Attachment 9 - Preliminary Contaminated Site Assessment

Report

Stage 2 Detailed Contamination Assessment

Proposed Rezoning to Rural Residential, 510 Beach Road, Berry

Prepared for:

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27 February 2018

Ref: G09/2571-Ar

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Document Status

Rev No.	Version	Author	Reviewer	Approved for Issue		
				Name	Signature	Date
0	Final	T Park-Ross	M Williams	M Williams		12.10.17
1	Final	T Park-Ross	M Williams	M Williams		27.2.17

Document Distribution

Rev No.	Copies	Format	Issued to	Date
0	1	Electronic	Richard and Enid Hall	12.10.17
1	1	Electronic	Richard and Enid Hall	27.2.18

Document delivery

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Executive Summary

Richard and Enid Hall commissioned Network Geotechnics Pty Ltd (NG) to carry out a Stage 2 Contamination Assessment in accordance with Contamination Land Management Act as part of a rezoning application to permit rural residential development at 510 Beach Road, Berry.

A Stage 1 Contamination Assessment was completed by Strategic Environmental Engineering Consulting (SEEC) in July 2015 (Reference: 15000106-CA-01). The report identified the site as being used for dairy farming and then grazing of beef cattle. Some isolated areas were identified as requiring further investigation including an aboveground storage tank (AST) and underground storage tank (UST) used for storing fuel, areas around the house and machinery sheds.

The objective of this investigation was to carry out a Stage 2 Contamination Assessment in order to assess the risk of site contamination and the suitability of the site for the proposed rezoning.

The scope of work undertaken to achieve the objectives included:

- Design and implementation of a field sampling and laboratory testing program.
- Drilling of 30 boreholes across the site.
- Collection of soil samples at regular depth intervals.
- Analysis of soil and dam water samples for contaminants of concern.
- Preparation of a Stage 2 Contamination Assessment report which includes recommendations for remediation.

Based on the results of this investigation, it is evident that there are some areas of contamination at the subject site. These areas of environmental concern (AECs) are as follows:

- AEC 1: Soils near UST/AST. Sample BH7 0.4-0.5 and BH7 0.9-1.0 contains concentrations of TRH C16 to C34 (F3) greater than the ESL for fine grained soils. Sample BH7 0-0.1 contains concentrations of zinc exceeding the EIL.
- AEC 2: Stained surface soils adjacent to the machinery shed. Soils have hydrocarbon staining and odour and are assessed to be aesthetically impacted.
- AEC 3: Area of burnt material. Sample BH13 contains concentrations of zinc greater than the EIL and lead greater than the HIL.

It is recommended that a Remediation Action Plan (RAP) be prepared which details remediation options and goals and the actions which must be carried out in order to meet these goals and validation procedures. In addition it is recommended that an environmental consultant be present during demolition and further testing be carried out after the removal of sheds, dwellings and driveway areas for any residual contamination.

It is assessed that the site can be remediated in order to be made suitable for the proposed rezoning to rural residential land use.

1.0 Introduction

Richard and Enid Hall commissioned Network Geotechnics Pty Ltd (NG) to carry out a Stage 2 Contamination Assessment in accordance with Contamination Land Management Act in order to lodge a Development Application to rezone the land to permit rural residential development at 510 Beach Road, Berry.

A Stage 1 Contamination Assessment was completed by Strategic Environmental Engineering Consulting (SEEC) in July 2015 (Reference: 15000106-CA-01). The report identified the site as being used for dairy farming and then grazing of beef cattle. Some isolated areas were identified as requiring further investigation including an aboveground storage tank (AST) and underground storage tank (UST) used for storing fuel, areas around the house and machinery sheds.

2.0 Scope of Work

The objective of this investigation was to carry out a Stage 2 Contamination Assessment in order to assess the risk of site contamination and the suitability of the site for the proposed rezoning.

The scope of work undertaken to achieve the objectives included:

- Design and implementation of a field sampling and laboratory testing program.
- Drilling of 30 boreholes across the site.
- Collection of soil samples at regular depth intervals.
- Analysis of soil and dam water samples for heavy metals (As, Cd, Cr, Cu, Pb, Ni, Zn, Hg), Total Recoverable Hydrocarbon, Benzene Toluene, Ethyl Benzene and Xylene and Polynuclear Aromatic Hydrocarbon (TRH/BTEX/PAH), Organochlorine and Organophosphate Pesticides (OC/OP) and asbestos presence
- Preparation of a Stage 2 Contamination Assessment report which includes recommendations for remediation.

3.0 Site Identification

The site is located to the south of Beach Road and is identified as 510 Beach Road, Berry (Lot 4 DP 834254). The site is bounded by:

- Rural residential properties to the east and west;
- Beach Road with rural properties to the north;
- Coomonderry Swamp to the south.

It is understood that the rear section of the lot is to be zoned for environmental conservation and is therefore not part of this investigation. The subject site covers a total area of approximately 56.4 hectares and is located in the Shoalhaven City Council area.

A plan of the site is included in Drawing No. G09/2571-1 in Appendix B.

4.0 Site History

4.1 Zoning

The site is currently zoned RU1 Primary Production and a section at the rear is zoned E2 Environmental Conservation. It is understood that the proposal involves rezoning the RU1 part of the site to R5 Large Lot Residential and the E2 part of the site to E1 National Parks and Nature Reserves.

4.2 Land Use

The Stage 1 report identified historical land use to include dairy farming up until approximately 1989. Since then the site has been used for cattle grazing. The site has also been used for residential purposes since the 1970s.

4.3 Adjacent Land

The Stage 1 report identified neighbouring sites to have been used for agricultural purposes up until the early 2000s when the sites to the east and west were rezoned for use as rural residential. The site to the north is part of a sand quarry. Based on these uses it is assessed that there is a low risk of contamination migration from neighbouring sites.

5.0 Site Condition and Surrounding Environment

5.1 Topography and Drainage

An east-west ridge runs through the site. The front portion of the site slopes to the north to north-east and the rear portion of the site slopes to the south-west.

Surface water runoff from the rear portion of the site would flow into Coomonderry Swamp – a SEPP14 Wetland. Runoff from the front portion of the site would flow into the two on-site dams and then into a culvert which flows under Beach Road into a dam on the adjacent property to the north.

