did not return any matching results.

Section 3. Items listed by Local Government and State Agencies.

Your search returned 1 record.

Item name	Address	Suburb	LGA	Information source
House called Trees	36 Plateau Road	Bilgola Plateau	Pittwater	LGOV

There was a total of 1 records matching your search criteria.

Key:
LGA = Local Government Area
GAZ= NSW Government Gazette (statutory listings prior to 1997), HGA = Heritage Grant Application, HS = Heritage Study, LGOV = Local Government, SGOV = State Government Agency.
Note: While Heritage NSW seeks to keep the Inventory up to date, it is reliant on State agencies and local councils to provide their data. Always check with the relevant State agency or local council for the most up-to-date information.

Appendix E

EPA Register Search Results

Home Contaminated land Record of notices

Search results

Your search for:Suburb: BILGOLA

Search Again
Refine Search

did not find any records in our database.

If a site does not appear on the record it may still be affected by contamination. For example:

- Contamination may be present but the site has not been regulated by the EPA under the Contaminated Land Management Act 1997 or the Environmentally Hazardous Chemicals Act 1985.
- The EPA may be regulating contamination at the site through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act).
- Contamination at the site may be being managed under the planning process.

Search TIP

To search for a specific site, search by LGA (local government area) and carefully review all sites listed.

... more search tips

More information about particular sites may be available from:

- The POEO public register
- The appropriate planning authority: for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act.

See What's in the record and What's not in the record.

If you want to know whether a specific site has been the subject of notices issued by the EPA under the CLM Act, we suggest that you search by Local Government Area only and carefully review the sites that are listed.
This public record provides information about sites regulated by the EPA under the Contaminated Land Management Act 1997, including sites currently and previously regulated under the Environmentally Hazardous Chemicals Act 1985. Your inquiry using the above search criteria has not matched any record of current or former regulation. You should consider searching again using different criteria. The fact that a site does not appear on the record does not necessarily mean that it is not affected by contamination. The site may have been notified to the EPA but not yet assessed, or contamination may be present but the site is not yet being regulated by the EPA. Further information about particular sites may be available from the appropriate planning authority, for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act. In addition the EPA may be regulating contamination at the site through a licence under the Protection of the Environment Operations Act 1997. You may wish to search the POEO public register.POEO public register

18 July 2020

For business and industry

For local government

Contact us

- 131 555 (tel:131555)
- Online (https://yoursay.epa.nsw.gov.au/epa-website-feedback)
- info@epa.nsw.gov.au (mailto:info@epa.nsw.gov.au)
- EPA Office Locations (https://www.epa.nsw.gov.au/about-us/contact-us/locations)

Accessibility (https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/help-index)
Disclaimer (https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/disclaimer)
Privacy (https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/privacy)
Copyright (https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/copyright)

Find us on (https://au.linkedin.environment-protection-authority-

Search of Contaminated Sites Notified to the EPA

Home Contaminated land Record of notices

Search results

Your search for:Suburb: BILGOLA

Search Again
Refine Search

did not find any records in our database.

If a site does not appear on the record it may still be affected by contamination. For example:

- Contamination may be present but the site has not been regulated by the EPA under the Contaminated Land Management Act 1997 or the Environmentally Hazardous Chemicals Act 1985.
- The EPA may be regulating contamination at the site through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act).
- Contamination at the site may be being managed under the planning process.

Search TIP

To search for a specific site, search by LGA (local government area) and carefully review all sites listed.

... more search tips

More information about particular sites may be available from:

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- info@epa.nsw.gov.au (mailto:info@epa.nsw.gov.au)
- EPA Office Locations (https://www.epa.nsw.gov.au/about-us/contact-us/locations)

Accessibility (https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/help-index)
Disclaimer (https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/disclaimer)
Privacy (https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/privacy)
Copyright (https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/copyright)

Find us on (https://au.linkedin.environment-protection-authority-

Search of POEO Public Register for; Licences, Applications and Notices

Suburb	SiteName	Address	ContaminationActivityType	ManagementClass	Latitude	Longitude
BERRY	BP branded service station Berry (Formerly Shell)	75 Queen STREET	Service Station	Contamination currently regulated under POEO Act	-34.77500516	150.695167
BEXLEY	7-Eleven Bexley	474 Forest ROAD	Service Station	Regulation under CLM Act not required	-33.95160096	151.1252355
BEXLEY	7-Eleven (former Mobil) Service Station Bexley	613 Forest ROAD	Service Station	Regulation under CLM Act not required	-33.95539246	151.118447
BILAMBIL HEIGHTS	Former Banana Plantation Land	38 McAllisters ROAD	Other Industry	Regulation under CLM Act not required	-28.21218056	153.4778762
BILLINUDGEL	CSR Readymix	Mogo PLACE	Other Industry	Regulation under CLM Act not required	-28.50210255	153.5278161
BILLINUDGEL	Billinudgel General Store	2A Wilfred STREET	Service Station	Under assessment	-28.50435	153.52701
BLACKMANS FLAT	Mount Piper Extension Development Site	2847 Boulder ROAD	Other Industry	Regulation under CLM Act not required	-33.35619968	150.0279881

Search of the Contaminated Land Record

Appendix F
Land Title Search Results

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
18/7/2020 7:06AM

FOLIO: 5/229309

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 10344 FOL 50

Recorded	Number	Type of Instrument	C.T. Issue
5/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
8/4/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
29/8/1988	X792158	DISCHARGE OF MORTGAGE	
29/8/1988	X792159	TRANSFER	EDITION 1
18/2/1994	U43410	CAVEAT	
29/9/1994		AMENDMENT: LOCAL GOVT AREA	
10/4/1996	2071256	WITHDRAWAL OF CAVEAT	
19/4/1996	2094239	WITHDRAWAL OF CAVEAT	
7/5/1996	2136751	LEASE	EDITION 2
4/6/1996	2206859	TRANSFER	
4/6/1996	2206860	MORTGAGE	EDITION 3
8/9/1998	5253410	DISCHARGE OF MORTGAGE	
8/9/1998	5253411	MORTGAGE	EDITION 4
7/8/2007	AD320097	DISCHARGE OF MORTGAGE	
7/8/2007	AD320098	TRANSFER	EDITION 5
28/3/2019	AP151790	LEASE	EDITION 6
18/7/2019	AP401681	TRANSFER	EDITION 7
1/7/2020	AQ213229	TRANSFER	
1/7/2020	AQ213230	MORTGAGE	EDITION 8

*** END OF SEARCH ***

Bilgola-BI20 PRINTED ON 18/7/2020

Search Date/Time: **18/07/2020 7:06AM**

97-01T

TRANSFER

Real Property Act, 1900

2206859 F

$2.00 Office of State Revenue use only

N.S.W. STAMP DUTY

(A) **LAND TRANSFERRED**

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

FOLIO IDENTIFIER: 5/229309

(B) **LODGED BY**

L.T.O. Box	Name, Address or DX and Telephone
599D	MINTER ELLISON 44 MARTIN PLACE SYDNEY FACSIMILE No. (02) 235 27 REFERENCE (max. 15 characters): CLR 10432560

(C) **TRANSFEROR** JOHN FRANCIS MONAGHAN and PATRICIA ADRIENNE MONAGHAN

(D) acknowledges receipt of the consideration of $270,000.00

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

(E) subject to the following **ENCUMBRANCES** 1. 2136751 2. 3.