5.2 Site Observations

A site inspection was carried out by a NG Environmental Scientist during fieldwork on 11 and 12 September 2017.

A gravel driveway was observed to lead to a brick, fibro and tile residence and a separate metal garage on concrete slab. To the east of the residence a pile of burnt timber and metal was observed.

Behind the garage, two metal sheds on concrete slabs were observed. The western shed was observed to be used for storing machinery and containers of oils. Oil staining was observed on the concrete and on the ground surface in front of the shed.

In front of the machinery sheds an AST was observed. Beneath the AST a fill point for a UST was observed. The two tanks are understood to have contained either diesel or petrol but are no longer in use.

Behind the machinery sheds the disused dairy building was observed to be constructed of bricks and metal on concrete slab. Some paint was observed to be peeling from the building. The holding yard in front of the dairy was on bare ground.

A metal shed on ground was observed to the east of the dairy. It was observed that the shed is used for storing hay bales.

Two dams were observed further to the east. A disused dam which had become silted up over time was observed in the north-western corner of the site and another in the south-eastern corner of the site. An area of excavation was observed near the northern boundary.

A site plan is attached in Appendix B.

5.3 Sensitive Environments

The rear section of the site is occupied by the Coomonderry Swamp which is a SEPP14 wetland. Surface water runoff from the southern portion of the site would flow into the swamp.

5.4 Preliminary Areas of Environmental Concern

Based on the findings of the Stage 1 report and NGs investigation the following areas of environmental concern (AECs) have been identified:

- The area surrounding and downslope of the AST and UST. Soils may be contaminated with TRH/BTEX/PAH and lead as a results of leaks or spillage from the tanks.
- The footprint of the homestead. This area is likely to have been treated for white ants and so could have residual organochlorine pesticides in the near-surface soil.
- The soils beneath and immediately outside the machinery sheds. These areas could be contaminated by fuel, oil or chemical spills from within the sheds. Contaminants of concern include TRH/BTEX/PAH, heavy metals and OC/OP pesticides.
- Areas which are visually assessed to have been filled including the gravel driveway and dam walls. Contaminants of concern include TRH/BTEX/PAH, heavy metals, OC/OP pesticides and asbestos.

6.0 Geology & Hydrology

6.1 Geology

Reference to the 1:250,000 Wollongong Series geological map indicates the front portion of the site is underlain by Quartenary Alluvium which consists of alluvium, gravel, swamp deposits and sand dunes and the rear of the site is underlain by Shoalhaven Group Berry Formation which consists of siltstone, shale and sandstone.

Subsurface conditions encountered in boreholes may be generalised as follows:

Table 3 Generalised Subsurface Lithology Encountered for BH4 to BH10, BH12, BH13, BH18 to BH30

Layer	Description	Depth to base of layer (m)
TOPSOIL	Silty CLAY, low plasticity, brown or grey brown	0.1 – 0.2
RESIDUAL	CLAY, medium to high plasticity, red brown or orange or red mottled grey or grey mottled orange, traces to some silt and gravel	0.35 - >1.5
ROCK	SHALE, extremely weathered, orange brown (BH21, BH26, BH27 only)	0.5 – 1.0

Table 4 Generalised Subsurface Lithology Encountered for BH1 to BH3, BH11, BH14 to BH17

Layer	Description	Depth to base of layer (m)
FILL	Sandy GRAVEL, medium to coarse grained, grey (BH1, BH2 and BH3 only)	0.5 - 1.0
FILL	Gravelly Silty CLAY, low to medium plasticity, grey (BH11 only)	0.2
FILL	Silty CLAY, low to medium plasticity, brown or grey mottled orange, traces of gravel (BH14, BH15, BH16, BH17 only)	0.2 - 0.7
RESIDUAL	CLAY, medium to high plasticity, red brown or orange or red mottled grey or grey mottled orange, traces to some silt and gravel	>1.5

6.2 Hydrology

The NSW Office of Water groundwater map indicates that there is one groundwater bore within 1km of the subject site. The groundwater bore (GW) is approximately 300m from the eastern boundary of the site and used for domestic purposes. The standing water level is 16m below ground level.

7.0 Sampling, Analysis Plan & Sampling Methodology

7.1 Sampling & Analysis Plan

A combination of systematic and judgemental sampling plan was utilised. Areas identified to have a higher risk of contamination during the site walkover assessment and from historical aerial photos were targeted for sampling. These include dam walls, areas around the sheds and AST/UST and gravel driveways. The remainder of the sampling points were spread across the subject site.

Based on the site history and findings of the fieldwork carried out, potential contaminants of concern were considered to be heavy metals, hydrocarbons, pesticides, and asbestos.

The table below provides rationale for sampling and testing details.