(F) **TRANSFEREE**

T TS (s713 LGA) TW (Sheriff)	DEAN WILLIAM MASSEY and MICHELE MARIE MASSEY

(G) **TENANCY:** JOINT TENANTS

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. **DATED** 13 May 1996

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

R. Dunreath-Cooper JP

Signature of Witness

R. DUNREATH-COOPER

DEBBIE LANE

Name of Witness (BLOCK LETTERS)

11 Murray Street Five Dock

23 TERAMA ST BILGOLA 2107.

Address of Witness

J. F. Monaghan

P. Monaghan

Signature of Transferor

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

D. Lane

Signature of Witness

DEBBIE LANE

Name of Witness (BLOCK LETTERS)

23 TERAMA ST BILGOLA 2107.

Address of Witness

Michelle Massey

Signature of Transferee

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

CHECKED BY (office use only)

Form: 01T
Licence: 01-05-025
Licensee: Harris Freidman Hyde Page

TRANSFER

New South Wales
Real Property Act 1900

AD320098R

PRIVACY NOTE: Section 31B of the Real Property Act 1900 (RP Act) authorises the Registrar General to collect the information required by this form for the establishment and maintenance of the Real Property Act Register. Section 96B RP Act requires that the Register is made available to any person for search upon payment of a fee, if any.

STAMP DUTY Office of State Revenue use only

(A) **TORRENS TITLE** If appropriate, specify the part transferred
5/229309

(B) **LODGED BY**

Delivery Box	Name, Address or DX and Telephone	CODES
124E	LLPN: 123820V Legalink Pty Ltd (head Office - Sydne LEVEL 8, 170 PHILLIP STREET SYDNEY NSW 2000 Ph: 02 9230 6900 HARF:109587	T TW (Sheriff)

(C) **TRANSFEROR** MICHELLE MARIE MASSEY AND DEAN WILLIAM MASSEY

(D) **CONSIDERATION** The transferor acknowledges receipt of the consideration of $1.00 and as regards
(E) **ESTATE** the land specified above transfers to the transferee an estate in fee simple.
(F) **SHARE TRANSFERRED**

(G) Encumbrances (if applicable):

(H) **TRANSFEREE** MICHELLE MARIE MASSEY AND DEAN WILLIAM MASSEY

(I) **TENANCY:** TENANTS IN COMMON IN EQUAL SHARES

DATE 31 JULY 2007

(J) I certify that the person(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

Signature of witness:

Name of witness: Brad Griffiths
Address of witness: 2/16 Wetherill st Narrabeen.

Certified correct for the purposes of the Real Property Act 1900 by the transferor.

Signature of transferor: michelle massey

I certify that the person(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

Signature of witness:

Name of witness: Brad Griffiths
Address of witness: 2/16 Wetherill St Narrabeen

Certified correct for the purposes of the Real Property Act 1900 by the transferee.

Signature of transferee: michelle massey

ALL HANDWRITING MUST BE IN BLOCK CAPITALS

Form: 01T
Release: 6·2

TRANSFER

New South Wales
Real Property Act 1900

AP401681J

PRIVACY NOTE: Section 31B of the Real Property Act 1900 (RP Act) authorises the by this form for the establishment and maintenance of the Real Property . the Register is made available to any person for search upon payment of a fee, if any.

STAMP DUTY Revenue NSW use only

NEW SOUTH WALES DUTY
10-07-2019 0009583159-001
SECTION 62A (1)
DUTY $ **********10.00
NO SURCHARGE DUTY PAYABLE

(A) **TORRENS TITLE** 5/229309

(B) **LODGED BY**

Document Collection Box	Name, Address or DX, Telephone, and Customer Account Number if any	CODES
519E	~~TELEMON LAWYERS PTY LIMITED~~ VIKING LEGAL SERVICE ~~PO BOX 997 MANLY NSW 1655~~ ~~02 8065 3080~~ 519E LLPN: 125626F Reference: ~~128020~~ TELEMON MASSEY	T TW

(C) **TRANSFEROR** DEAN WILLIAM MASSEY AND MICHELLE MARIE MASSEY

(D) **CONSIDERATION** The transferor acknowledges receipt of the consideration of $ 2,200,000.00 and as regards

(E) **ESTATE** the abovementioned land transfers to the transferee an estate in fee simple

(F) **SHARE TRANSFERRED**

(G) Encumbrances (if applicable):

(H) **TRANSFEREE** MASSEY SUPER PROPERTY PTY LTD A.C.N. 631 439 391

(I) **TENANCY:**

DATE

(J) I certify I am an eligible witness and that the transferor signed this dealing in my presence. [See note* below]

Certified correct for the purposes of the Real Property Act 1900 by the transferor.

Signature of witness:

Signature of transferor: Michelle Massey

Name of witness: CAMERON SHAW
Address of witness: 10/6 BELGRAVE ST
MANLY NSW 2095

Certified correct for the purposes of the Real Property Act 1900 and executed on behalf of the company named below by the authorised person(s) whose signature(s) appear(s) below pursuant to the authority specified.

Company: MASSEY SUPER PROPERTY PTY LTD A.C.N. 631 439 391
Authority: section 127 of the Corporations Act 2001

Signature of authorised person:

Name of authorised person: DEAN WILLIAM MASSEY
Office held: Director

Signature of authorised person: Michelle Massey

Name of authorised person: MICHELLE MARIE MASSEY
Office held: Secretary

(K) The transferee's agent certifies that the eNOS data relevant to this dealing has been submitted and stored under eNOS ID No. 1863883 Full name: ~~CAMERON JAMES SHAW~~ MARK RYAN Signature:

* *s117 RP Act requires that you must have known the signatory for more than 12 months or have sighted identifying documentation.*

ALL HANDWRITING MUST BE IN BLOCK CAPITALS

1708

BF 13

STAMP DUTY [redacted]

OFFICE OF STATE REVENUE (N.S.W. TREASURY) 1988/1862 S5 $1.00 STAMP DUTY

X792159

TRANSFER

REAL PROPERTY ACT, 1900

T 3 2 of 2 X

$ 92

R2/2.

Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
Volume 10344 Folio 50 BEING WHOLE OF LAND COMPRISED IN FOLIO 5/229309	WHOLE	Cnr. Plateau Road & Bilkurra Avenue Bilgola Plateau

DESCRIPTION OF LAND Note (a)

TRANSFEROR Note (b)

MARTIN WAYNE ABEL of 7/12 Terrol Crescent Mona Vale, Garage Proprietor

ESTATE Note (c)

(the abovenamed TRANSFEROR hereby acknowledges receipt of the consideration of $ 340,000-00 and transfers an estate in fee simple in the land above described to the TRANSFEREE

TRANSFEREE Note (d)

JOHN FRANCIS MONAGHAN of 5 Cavan Road, Killarney Heights, Company Director and PATRICIA ADRIENNE MONAGHAN his wife

OFFICE USE ONLY

JT2.

TENANCY Note (e)

as joint tenants

PRIOR ENCUMBRANCES Note (f)

subject to the following PRIOR ENCUMBRANCES 1. ..... 2. ..... 3. .....

DATE 29th July, 1938

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

EXECUTION Note (g)

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

..... Signature of Witness

R. PEDDLE

..... Name of Witness (BLOCK LETTERS)

51 Oldbury ... Solicitor

..... Address and occupation of Witness

Signature of Transferor

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

Note (g)

..... Signature of Witness

..... Name of Witness (BLOCK LETTERS)

..... Address and occupation of Witness

Signature of Transferee

(P. ABIGAIL)
Solicitor for Transferees.

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

LODGED BY

ABIGAIL & SON.

Delivery Box Number 63 X,

LOCATION OF DOCUMENTS		
CT	OTHER	
		Herewith.
		In L.T.O. with
		Produced by

OFFICE USE ONLY

Checked	Passed	REGISTERED - -19	Secondary Directions	UNDER	X	T622293
EAG				ON	UX	CAVEATOR CONSENTED
Signed	Extra Fee	29 AUG 1988	Delivery Directions	CT	63X.	

To: The Land Titles Office
Queens Square,
SYDNEY N.S.W.

CAVEAT T622293

BP AUSTRALIA LIMITED has no objection to the registeration of a transfer from Martin Wayne Abel to John Francis Monoghan and Patricia Adrienne Monoghan on Certificate of Title Volume 10344, Folio 50 notwithstanding the existence of the abovementioned caveat.

BP AUSTRALIA LIMITED by its)
Attorney MICHAEL GRAEME SMITH)
pursuant to Power of Attorney) .....
No. 764, Book 3689 in the)
presence of)

..... J.P.

Appendix G
Historical Research Information
&
Historical Aerials

NSW Department of Land Property Information - 1978

Google Earth Pro – 2003

Google Earth Pro – 2009

Google Earth Pro – 2014

Google Earth Pro – 2018

Appendix H
Laboratory Reports &
Results Summary Tables

CHAIN OF CUSTODY

Canopy Enterprises - 0412 987 456

Client: Canopy Enterprises	Project Name / Number / Site etc (ie report title): Bilgola - B:20
Contact Person: Fenn Hinchcliffe	
Project Mgr:	PO No.:
Sampler: G Haid	
Address:	Date results required: Or choose: standard / same day / 1 day / 2 day / 3 day
Phone: Mob: 0402 411 177	Report format: esdat / equis /
Email: fenn@canopyenterprises.com, gunnar@canopyenterprises.com	Lab Comments:

CANOPY ENTERPRISES

Sample information					Tests Required											Comments
Laboratory Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Priority Metals	PAH	OC/OP	BTEX/TRH	PCB	Comb 6	Comb 6a	Cr Suite	Asbestos ID	Asbestos NEPM	Comb 1	Additional Information
1	B1	1.0	12.6.20	S						✓						
2	B1	2.0	"	"											✓	
3	B1	3.0	"	"											✓	
4	B2	1.0	"	"						✓						
5	B2	3.0	"	"											✓	
6	B2	6.5	"	"											✓	
7	B3	1.0 (0.5)	"	"											✓	
8	B3	2.5	"	"											✓	
9	B4	1.0	"	"											✓	
10	B4	2.5	"	"											✓	
11	B4	8.5	"	"											✓	
12	B5	0.5	"	"											✓	
13	B5	2.5	"	"											✓	
14	D1	-	"	"											✓	

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 244731

Date Received: 12-6-20
Time Received: 13:30
Received by:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (Company): Canopy Enterprises	Received by (Company): ES
Print Name: G Haid	Print Name: CHRISTIE
Date & Time: 12.6.20 13:10	Date & Time: 12-6-20 13:30
Signature:	Signature:

Lab use only:
Samples Received: Cool or Ambient (circle one)
Temperature Received at: 10 (if applicable)
Transported by: Hand delivered / courier

CHAIN OF CUSTODY

Canopy Enterprises - 0412 987 456

Client: Canopy Enterprises	Project Name / Number / Site etc (ie report title): Bilgola - BiZO
Contact Person: Fenn Hinchcliffe	
Project Mgr:	PO No.:
Sampler: G Haid	
Address:	Date results required: Or choose: standard / same day / 1 day / 2 day / 3 day
Phone: Mob: 0402 411 177	Report format: esdat / equis /
Email: fenn@canopyenterprises.com, gunnar@canopyenterprises.com	Lab Comments:

CANOPY ENTERPRISES

Sample information					Tests Required										Comments
Laboratory Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Priority Metals	PAH	OC/OP	BTEX/TRH	PCB	Comb 6	Comb 6a	Cr Suite	Asbestos ID	Asbestos NEPM	Additional Information
(1)	WB2	1	19.6.20	2x Water				✓							

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 295212
Date Received: 19/6/20
Time Received: 1240
Received by:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (Company): Canopy Enterprises	Received by (Company):	*Lab use only:*
Print Name: G Haid	Print Name:	Samples Received: Cool or Ambient (circle one)
Date & Time: 11:55 19.6.20	Date & Time: 19/6/20	Temperature Received at: (if applicable)
Signature:	Signature:	Transported by: Hand delivered / courier