Table 5 Samples Tested for Contaminants

Sample ID	Location	Analytes Tested
BH1 0-0.1	Gravel driveway in fill.	Heavy metals
BH2 0-0.1	Gravel driveway in fill.	TRH/BTEX/PAH, OC/OP Pesticides, Heavy metals
BH3 0-0.1	Gravel driveway in fill.	Heavy metals
BH4 0-0.1	Topsoil adjacent to the residence.	Heavy metals
BH5 0-0.1	Near AST/UST in topsoil.	TRH/BTEX/PAH, Heavy metals
BH5 0.9-1.0	Near AST/UST in residual.	TRH/BTEX/PAH, Heavy metals
BH5 1.4-1.5	Near AST/UST in residual.	TRH/BTEX/PAH, Heavy metals
BH6 0.4-0.5	Near AST/UST in residual.	TRH/BTEX/PAH, Heavy metals
BH6 1.4-1.5	Near AST/UST in residual.	TRH/BTEX/PAH, Heavy metals
BH7 0-0.1	Near AST/UST in topsoil.	TRH/BTEX/PAH, Heavy metals
BH7 0.4-0.5	Near AST/UST in residual.	TRH
BH7 0.9-1.0	Near AST/UST in residual.	TRH/BTEX/PAH, Heavy metals
BH7 1.4-1.5	Near AST/UST in residual.	TRH
BH8 0-0.1	Near machinery shed in topsoil.	TRH/BTEX/PAH, OC/OP Pesticides, Heavy metals
BH9 0-0.1	Near machinery shed in topsoil.	TRH/BTEX/PAH, Heavy metals
BH10 0-0.1	Adjacent to dairy shed in topsoil.	TRH/BTEX/PAH
BH11 0-0.1	In holding area in fill.	TRH/BTEX/PAH, OC/OP Pesticides, Heavy metals
BH13 0-0.1	Burnt area in fill.	TRH/BTEX/PAH, Heavy metals
BH14 0.4-0.5	Wall of Dam 1 in fill.	TRH/BTEX/PAH, Heavy metals
BH15 0-0.1	Wall of Dam 1 in fill.	OC/OP Pesticides, Heavy metals
BH16 0.4-0.5	Wall of Dam 1 in fill.	TRH/BTEX/PAH, Heavy metals
BH17 0.4-0.5	Wall of Dam 1 in fill.	OC/OP Pesticides, Heavy metals
BH19 0-0.1	Grazing paddock in topsoil.	OC/OP Pesticides, Heavy metals
BH20 0.9-1.0	Grazing paddock in residual.	TRH/BTEX/PAH, Heavy metals
BH22 0-0.1	Grazing paddock in topsoil.	Heavy metals
BH25 0.4-0.5	Grazing paddock in residual.	OC/OP Pesticides, Heavy metals
BH27 0-0.1	Grazing paddock in topsoil.	Heavy metals
BH29 0-0.1	Grazing paddock in topsoil.	OC/OP Pesticides, Heavy metals
BH30 0.9-1.0	Grazing paddock in residual.	TRH/BTEX/PAH, Heavy metals
BH130 0.9-1.0	Intra-laboratory duplicate in residual.	TRH/BTEX/PAH, Heavy metals
BH120 0.9-1.0	Intra-laboratory duplicate in residual.	TRH/BTEX/PAH, Heavy metals
BH230 0.9-1.0	Inter-laboratory duplicate in residual.	TRH/BTEX/PAH, Heavy metals
BH220 0.9-1.0	Iner-laboratory duplicate in residual.	TRH/BTEX/PAH, Heavy metals
DW1	Water sample from Dam 1.	TRH/BTEX/PAH, Heavy metals, OC/OP Pesticides, Total hardness
DW2	Water sample from Dam 2.	TRH/BTEX/PAH, Heavy metals, OC/OP Pesticides, Total hardness

7.2 Sampling Methodology

Fieldwork carried out on 11 and 12 September 2017 involved drilling 30 boreholes (BH1 to BH30) using a skid steer Dingo drill rig with 100mm solid flight augurs.

Soil samples for contamination testing were collected using a stainless steel trowel from the augur cuttings. Sampling tools were decontaminated between each sample collection using water, DECON 90 and a scrubbing brush. All samples were placed in glass jars with plastic caps and teflon seals with minimum headspace. Each sample was labelled with job number, the sample location and date. All samples were recorded on the Chain of Custody (COC) record stored in our office files.

The field investigation was carried out by an Environmental Scientist from NG who selected borehole locations, carried out sampling and prepared borehole logs. Borehole locations are shown on the site plan in Appendix B and the borehole logs are included in Appendix C.

8.0 Quality Assurance & Quality Control

8.1 Field Quality Assurance & Quality control

Field quality assurance objectives were designed based on Australian Standard AS4482 and comprised the following:

- Sample collection and dispatch to testing laboratory were carried out by experienced environmental/ civil engineers appropriately trained for such tests.
- All sampling tools were decontaminated prior to use.
- Chain of custody forms were used in dispatching samples.
- Containers, sampling packaging and holding times were checked prior to dispatch of samples and checked after samples were received by the laboratories.

Two intra and inter laboratory duplicate samples were tested during the investigation. The results are summarised below.

Table 6 Summary of results of intra-laboratory duplicate sample 1

Sample ID	LOR	BH30 0.9-1.0	BH130 0.9-1.0	RPD (%)
Arsenic	3	2	2	N/A
Cadmium	0.3	0.4	0.5	N/A
Chromium	0.5	21	21	0%
Copper	0.5	26	25	4%
Lead	1	10	10	0%
Nickel	0.5	8.6	8.1	6%
Zinc	2	50	49	2%
Mercury	0.05	<0.05	<0.05	N/A
TRH (F1)	25	<25	<25	N/A
TRH (F2)	25	<25	<25	N/A
TRH (F3)	90	<90	<90	N/A
TRH (F4)	120	<120	<120	N/A
BTEX	0.6	<0.6	<0.6	N/A
PAH	0.8	<0.8	<0.8	N/A

Table 7 Summary of results of intra-laboratory duplicate sample 2

Sample ID	LOR	BH20 0.9-1.0	BH120 0.9-1.0	RPD (%)
Arsenic	3	3	2	N/A
Cadmium	0.3	0.9	0.9	N/A
Chromium	0.5	25	21	17%
Copper	0.5	12	11	9%
Lead	1	16	12	29%
Nickel	0.5	2.8	2.4	N/A
Zinc	2	17	15	N/A
Mercury	0.05	<0.05	<0.05	N/A
TRH (F1)	25	<25	<25	N/A
TRH (F2)	25	<25	<25	N/A
TRH (F3)	90	<90	<90	N/A
TRH (F4)	120	<120	<120	N/A
BTEX	0.6	<0.6	<0.6	N/A
PAH	0.8	<0.8	<0.8	N/A

Table 8 Summary of results of inter-laboratory duplicate sample 1

Sample ID	LOR	BH30 0.9-1.0	BH230 0.9-1.0	RPD (%)
Arsenic	3	2	3	N/A
Cadmium	0.3	0.4	<0.2	N/A
Chromium	0.5	21	11	63%
Copper	0.5	26	16	48%
Lead	1	10	8	N/A
Nickel	0.5	8.6	4	N/A
Zinc	2	50	26	N/A
Mercury	0.5	<0.05	<0.05	N/A
TRH (F1)	25	<25	<25	N/A
TRH (F2)	25	<25	<25	N/A
TRH (F3)	90	<90	<90	N/A
TRH (F4)	120	<120	<120	N/A
BTEX	0.6	<0.6	<0.6	N/A
PAH	0.8	<0.8	<0.8	N/A