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	Canopy Enterprises Pty Ltd
Attention	Fenn Hinchcliffe

Sample Login Details

Your reference	Bilgola, Bi20
Envirolab Reference	244731
Date Sample Received	12/06/2020
Date Instructions Received	12/06/2020
Date Results Expected to be Reported	19/06/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	14 SOIL
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
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:

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	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil
B1-1.0	✓	✓	✓	✓	✓	✓	✓
B1-2.0	✓	✓					✓
B1-3.0	✓	✓					✓
B2-1.0	✓	✓	✓	✓	✓	✓	✓
B2-3.0	✓	✓					✓
B2-6.5	✓	✓					✓
B3-1.0	✓	✓					✓
B3-2.5	✓	✓					✓
B4-1.0	✓	✓					✓
B4-2.5	✓	✓					✓
B4-8.5	✓	✓					✓
B5-0.5	✓	✓					✓
B5-2.5	✓	✓					✓
D1	✓	✓					✓

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.

Table 1: Heavy Metals and Organics Results

	METALS								BTEXN					PAHs			TRHs			
Analyte	**As**	**Cd**	**Cr(6+)[1]**	**Cu**	**Pb**	**Hg**	**Ni**	**Zn**	**Benzene**	**Toluene**	**Ethyl-benzene**	**Total Xylenes**	**Naphtha-lene**	**Total PAHs**	**Carcinogenic (as BaP TEQ[2]**	**B(a)P**	**F1**	**F2**	**F3 (C16-C34)**	**F4 (C34-C40)**
Unit of measurement	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
Assessment criteria																				
NEPM Sch B1 (2013) HIL-A Table 1A(1)	100	20	100	6,000	300	40	400	7,400	NA	NA	NA	NA	NA	300	3	NA	NA	NA	NA	NA
NEPM Sch B1 (2013) HSL (Table 1A(3))	NA	NA	NA	NA	NA	NA	NA	NA	0.5	160	55	40	3	NA	NA	NA	45	110	NA	NA
NEPM Sch B1 (2013) EIL (Urban residential)[5]	100	NA	203	88	1263	NA	35	192	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NEPM Sch B1 (2013) ESL (Table 1B(6))	NA	NA	NA	NA	NA	NA	NA	NA	50	85	70	105	170	NA	NA	0.7	180	120	300	2800
Laboratory Analysis																				
Limit of reporting (LOR)	4	0.4	1	1	1	0.1	1	1	0.2	0.5	1	3	1	0.05	0.5	0.05	25	50	100	100
SAMPLE ID																				
B1 1.0m	BDL	BDL	58	BDL	6	BDL	2	2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B1 2.0m	-	-	-	-	7	-	-	-	BDL	BDL	BDL	BDL	BDL	-	-	-	BDL	BDL	BDL	BDL
B1 3.0m	-	-	-	-	6	-	-	-	BDL	BDL	BDL	BDL	BDL	-	-	-	BDL	BDL	BDL	BDL
B2 1.0m	BDL	BDL	6	2	9	BDL	1	25	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B2 3.0m	-	-	-	-	4	-	-	-	BDL	BDL	BDL	BDL	BDL	-	-	-	BDL	BDL	BDL	BDL
B2 6.5m	-	-	-	-	2	-	-	-	BDL	BDL	BDL	BDL	BDL	-	-	-	BDL	BDL	BDL	BDL
B3 1.0m	-	-	-	-	21	-	-	-	BDL	BDL	BDL	BDL	BDL	-	-	-	BDL	BDL	BDL	BDL
B3 2.5m	-	-	-	-	4	-	-	-	BDL	BDL	BDL	BDL	BDL	-	-	-	BDL	BDL	BDL	BDL
B4 1.0m	-	-	-	-	4	-	-	-	BDL	BDL	BDL	BDL	BDL	-	-	-	BDL	BDL	BDL	BDL
B4 2.5m	-	-	-	-	6	-	-	-	BDL	BDL	BDL	BDL	BDL	-	-	-	BDL	BDL	BDL	BDL
B4 8.5m	-	-	-	-	5	-	-	-	BDL	BDL	BDL	BDL	BDL	-	-	-	BDL	BDL	BDL	BDL
B5 0.5m	-	-	-	-	2	-	-	-	BDL	BDL	BDL	BDL	BDL	-	-	-	BDL	BDL	BDL	BDL
B5 2.5m	-	C	-	-	5	-	-	-	BDL	BDL	BDL	BDL	BDL	-	-	-	BDL	BDL	BDL	BDL
D1	-	-	-	-	2	-	-	-	BDL	BDL	BDL	BDL	BDL	-	-	-	BDL	BDL	BDL	BDL
Groundwater Results [ug/L]																				
NEPM Sch B1 (2013) HSL / GIL (Silt 4-8 m))	-	-	-	-	-	-	-	-	500	NA	NA	NA	NA	-	-	-	600	-	-	-
WB2	-	-	-	-	-	-	-	-	<1	1	<1	<3	-	-	-	-	<10	<50	<100	<100
Key	**Red Cells** indicate values that exceed relevant Human Health Threshold Level **Green shaded** cells indicate an exceedance of an environmental or ecological threshold level BDL – Below Detection Limit (refer to laboratory reports for details) NA – Not applicable '-' - indicates not tested																			
Footnote	1- For metals Cr6+, the assessment criteria are based on Chromium hexavalent (Cr6+) and results are based on total Chromium (Cr) 2- HIL is based on the toxicity equivalent quotient (TEQ) of 8 carcinogenic PAHs and their potency relative to B(a)P) adopted by CCME 2008 (see Schedule B 1 Guidelines on Investigation Levels for Soil and Groundwater (NEPM 2013) 3- F1 is the subtraction of the sum of BTEX concentrations from C6-C10 4- F2 is the subtraction of naphthalene from >C10-C16 5 - Background levels using the 25th percentile in old suburbs with high traffic were used as per Olszowy et al (1995) and added to the ACL provided in NEPM 2013 6 - Levels from January 2018 PFAS National Environmental Management Plan																			

Table 2: Organochlorine and Organophosphorus Pesticides, Polychlorinated Biphenols Results

	OC/OP PESTICIDES									
	OCPs								OPPs	PCBs
Analyte	**DDD+DDE+DDT**	**Aldrin +Dieldrin[1]**	**Total Chlordane[2]**	**Total Endosulfans[3]**	**Endrin**	**Heptachlor**	**Hexachlorobenzene (HCB)**	**Methoxychlor**	**Chlorpyrifos**	**Total PCBs[4]**
Unit of measurement	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Assessment criteria										
NEPM Sch B1 (2013) HIL-A (Residential A)	240	6	50	270	10	6	10	300	160	1
NEPM Sch B1 (2013) EIL (Table 1B(5))	180 (DDT only)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Laboratory Analysis										
Limit of reporting (LOR)	0.1	<0.2	<0.2	<0.3	0.1	0.1	0.1	0.1	0.1	0.1
SAMPLE ID										
B1 1.0m	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B1 2.0m	-	-	-	-	-	-	-	-	-	-
B1 3.0m	-	-	-	-	-	-	-	-	-	-
B2 1.0m	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
B2 3.0m	-	-	-	-	-	-	-	-	-	-
B2 6.5m	-	-	-	-	-	-	-	-	-	-
B3 1.0m	-	-	-	-	-	-	-	-	-	-
B3 2.5m	-	-	-	-	-	-	-	-	-	-
B4 1.0m	-	-	-	-	-	-	-	-	-	-
B4 2.5m	-	-	-	-	-	-	-	-	-	-
B4 8.5m	-	-	-	-	-	-	-	-	-	-
B5 0.5m	-	-	-	-	-	-	-	-	-	-
B5 2.5m	-	-	-	-	-	-	-	-	-	-
D1	-	-	-	-	-	-	-	-	-	-
Key	Yellow cells indicate values that exceed relevant levels. BDL – Below Detection Limit (refer to laboratory reports for details) NA – Not applicable '-' - indicates not tested									
Footnote	1- Laboratory does not analyse Aldrin + Dieldrin, but Aldrin and Dieldrin separately. 2- Laboratory does not analyse Total Chlordane, but gamma-Chlordane and alpha-Chlordane separately. 3- Laboratory does not analyse Total Endosulfans, but Endosulfan I, Endosulfan II, and Endosulfan Sulphate separately. 4- Positive values shown only.									

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CERTIFICATE OF ANALYSIS 245212

Client Details

Client	Canopy Enterprises Pty Ltd
Attention	Gunnar Haid, Fenn Hinchcliffe
Address	16/40 Hilly St, Mortlake, NSW, 2137

Sample Details

Your Reference	**Bilgola - Bi20**
Number of Samples	1 Water
Date samples received	19/06/2020
Date completed instructions received	19/06/2020

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	26/06/2020
Date of Issue	25/06/2020

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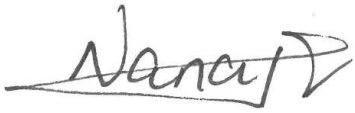
Results Approved By
Dragana Tomas, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference		245212-1
Your Reference	UNITS	WB2
Date Sampled		19/06/2020
Type of sample		Water
Date extracted	-	19/06/2020
Date analysed	-	21/06/2020
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	126
Surrogate toluene-d8	%	94
Surrogate 4-BFB	%	96

svTRH (C10-C40) in Water		
Our Reference		245212-1
Your Reference	UNITS	WB2
Date Sampled		19/06/2020
Type of sample		Water
Date extracted	-	22/06/2020
Date analysed	-	22/06/2020
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Surrogate o-Terphenyl	%	98

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.
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.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W10	[NT]
Date extracted	-			19/06/2020	[NT]	[NT]	[NT]	[NT]	19/06/2020	[NT]
Date analysed	-			21/06/2020	[NT]	[NT]	[NT]	[NT]	21/06/2020	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	120	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	120	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	120	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	125	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	126	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	116	[NT]	[NT]	[NT]	[NT]	107	[NT]
Surrogate toluene-d8	%		Org-023	94	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 4-BFB	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	113	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			18/06/2020	1	22/06/2020	22/06/2020		22/06/2020	[NT]
Date analysed	-			23/06/2020	1	22/06/2020	24/06/2020		22/06/2020	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	96	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	83	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	113	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	96	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	83	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	113	[NT]
Surrogate o-Terphenyl	%		Org-020	111	1	98	97	1	87	[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 244731

Client Details

Client	Canopy Enterprises Pty Ltd
Attention	Fenn Hinchcliffe
Address	16/40 Hilly St, Mortlake, NSW, 2137

Sample Details

Your Reference	**Bilgola, Bi20**
Number of Samples	14 SOIL
Date samples received	12/06/2020
Date completed instructions received	12/06/2020

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	19/06/2020
Date of Issue	19/06/2020

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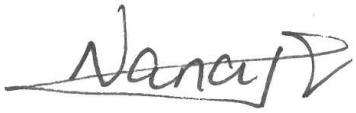
Results Approved By
Dragana Tomas, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor
Josh Williams, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		244731-1	244731-2	244731-3	244731-4	244731-5
Your Reference	UNITS	B1	B1	B1	B2	B2
Depth		1.0	2.0	3.0	1.0	3.0
Date Sampled		12/06/2020	12/06/2020	12/06/2020	12/06/2020	12/06/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Date analysed	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020	16/06/2020
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	%	110	103	107	110	123

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		244731-6	244731-7	244731-8	244731-9	244731-10
Your Reference	UNITS	B2	B3	B3	B4	B4
Depth		6.5	1.0	2.5	1.0	2.5
Date Sampled		12/06/2020	12/06/2020	12/06/2020	12/06/2020	12/06/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Date analysed	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020	16/06/2020
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	101	108	107	111

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		244731-11	244731-12	244731-13	244731-14
Your Reference	UNITS	B4	B5	B5	D1
Depth		8.5	0.5	2.5	-
Date Sampled		12/06/2020	12/06/2020	12/06/2020	12/06/2020
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Date analysed	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	111	113	98	109

svTRH (C10-C40) in Soil						
Our Reference		244731-1	244731-2	244731-3	244731-4	244731-5
Your Reference	UNITS	B1	B1	B1	B2	B2
Depth		1.0	2.0	3.0	1.0	3.0
Date Sampled		12/06/2020	12/06/2020	12/06/2020	12/06/2020	12/06/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Date analysed	-	16/06/2020	16/06/2020	17/06/2020	17/06/2020	17/06/2020
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	%	77	80	75	74	76

svTRH (C10-C40) in Soil						
Our Reference		244731-6	244731-7	244731-8	244731-9	244731-10
Your Reference	UNITS	B2	B3	B3	B4	B4
Depth		6.5	1.0	2.5	1.0	2.5
Date Sampled		12/06/2020	12/06/2020	12/06/2020	12/06/2020	12/06/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Date analysed	-	17/06/2020	17/06/2020	17/06/2020	17/06/2020	17/06/2020
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	%	84	76	73	76	74

svTRH (C10-C40) in Soil					
Our Reference		244731-11	244731-12	244731-13	244731-14
Your Reference	UNITS	B4	B5	B5	D1
Depth		8.5	0.5	2.5	-
Date Sampled		12/06/2020	12/06/2020	12/06/2020	12/06/2020
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Date analysed	-	17/06/2020	17/06/2020	17/06/2020	17/06/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50
Surrogate o-Terphenyl	%	76	72	75	71