Table 9 Summary of results of inter-laboratory duplicate sample 2

Sample ID	LOR	BH20 0.9-1.0	BH220 0.9-1.0	RPD (%)
Arsenic	3	3	<2	N/A
Cadmium	0.3	0.9	<0.2	N/A
Chromium	0.5	25	6	123%
Copper	0.5	12	3	120%
Lead	1	16	7	N/A
Nickel	0.5	2.8	<2	N/A
Zinc	2	17	2	N/A
Mercury	0.5	<0.05	<0.05	N/A
TRH (F1)	25	<25	<25	N/A
TRH (F2)	25	<25	<25	N/A
TRH (F3)	90	<90	<90	N/A
TRH (F4)	120	<120	<120	N/A
BTEX	0.6	<0.6	<0.6	N/A
PAH	0.8	<0.8	<0.8	N/A

Notes:

1. N/A indicates that sample results for analyte are not greater than 10 times the Limit of Reporting (LOR)

RPD values obtained for duplicate samples were below the allowable limit of 30-50% (Australian Standard AS 4482.1) for intra-laboratory duplicate samples. However, both inter-laboratory duplicate samples were greater than the limit. This indicates that the results of the secondary laboratory may not be reliable. The samples are being reanalysed by the laboratory.

The trip blank recorded less than laboratory detection levels for TRH/BTEX/PAH. Recovery on the trip spike was greater than 84% for all samples which is acceptable.

On the basis of the analytical data validation procedures employed, the overall quality of the analytical data produced is considered to be of an acceptable standard for interpretive use.

8.2 Laboratory Quality Assurance & Quality Control

Only NATA accredited laboratories were used for testing. Certificates of analysis and quality control records were reviewed for each batch of test results.

Specific elements that have been checked and assessed include the following:

- Preservation and storage of samples upon collection and during transport to the laboratory;
- Sample holding times;
- Use of appropriate analytical and field sampling procedures;
- Required limits of reporting;
- Frequency of conducting quality control measurements;
- The occurrences of apparently unusual or anomalous results, eg laboratory results that appear to be inconsistent with field observations or measurements have been assessed.

On the basis of the analytical data validation procedures employed, the overall quality of the analytical data produced is considered to be of an acceptable standard for interpretive use.

9.0 Assessment Criteria

9.1 Soil

The assessment of potentially contaminated land involves the evaluation of potential human health hazards and environmental impacts. The receptors (or potential receptors) of concern may be within the site being assessed, or outside the site boundaries due to potential off-site migration of contaminants.

The following assessment criteria were used for assessment of the site soils:

- The Health Investigation Levels (HILs) and Health Screening Levels (HSLs) summarised in the following Table 10 to 12, which are extracted from Schedule B1 of the NEPM Guidelines May 2013 are used for assessing the risk to human health.

- The Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) summarised in the following Table 13 to 14 from Schedule B1 of the NEPM Guidelines May 2013 are used for assessing the risk to the environment.

Table 10 Health Investigation Levels for soil contaminants (mg/kg)

Chemical	Health-based investigation levels (mg/kg) Residential[1] A
Metals and Inorganics	
Arsenic[2]	100
Cadmium	20
Chromium (VI)	100
Copper	6000
Lead[3]	300
Mercury (inorganic)[5]	40
Methyl mercury[4]	10
Nickel	400
Zinc	7400
Polycyclic Aromatic Hydrocarbons (PAHs)	
Carcinogenic PAHs (as BaP TEQ)[6]	3
Total PAHs[7]	300
Organochlorine Pesticides	
DDT+DDE+DDD	240
Aldrin and dieldrin	6
Chlordane	50
Endosulfan	270
Endrin	10
Heptachlor	6
HCB	10
Methoxychlor	300
Mirex	10
Toxaphene	20
Other Pesticides	
Atrazine	320
Chlorpyrifos	160
Bifenthrin	600

Table 11 Soil HSLs for vapour intrusion (mg/kg)

	HSL A & HSL B Low – high density residential				
CHEMICAL	**0 m to <1 m**	**1 m to <2 m**	**2 m to <4m**	**4 m+**	**Soil saturation concentration (Csat)**
SAND					
Toluene	160	220	310	540	560
Ethylbenzene	55	NL	NL	NL	64
Xylenes	40	60	95	170	300
Naphthalene	3	NL	NL	NL	9
Benzene	0.5	0.5	0.5	0.5	360
F1	45	70	110	200	950
F2	110	240	440	NL	560
SILT					
Toluene	390	NL	NL	NL	640
Ethylbenzene	NL	NL	NL	NL	69
Xylenes	95	210	NL	NL	330
Naphthalene	4	NL	NL	NL	10
Benzene	0.6	0.7	1	2	440
F1	40	65	100	190	910
F2	230	NL	NL	NL	570
CLAY					
Toluene	480	NL	NL	NL	630
Ethylbenzene	NL	NL	NL	NL	68
Xylenes	110	310	NL	NL	330
Naphthalene	5	NL	NL	NL	10
Benzene	0.7	1	2	3	430
F1	50	90	150	290	850
F2	280	NL	NL	NL	560

Table 12 Health screening levels for asbestos contamination in soil

	Health Screening Level (w/w)
Form of asbestos	**Residential A**
Bonded ACM	0.01%
Friable asbestos (FA) and asbestos fines (AF)	0.001%
All forms of asbestos	No visible asbestos for surface soil

Table 13 ESLs for TRH Fractions F1 – F4, BTEX and Benzo(a)pyrene in Soil

CHEMICAL	Soil texture	ESLs (mg/kg dry soil)
		Urban residential and public open space
F1 C_6-C_{10}	*Coarse / Fine*	180*
F2 >C_{10}-C_{16}		120*
F3 >C_{16}-C_{34}	*Coarse*	300
	Fine	1300
F4 >C_{34}-C_{40}	*Coarse*	2800
	Fine	5600
Benzene	*Coarse*	50
	Fine	65
Toluene	*Coarse*	85
	Fine	105
Ethylbenzene	*Coarse*	70
	Fine	125
Xylenes	*Coarse*	105
	Fine	45
Benzo(a)pyrene	*Coarse*	0.7
	Fine	0.7

Table 14 EILs for contaminants in Soil

Chemical	Ecological investigation levels (mg/kg)
	Urban residential/public open space
Metals and Inorganics	
Arsenic	100
Chromium (III)	190
Copper	60
Lead	1100
Nickel	30
Zinc	110
Naphthalene	170
DDT	180

Notes:

1. The EIL is calculated from summing the Added Contaminant Limit (ACL) and the Ambient Background Concentration (ABC).
2. The EIL for soil is based on the most conservative CEC and pH as no results were available.