PAHs in Soil			
Our Reference		244731-1	244731-4
Your Reference	UNITS	B1	B2
Depth		1.0	1.0
Date Sampled		12/06/2020	12/06/2020
Type of sample		SOIL	SOIL
Date extracted	-	16/06/2020	16/06/2020
Date analysed	-	17/06/2020	17/06/2020
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<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	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<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	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	86	72

Organochlorine Pesticides in soil			
Our Reference		244731-1	244731-4
Your Reference	UNITS	B1	B2
Depth		1.0	1.0
Date Sampled		12/06/2020	12/06/2020
Type of sample		SOIL	SOIL
Date extracted	-	16/06/2020	16/06/2020
Date analysed	-	17/06/2020	17/06/2020
alpha-BHC	mg/kg	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	109	108

Organophosphorus Pesticides in Soil			
Our Reference		244731-1	244731-4
Your Reference	UNITS	B1	B2
Depth		1.0	1.0
Date Sampled		12/06/2020	12/06/2020
Type of sample		SOIL	SOIL
Date extracted	-	16/06/2020	16/06/2020
Date analysed	-	17/06/2020	17/06/2020
Dichlorvos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	109	108

PCBs in Soil			
Our Reference		244731-1	244731-4
Your Reference	UNITS	B1	B2
Depth		1.0	1.0
Date Sampled		12/06/2020	12/06/2020
Type of sample		SOIL	SOIL
Date extracted	-	16/06/2020	16/06/2020
Date analysed	-	17/06/2020	17/06/2020
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	109	108

Acid Extractable metals in soil						
Our Reference		244731-1	244731-2	244731-3	244731-4	244731-5
Your Reference	UNITS	B1	B1	B1	B2	B2
Depth		1.0	2.0	3.0	1.0	3.0
Date Sampled		12/06/2020	12/06/2020	12/06/2020	12/06/2020	12/06/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Date analysed	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Arsenic	mg/kg	<4	[NA]	[NA]	<4	[NA]
Cadmium	mg/kg	<0.4	[NA]	[NA]	<0.4	[NA]
Chromium	mg/kg	58	[NA]	[NA]	6	[NA]
Copper	mg/kg	<1	[NA]	[NA]	2	[NA]
Lead	mg/kg	6	7	6	9	4
Mercury	mg/kg	<0.1	[NA]	[NA]	<0.1	[NA]
Nickel	mg/kg	2	[NA]	[NA]	1	[NA]
Zinc	mg/kg	2	[NA]	[NA]	25	[NA]

Acid Extractable metals in soil						
Our Reference		244731-6	244731-7	244731-8	244731-9	244731-10
Your Reference	UNITS	B2	B3	B3	B4	B4
Depth		6.5	1.0	2.5	1.0	2.5
Date Sampled		12/06/2020	12/06/2020	12/06/2020	12/06/2020	12/06/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Date analysed	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Lead	mg/kg	2	21	4	4	6

Acid Extractable metals in soil					
Our Reference		244731-11	244731-12	244731-13	244731-14
Your Reference	UNITS	B4	B5	B5	D1
Depth		8.5	0.5	2.5	-
Date Sampled		12/06/2020	12/06/2020	12/06/2020	12/06/2020
Type of sample		SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Date analysed	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Lead	mg/kg	5	2	5	2

Moisture						
Our Reference		244731-1	244731-2	244731-3	244731-4	244731-5
Your Reference	UNITS	B1	B1	B1	B2	B2
Depth		1.0	2.0	3.0	1.0	3.0
Date Sampled		12/06/2020	12/06/2020	12/06/2020	12/06/2020	12/06/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Date analysed	-	17/06/2020	17/06/2020	17/06/2020	17/06/2020	17/06/2020
Moisture	%	19	20	17	6.9	12

Moisture						
Our Reference		244731-6	244731-7	244731-8	244731-9	244731-10
Your Reference	UNITS	B2	B3	B3	B4	B4
Depth		6.5	1.0	2.5	1.0	2.5
Date Sampled		12/06/2020	12/06/2020	12/06/2020	12/06/2020	12/06/2020
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Date analysed	-	17/06/2020	17/06/2020	17/06/2020	17/06/2020	17/06/2020
Moisture	%	16	15	15	16	19

Moisture					
Our Reference		244731-11	244731-12	244731-13	244731-14
Your Reference	UNITS	B4	B5	B5	D1
Depth		8.5	0.5	2.5	-
Date Sampled		12/06/2020	12/06/2020	12/06/2020	12/06/2020
Type of sample		SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/06/2020	16/06/2020	16/06/2020	16/06/2020
Date analysed	-	17/06/2020	17/06/2020	17/06/2020	17/06/2020
Moisture	%	18	8.5	18	9.3

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
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-3	[NT]
Date extracted	-			16/06/2020	1	16/06/2020	16/06/2020		16/06/2020	[NT]
Date analysed	-			16/06/2020	1	16/06/2020	16/06/2020		16/06/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	92	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	92	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	79	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	106	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	96	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	90	[NT]
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	87	[NT]
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	121	1	110	109	1	113	[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]	11	16/06/2020	16/06/2020		[NT]	[NT]
Date analysed	-			[NT]	11	16/06/2020	16/06/2020		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	11	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	11	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	11	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	11	111	107	4	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			16/06/2020	1	16/06/2020	16/06/2020		16/06/2020	[NT]
Date analysed	-			16/06/2020	1	16/06/2020	16/06/2020		16/06/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	109	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	91	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	114	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	109	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	91	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	114	[NT]
Surrogate o-Terphenyl	%		Org-020	78	1	77	80	4	99	[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]	11	16/06/2020	16/06/2020		[NT]	[NT]
Date analysed	-			[NT]	11	17/06/2020	17/06/2020		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	11	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	11	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	11	76	76	0	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			16/06/2020	1	16/06/2020	16/06/2020		16/06/2020	[NT]
Date analysed	-			17/06/2020	1	17/06/2020	17/06/2020		17/06/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	100	[NT]
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	102	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	[NT]
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	88	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	[NT]
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	90	[NT]
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	114	[NT]
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	96	1	86	83	4	77	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			16/06/2020	1	16/06/2020	16/06/2020		16/06/2020	[NT]
Date analysed	-			17/06/2020	1	17/06/2020	17/06/2020		17/06/2020	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	[NT]
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	100	[NT]
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	90	[NT]
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	88	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	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	80	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	[NT]
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	78	[NT]
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	78	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	106	1	109	105	4	113	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			16/06/2020	1	16/06/2020	16/06/2020		16/06/2020	[NT]
Date analysed	-			17/06/2020	1	17/06/2020	17/06/2020		17/06/2020	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	[NT]
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	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	78	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	[NT]
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	76	[NT]
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	106	1	109	105	4	113	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			16/06/2020	1	16/06/2020	16/06/2020		16/06/2020	[NT]
Date analysed	-			17/06/2020	1	17/06/2020	17/06/2020		17/06/2020	[NT]
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	86	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	106	1	109	105	4	113	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			16/06/2020	1	16/06/2020	16/06/2020		16/06/2020	[NT]
Date analysed	-			16/06/2020	1	16/06/2020	16/06/2020		16/06/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	107	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	105	[NT]
Chromium	mg/kg	1	Metals-020	<1	1	58	54	7	100	[NT]
Copper	mg/kg	1	Metals-020	<1	1	<1	<1	0	105	[NT]
Lead	mg/kg	1	Metals-020	<1	1	6	6	0	105	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	90	[NT]
Nickel	mg/kg	1	Metals-020	<1	1	2	2	0	106	[NT]
Zinc	mg/kg	1	Metals-020	<1	1	2	2	0	106	[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]	11	16/06/2020	16/06/2020		[NT]	[NT]
Date analysed	-			[NT]	11	16/06/2020	16/06/2020		[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	11	5	5	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.

Appendix I
Bore Logs

BORE LOG

Project: Bilgola Plateau Date: 16/06/2020 Bore ID: B1

Site: 1 Bilambee Ln
Bilgola Plateay NSW 2107

Project ID: Bilgola-BI20

Logged by: Gunnar Haid

Driller:

Method: Full flight auger

Company: STS

Water Level: No GW Static:

Depth [m]	Well Construction	Sample	PID (PPM)	UCSC Class	Description
					Concrete 0.16 m, sand base underneath concrete to 0.25 m
1m		x			Silty sandy clay, orange, damp
2m		x			
3m		x			EOH @ 3.0 m

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
Fill	Clayey	Red	Homogenous	Dry	Very soft	Non plastic	Very loose	Boulders	Poorly sorted (well graded)	And (35-50%)
Clay	Silly	Yellow	Heterogeneous	Damp	Soft	Low plasticity	Loose	Cobbles		Some (20-35%)
Silt	Sandy	White	Stratified	Moist	Firm	Mod plasticity	Medium loose	Coarse gravel		Little (10-20%)
Sand	Gravelly	Black	Laminated	Wet	Stiff	High plasticity	Dense	Fine gravel	well sorted (poorly graded)	Trace (0-10%)
Gravel	Organic	Brown	Lens	Saturated	Very stiff		Very dense	Coarse sand		Contamination
Topsoil		Grey	Root holes		Hard					Odour
Peat		Mottled	occasional							

Disclaimer: This bore log is intended for environmental, not geotechnical purposes

BORE LOG

Project: Bilgola Plateau Date: 16/06/2020 Bore ID: B2

#SPILL! Project ID: Bilgola-BI20

Logged by: Gunnar Haid

Driller: Method: Full flight auger

Company: STS Water Level: 6.22 m on 10 June 2020

Depth [m]	Well Construction	Sample	PID (PPM)	UCSC Class	Description
					Gravel roadbase surface
1.0		x			Gravelly clayey sand, light brown, fine to medium grained (Fill)
2.0	Bentonite Seal				
3.0		x			Sandy clay, orange, medium plasticity, damp
4.0					
5.0					
6.0		Slotted PVC			Sandy clay, light brown to tan, lightly weathered sandstone, damp

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
Fill	Clayey	Red	Homogenous	Dry	Very soft	Non plastic	Very loose	Boulders	Poorly sorted	And (35-50%)
Clay	Silly	Yellow	Heterogeneous	Damp	Soft	Low plasticity	Loose	Cobbles	(well graded)	Some (20-35%)
Silt	Sandy	White	Stratified	Moist	Firm	Mod plasticity	Medium loose	Coarse gravel	well sorted	Little (10-20%)
Sand	Gravelly	Black	Laminated	Wet	Stiff	High plasticity	Dense	Fine gravel	(poorly graded)	Trace (0-10%)
Gravel	Organic	Brown	Lens	Saturated	Very stiff		Very dense	Coarse sand		Contamination
Topsoil		Grey	Root holes		Hard					Odour
Peat		Mottled	occasional							

BORE LOG

Project: Bilgola Plateau Date: 16/06/2020 Bore ID: B2

#SPILL! Project ID: Bilgola-BI20

Logged by: Gunnar Haid

Driller: Method: Full flight auger

Company: STS Water Level: 2.6 m Static: 2.62 m

Depth [m]	Well Construction	Sample	PID (PPM)	UCSC Class	Description
7.0		x			Sandy clay, light brown to tan, lightly weathered sandstone, damp
8.0					
9.0		Slotted PVC			Silty sandy clay, light grey, fine grained, moist
10.0					
11.0					Sandy clay, red brown and light grey, fine grained
					Sandstone
12.0					EOH @ 11.6 m

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
Fill	Clayey	Red	Homogenous	Dry	Very soft	Non plastic	Very loose	Boulders	Poorly sorted (well graded)	And (35-50%)
Clay	Silly	Yellow	Heterogeneous	Damp	Soft	Low plasticity	Loose	Cobbles		Some (20-35%)
Silt	Sandy	White	Stratified	Moist	Firm	Mod plasticity	Medium loose	Coarse gravel		Little (10-20%)
Sand	Gravelly	Black	Laminated	Wet	Stiff	High plasticity	Dense	Fine gravel	well sorted (poorly graded)	Trace (0-10%)
Gravel	Organic	Brown	Lens	Saturated	Very stiff		Very dense	Coarse sand		Contamination
Topsoil		Grey	Root holes		Hard					Odour
Peat		Mottled	occasional							