The subject site is proposed for residential use. Consequently, the issues of concern for contamination within the site are considered to be the risk of harm to human health and environmental impacts.

The test results for soils will therefore be assessed against the available Health Investigation Levels (HIL) for residential with gardens/accessible soil (HIL A) and Ecological Investigation Levels (EIL) for urban residential/public open space.

9.2 Water

Water samples collected from groundwater and dams will be compared with the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)* for freshwater ecosystems for the protection of 95% of species. The guideline values are presented in Table 15.

Table 15 ANZECC guidelines for freshwater ecosystems

Chemical		Trigger values for freshwater (μgL^{-1})
		95% Protection of Species
METALS & METALLOIDS		
Arsenic (As III)		24
Arsenic (AsV)		13
Cadmium	H	0.3
Chromium (Cr III)	H	ID
Chromium (CrVI)		2.0
Copper	H	1.9

Chemical		Trigger values for freshwater (μgL^{-1})
		95% Protection of Species
Lead	H	5.2
Mercury (inorganic)	B	0.6
Mercury (methyl)		ID
Nickel	H	14.6
Zinc	H	10.6
AROMATIC HYDROCARBONS		
Benzene		950
Toluene		ID
Ethylbenzene		ID
o-xylene		350
m-xylene		ID
p-xylene		200
m+*p*-xylene		ID
Cumene		ID
Polycyclic Aromatic Hydrocarbons		
Naphthalene		16
Anthracene	B	ID
Phenanthrene	B	ID
Fluoranthene	B	ID
Benzo(a)pyrene	B	ID
ORGANOCHLORINE PESTICIDES		
Aldrin	B	ID
Chlordane	B	0.08
DDE	B	ID
DDT	B	0.01
Dicofol	B	ID
Dieldrin	B	ID
Endosulfan	B	0.2 [A]
Endosulfan alpha	B	ID
Endosulfan beta	B	ID
Endrin	B	0.02
Heptachlor	B	0.09
Lindane		0.2
Methoxychlor	B	ID
Mirex	B	ID
Toxaphene	B	0.2
ORGANOPHOSPHORUS PESTICIDES		
Azinphos methyl		0.02
Chlorpyrifos	B	0.01
Demeton		ID
Demeton-S-methyl		ID
Diazinon		0.01
Dimethoate		0.15
Fenitrothion		0.2
Malathion		0.05
Parathion		0.004 [C]
Profenofos	B	ID
Temephos	B	ID

Notes:

1. Values in grey shading are the trigger values applying to typical *slightly–moderately disturbed systems*
2. B = Chemicals for which possible bioaccumulation and secondary poisoning effects should be considered.
3. H = Chemicals for which algorithms have been provided in the ANZECC guidelines in table 3.4.3 to account for the effects of hardness. The values for dam water have been calculated using a site-specific hardness of 32mg/L $CaCO_3$.

10.0 Results & Discussion

10.1 Visual Assessment

Boreholes drilled in the walls of Dams 1 and 2 (BH14 to BH17), driveway (BH1 to BH3) and holding area (BH11) were found to contain fill with no construction rubbish or foreign materials. Borehole BH13 was found to contain ash on the surface.

10.2 Analytical Test Results – Soil

Tests were carried out on discrete soil samples collected mainly from areas assessed to have a risk of contamination. The results are summarised in Appendix D and are discussed below:

10.2.1 Metals

The concentration of heavy metals in soil were below the HIL and EIL in most samples tested. However, samples BH7 0-0.1 and BH13 0-0.1 were found to contain concentrations of zinc exceeding the EIL. Sample BH13 0-0.1 was also found to contain concentrations of lead exceeding the HIL. Sample BH7 0-0.1 was collected from topsoil adjacent to the UST and sample BH13 0-0.1 was collected from an ash pile which is the likely source of contamination.

10.2.2 Polynuclear Aromatic Hydrocarbon

The concentration of PAH in samples tested were below the HSLs and ESLs for all samples.

10.2.3 Total Recoverable Hydrocarbons & BTEX

The concentration of TRH and BTEX in samples tested was below the HSLs and ESLs in most samples. However, samples BH7 0.4-0.5 and BH7 0.9-1.0 were found to contain concentrations of TRH C16 to C34 (F3) greater than the ESL for fine grained soils. The source of TRH is likely the adjacent UST.

10.2.4 OC/OP Pesticides

The concentration of OC/OP Pesticides in samples tested was below the laboratory detection levels all samples.

10.2.5 Asbestos

No asbestos was detected in any of the samples tested.

10.3 Analytical Test Results – Dam Water

Tests were carried out on dam water samples collected. The results were compared to the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)* for freshwater ecosystems for the protection of 95% of species. The results are discussed below:

10.3.1 Metals

The concentration of most heavy metals were less than the relevant trigger values for most metals. However, the concentration of copper in DW1 and DW2 exceeded the trigger value. The concentration of total chromium exceeded the trigger value for chromium VI.

10.3.2 TRH/BTEX/PAH

The dam water samples were tested for TRH/BTEX/PAH compounds and the results were below the laboratory detection levels.

10.3.3 OC/OP Pesticides

The dam water samples were tested for OC/OP Pesticides and the results were below the laboratory detection levels.

11.0 Site Characterisation

Based on the results of this investigation, it is evident that there are some areas of contamination at the subject site. These have been named areas of environmental concern (AECs). A summary of the contamination encountered is presented in Table 16 and estimated volume of contaminated material is presented in Table 17.