Disclaimer: This bore log is intended for environmental, not geotechnical purposes

BORE LOG

Project: Bilgola Plateau Date: 16/06/2020 Bore ID: B3

Site: 1 Bilambee Ln
Bilgola Plateay NSW 2107

Project ID: Bilgola-BI20

Logged by: Gunnar Haid

Driller:

Method: Full flight auger

Company: STS

Water Level: No GW Static:

Depth [m]	Well Construction	Sample	PID (PPM)	UCSC Class	Description
					Concrete 0.14 m
					Silty sandy clay, orange, ironstone gravel, damp
1m		x			Silty sandy clay, orange, damp
2m		x			
					EOH @ 2.5 m
3m					

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
Fill	Clayey	Red	Homogenous	Dry	Very soft	Non plastic	Very loose	Boulders	Poorly sorted (well graded)	And (35-50%)
Clay	Silly	Yellow	Heterogeneous	Damp	Soft	Low plasticity	Loose	Cobbles	well sorted (poorly graded)	Some (20-35%)
Silt	Sandy	White	Stratified	Moist	Firm	Mod plasticity	Medium loose	Coarse gravel		Little (10-20%)
Sand	Gravelly	Black	Laminated	Wet	Stiff	High plasticity	Dense	Fine gravel		Trace (0-10%)
Gravel	Organic	Brown	Lens	Saturated	Very stiff		Very dense	Coarse sand		Contamination
Topsoil		Grey	Root holes		Hard					Odour
Peat		Mottled	occasional							

Disclaimer: This bore log is intended for environmental, not geotechnical purposes

BORE LOG

Project: Bilgola Plateau Date: 16/06/2020 Bore ID: B4

Site: 1 Bilambee Ln
Bilgola Plateay NSW 2107

Project ID: Bilgola-BI20

Logged by: Gunnar Haid

Driller:

Method: Full flight auger

Company: STS

Water Level: No GW Static:

Depth [m]	Well Construction	Sample	PID (PPM)	UCSC Class	Description
					Concrete 0.16 m
1.0		x			Silty sandy clay, orange brown, fine grained, damp
2.0					
3.0		x			
4.0					
5.0					Clayey sand, yellow brown and light grey fine to medium grained, moist
6.0					Clayey sand, light grey, orange brown, fine to medium grained (weathered sandstone)

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
Fill	Clayey	Red	Homogenous	Dry	Very soft	Non plastic	Very loose	Boulders	Poorly sorted (well graded)	And (35-50%)
Clay	Silly	Yellow	Heterogeneous	Damp	Soft	Low plasticity	Loose	Cobbles	well sorted (poorly graded)	Some (20-35%)
Silt	Sandy	White	Stratified	Moist	Firm	Mod plasticity	Medium loose	Coarse gravel		Little (10-20%)
Sand	Gravelly	Black	Laminated	Wet	Stiff	High plasticity	Dense	Fine gravel		Trace (0-10%)
Gravel	Organic	Brown	Lens	Saturated	Very stiff		Very dense	Coarse sand		Contamination
Topsoil		Grey	Root holes		Hard					Odour
Peat		Mottled	occasional							

BORE LOG

Project: Bilgola Plateau Date: 16/06/2020 Bore ID: B4

Site: 1 Bilambee Ln
Bilgola Plateay NSW 2107

Project ID: Bilgola-BI20

Logged by: Gunnar Haid

Driller:

Method: Full flight auger

Company: STS

Water Level: No GW Static:

Depth [m]	Well Construction	Sample	PID (PPM)	UCSC Class	Description
7.0					Clayey sand, light grey, orange brown, fine to medium grained (weathered sandstone)
8.0					
9.0		x			Silty sandy clay, light grey, fine grained, dry
10.0					EOH @ 10.0 m
11.0					
12.0					

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
Fill	Clayey	Red	Homogenous	Dry	Very soft	Non plastic	Very loose	Boulders	Poorly sorted	And (35-50%)
Clay	Silly	Yellow	Heterogeneous	Damp	Soft	Low plasticity	Loose	Cobbles	(well graded)	Some (20-35%)
Silt	Sandy	White	Stratified	Moist	Firm	Mod plasticity	Medium loose	Coarse gravel	well sorted	Little (10-20%)
Sand	Gravelly	Black	Laminated	Wet	Stiff	High plasticity	Dense	Fine gravel	(poorly graded)	Trace (0-10%)
Gravel	Organic	Brown	Lens	Saturated	Very stiff		Very dense	Coarse sand		Contamination
Topsoil		Grey	Root holes		Hard					Odour
Peat		Mottled	occasional							

Disclaimer: This bore log is intended for environmental, not geotechnical purposes

BORE LOG

Project: Bilgola Plateau Date: 16/06/2020 Bore ID: B5

Site: 1 Bilambee Ln
Bilgola Plateay NSW 2107

Project ID: Bilgola-BI20

Logged by: Gunnar Haid

Driller:

Method: Full flight auger

Company: STS

Water Level: No GW Static:

Depth [m]	Well Construction	Sample	PID (PPM)	UCSC Class	Description
					Concrete 0.18 m
		x			Silty sandy clay, orange, damp
1m					
2m		x			EOH @ 2.5 m
3m					

Description		Colour	Structure	Moisture	Cohesive Soils		Sand & Gravel			Secondary
Fill	Clayey	Red	Homogenous	Dry	Very soft	Non plastic	Very loose	Boulders	Poorly sorted (well graded)	And (35-50%)
Clay	Silly	Yellow	Heterogeneous	Damp	Soft	Low plasticity	Loose	Cobbles		Some (20-35%)
Silt	Sandy	White	Stratified	Moist	Firm	Mod plasticity	Medium loose	Coarse gravel		Little (10-20%)
Sand	Gravelly	Black	Laminated	Wet	Stiff	High plasticity	Dense	Fine gravel	well sorted (poorly graded)	Trace (0-10%)
Gravel	Organic	Brown	Lens	Saturated	Very stiff		Very dense	Coarse sand		Contamination
Topsoil		Grey	Root holes		Hard					Odour
Peat		Mottled	occasional							

Disclaimer: This bore log is intended for environmental, not geotechnical purposes