Table 16 Description of Contamination Present in AECs

AEC	Location and Contamination
AEC 1	▪ Soils near UST/AST. ▪ Sample BH7 0.4-0.5 and BH7 0.9-1.0 contains concentrations of TRH C16 to C34 (F3) greater than the ESL for fine grained soils. ▪ Sample BH7 0-0.1 contains concentrations of zinc exceeding the EIL.
AEC 2	▪ Stained surface soils adjacent to the machinery shed. ▪ Soils have hydrocarbon staining and odour and are assessed to be aesthetically impacted.
AEC 3	▪ Area of burnt material. ▪ Sample BH13 contains concentrations of zinc greater than the EIL and lead greater than the HIL.

Table 17 Estimated Dimensions and Volumes of Areas of Environmental Concern

AEC	Approximate Area (m^2)	Average Depth/ Thickness of Contaminated Layer (m)	Volume of Contaminated Material (m^3)
AEC 1	12.5	1.5	19
AEC 2	20	0.1	2
AEC 3	20	0.5	10
		Total (max)	**31**

12.0 Conclusions

Based on the findings of this investigation the following conclusions are made:

- Laboratory testing of soil samples and visual assessment identified three AECs which require remediation.
- Dam water samples recorded concentrations of some heavy metals greater than the relevant trigger values. Therefore, the water may be irrigated across the site or used during earthworks for dust suppression but cannot be discharged to stormwater or creeks.
- If demolition of existing structures is proposed, care should be taken when removing the residence, sheds, septic tanks and when excavating dam walls and driveway areas as asbestos may be buried in these areas. We recommend that a hazardous material survey be carried out prior to demolition of structures. If asbestos is found an accredited contractor with a licence to handle asbestos should be engaged for demolition.
- Further testing should be carried out after the removal of sheds, dwellings and driveway areas for any residual contamination.

Based on the above, it is recommended that a Remediation Action Plan (RAP) be prepared which details remediation options and goals and the actions which must be carried out in order to meet these goals and validation procedures. It is assessed that the site can be remediated in order to be made suitable for the proposed rezoning to rural residential land use.

13.0 References

1. National Environment Protection Measures (NEPM) (2013)
2. Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)

Appendix A

Information Sheets

Information About This Report

LIMITATIONS

Scope of Services: The report has been prepared in accordance with the scope of services set out in NG's Proposal under NG's Terms of Engagement, or as otherwise agreed with the Client. The scope of services may have been limited and/or amended by a range of factors including time, budget, access and site constraints.

Specific Purpose: The report is provided for the specific development and purpose as described in the report. The report may not contain sufficient information for developments or purposes other than that described in the report.

Currency of Information: The information in this report is considered accurate at the date of issue with regard to the current conditions of the site.

Reliance on Information: In preparing the report NG has necessarily relied upon information provided by the Client and/or their Agents. Such data may include surveys, analyses, designs, maps and plans. NG has not verified the accuracy or completeness of the data except as stated in this report.

Copyright and Reproduction: The contents of this document are and remain the intellectual property of NG. This document should only be used for the purpose for which it was commissioned and should not be used for other projects or by a third party. This report shall not be reproduced either totally or in part without the permission of NG. Where information from this report is to be included in contract documents or engineering specification for the project, the entire report should be included in order to minimise the likelihood of misinterpretation.

Construction Specifications: Unless otherwise stated, the report, or sections of the report, should not be used as part of a specification for a project, without review and agreement by NG.

Report Should Not be Separated: The report must be read in conjunction with the attached Information Sheets and any other explanatory notes and should be kept in its entirety without separation of individual pages or sections.

Review by Others: NG cannot be held responsible for interpretations or conclusions from review by others of this report or test data, which are not otherwise supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

GENERAL NOTES

Geotechnical and Environmental Reporting: Geotechnical and environmental reporting relies on the interpretation of factual information based on judgment and opinion and is far less exact than other engineering or design disciplines. Geotechnical and environmental reports are for a specific purpose, development and site as described in the report and may not contain sufficient information for other purposes, developments or sites (including adjacent sites) other than that described in the report.

Subsurface Conditions: Subsurface conditions can change with time and can vary between test locations. For example, the actual interface between the materials may be far more gradual or abrupt than indicated and contaminant presence may be affected by spatial and temporal patterns. Therefore, actual conditions in areas not sampled may differ from those predicted since no subsurface investigation, no matter how comprehensive, can reveal all subsurface details and anomalies. Construction operations at or adjacent to the site and natural events such as floods, earthquakes or groundwater fluctuations can also affect subsurface conditions and thus the continuing adequacy of a geotechnical report. NG should be kept informed of any such events and should be retained to identify variances, conduct additional tests if required, and recommend solutions to problems encountered on site.

Groundwater: Groundwater levels indicated on borehole and test pit logs are recorded at specific times. Depending on ground permeability, measured levels may or may not reflect actual levels if measured over a longer time period. Also, groundwater levels and seepage inflows may fluctuate with seasonal and environmental variations and construction activities.

Interpretation of Data: Data obtained from nominated discrete locations, subsequent laboratory testing and empirical or external sources are interpreted by trained professionals in order to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions in accordance with any relevant industry standards, guidelines or procedures.

Soil and Rock Descriptions: Soil and rock descriptions are based on AS 1726 – 1993, using visual and tactile assessment except at discrete locations where field and / or laboratory tests have been carried out. Refer to the accompanying soil and rock terms sheet for further information.

Further Advice: NG would be pleased to further discuss how any of the above issues could affect a specific project. We would also be pleased to provide further advice or assistance including:

- Assessment of suitability of designs and construction techniques;
- Contract documentation and specification;
- Construction control testing (earthworks, pavement materials, concrete);
- Construction advice (foundation assessments, excavation support).

Abbreviations, Notes & Symbols

SUBSURFACE INVESTIGATION

METHOD

Borehole Logs

AS#	Auger screwing (#-bit)
AD#	Auger drilling (#-bit)
B	Blank bit
V	V-bit
T	TC-bit
HA	Hand auger
R	Roller/tricone
W	Washbore
AH	Air hammer
AT	Air track
LB	Light bore push tube
MC	Macro core push tube
DT	Dual core push tube

Excavation Logs

BH	Backhoe/excavator bucket
NE	Natural exposure
HE	Hand excavation
X	Existing excavation

Cored Borehole Logs

NMLC	NMLC core drilling
NQ/HQ	Wireline core drilling

SUPPORT

Borehole Logs

C	Casing
M	Mud

Excavation Logs

S	Shoring
B	Benched

SAMPLING

B	Bulk sample
D	Disturbed sample
U#	Thin-walled tube sample (#mm diameter)
ES	Environmental sample
EW	Environmental water sample

FIELD TESTING

PP	Pocket penetrometer (kPa)
DCP	Dynamic cone penetrometer
PSP	Perth sand penetrometer
SPT	Standard penetration test
PBT	Plate bearing test
s_U	Vane shear strength peak/residual (kPa) and vane size (mm)
N*	SPT (blows per 300mm)
Nc	SPT with solid cone
R	Refusal

**denotes sample taken*

BOUNDARIES

———— Known

— — — - Probable

..... Possible

SOIL

MOISTURE CONDITION

D	Dry
M	Moist
W	Wet
Wp	Plastic Limit
Wl	Liquid Limit
MC	Moisture Content

CONSISTENCY

VS	Very Soft
S	Soft
F	Firm
St	Stiff
VSt	Very Stiff
H	Hard
Fb	Friable

DENSITY INDEX

VL	Very Loose
L	Loose
MD	Medium Dense
D	Dense
VD	Very Dense

USCS SYMBOLS

GW	Well graded gravels and gravel-sand mixtures, little or no fines
GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
GM	Silty gravels, gravel-sand-silt mixtures
GC	Clayey gravels, gravel-sand-clay mixtures
SW	Well graded sands and gravelly sands, little or no fines
SP	Poorly graded sands and gravelly sands, little or no fines
SM	Silty sand, sand-silt mixtures
SC	Clayey sand, sand-clay mixtures
ML	Inorganic silts of low plasticity, very fine sands, rock flour, silty or clayey fine sands
CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays
OL	Organic silts and organic silty clays of low plasticity
MH	Inorganic silts of high plasticity
CH	Inorganic clays of high plasticity
OH	Organic clays of medium to high plasticity
PT	Peat muck and other highly organic soils

ROCK

WEATHERING

RS	Residual Soil
XW	Extremely Weathered
HW	Highly Weathered
MW	Moderately Weathered
DW*	Distinctly Weathered
SW	Slightly Weathered
FR	Fresh

**covers both HW & MW*

STRENGTH

EL	Extremely Low
VL	Very Low
L	Low
M	Medium
H	High
VH	Very High
EH	Extremely High

ROCK QUALITY DESIGNATION (%)

$$= \frac{\text{sum of intact core pieces} > 100\text{mm}}{\text{total length of section being evaluated}} \times 100$$

CORE RECOVERY (%)

$$= \frac{\text{core recovered}}{\text{core lIft}} \times 100$$

NATURAL FRACTURES

Type

JT	Joint
BP	Bedding plane
SM	Seam
FZ	Fractured zone
SZ	Shear zone
VN	Vein

Infill or Coating

Cn	Clean
St	Stained
Vn	Veneer
Co	Coating
Cl	Clay
Ca	Calcite
Fe	Iron oxide
Mi	Micaceous
Qz	Quartz

Shape

pl	Planar
cu	Curved
un	Undulose
st	Stepped
ir	Irregular

Roughness

pol	Polished
slk	Slickensided
smo	Smooth
rou	Rough

Soil & Rock Terms

SOIL

MOISTURE CONDITION

Term	Description
Dry	Looks and feels dry. Cohesive and cemented soils are hard, friable or powdery. Uncemented granular soils run freely through the hand.
Moist	Feels cool and darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.
Wet	As for moist, but with free water forming on hands when handled.

For cohesive soils, moisture content may also be described in relation to plastic limit (W_P) or liquid limit (W_L). [>> much greater than, > greater than, < less than, << much less than].

CONSISTENCY

Term	c_u (kPa)	Term	c_u (kPa)
Very Soft	< 12	Very Stiff	100 - 200
Soft	12 - 25	Hard	> 200
Firm	25 - 50	Friable	-
Stiff	50 - 100		

DENSITY INDEX

Term	I_D (%)	Term	I_D (%)
Very Loose	< 15	Dense	65 – 85
Loose	15 – 35	Very Dense	> 85
Medium Dense	35 – 65		

PARTICLE SIZE

Name	Subdivision	Size (mm)
Boulders		> 200
Cobbles		63 - 200
Gravel	coarse	20 - 63
	medium	6 - 20
	fine	2.36 - 6
Sand	coarse	0.6 - 2.36
	medium	0.2 - 0.6
	fine	0.075 - 0.2
Silt & Clay		< 0.075

MINOR COMPONENTS

Term	Proportion by Mass coarse grained	fine grained
Trace	≤ 5%	≤ 15%
Some	5 - 2%	15 - 30%

SOIL ZONING

Layers	Continuous exposures
Lenses	Discontinuous layers of lenticular shape
Pockets	Irregular inclusions of different material

SOIL CEMENTING

Weakly	Easily broken up by hand
Moderately	Effort is required to break up the soil by hand

SOIL STRUCTURE

Massive	Coherent, with any partings both vertically and horizontally spaced at greater than 100mm
Weak	Peds indistinct and barely observable on pit face. When disturbed approx. 30% consist of peds smaller than 100mm
Strong	Peds are quite distinct in undisturbed soil. When disturbed >60% consists of peds smaller than 100mm

ROCK

SEDIMENTARY ROCK TYPE DEFINITIONS

Rock Type	**Definition** (more than 50% of rock consists of….)
Conglomerate	… gravel sized (> 2mm) fragments
Sandstone	… sand sized (0.06 to 2mm) grains
Siltstone	… silt sized (<0.06mm) particles, rock is not laminated
Claystone	… clay, rock is not laminated
Shale	… silt or clay sized particles, rock is laminated

STRENGTH

Term	Is50 (MPa)	Term	Is50 (MPa)
Extremely Low	< 0.03	High	1 – 3
Very Low	0.03 – 0.1	Very High	3 – 10
Low	0.1 – 0.3	Extremely High	> 10
Medium	0.3 – 1		

WEATHERING

Term	Description
Residual Soil	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident
Extremely Weathered	Rock is weathered to such an extent that it has 'soil' properties, i.e. it either disintegrates or can be remoulded, in water. Fabric of original rock is still visible
Highly Weathered	Rock strength usually highly changed by weathering; rock may be highly discoloured
Moderately Weathered	Rock strength usually moderately changed by weathering; rock may be moderately discoloured
Distinctly Weathered	See 'Highly Weathered' or 'Moderately Weathered'
Slightly Weathered	Rock is slightly discoloured but shows little or no change of strength from fresh rock
Fresh	Rock shows no signs of decomposition or staining

NATURAL FRACTURES

Type	Description
Joint	A discontinuity or crack across which the rock has little or no tensile strength. May be open or closed
Bedding plane	Arrangement in layers of mineral grains of similar sizes or composition
Seam	Seam with deposited soil (infill), extremely weathered insitu rock (XW), or disoriented usually angular fragments of the host rock (crushed)
Shear zone	Zone with roughly parallel planar boundaries, of rock material intersected by closely spaced (generally < 50mm) joints and /or microscopic fracture (cleavage) planes
Vein	Intrusion of any shape dissimilar to the adjoining rock mass. Usually igneous

Shape	Description
Planar	Consistent orientation
Curved	Gradual change in orientation
Undulose	Wavy surface
Stepped	One or more well defined steps
Irregular	Many sharp changes in orientation

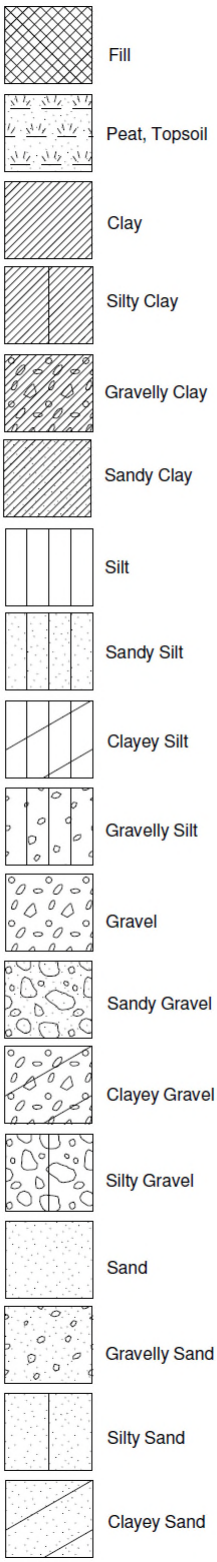
Infill or Coating	Description
Clean	No visible coating or discolouring
Stained	No visible coating but surfaces are discoloured
Veneer	A visible coating of soil or mineral, too thin to measure; may be patchy
Coating	Visible coating ≤ 1mm thick. Ticker soil material described as seam

Roughness	Description
Polished	Shiny smooth surface
Slickensided	Grooved or striated surface, usually polished
Smooth	Smooth to touch. Few or no surface irregularities
Rough	Many small surface irregularities (amplitude generally < 1mm). Feels like fine to coarse sandpaper

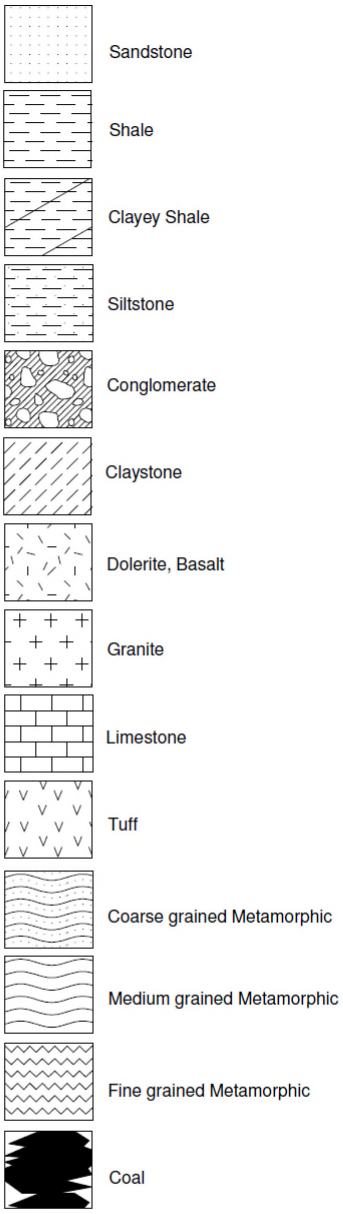
Note: soil and rock descriptions are generally in accordance with AS1726-1993 Geotechnical Site Investigations

Graphic Symbols Index

Soil

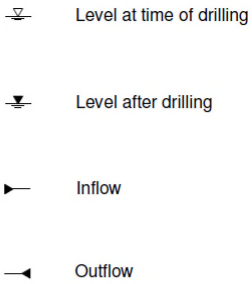


Rock



Other

Water Measurements



Appendix B

Site Plan and Test Locations

		Network Geotechnics Pty Ltd 12/9-15 Gundah Road, MT KURING-GAI NSW 2080 Tel: (02) 8438 0300 Fax: (02) 8438 0310 Email: engineering@netgeo.com.au	Scale: On drawing	Client: Richard and Enid Hall	
			Date: 12/10/17	Project: Proposed Residential Subdivision	
			Drawn By: TPR	Location: 510 Beach Road, Berry	
			Drawing No: G09/2571-1	Sheet: 1 of 1	**SITE PLAN**

Network Geotechnics Pty Ltd
12/9-15 Gundah Road,
MT KURING-GAI NSW 2080
Tel: (02) 8438 0300
Fax: (02) 8438 0310
Email: engineering@netgeo.com.au

Scale: On drawing	Client: Richard and Enid Hall
Date: 12/10/17	Project: Proposed Residential Subdivision
Drawn By: TPR	Location: 510 Beach Road, Berry
Drawing No: G09/2571-2	Sheet: 1 of 1

SITE PLAN

Appendix C

Borehole Logs

BOREHOLE LOG

Network Geotechnics Pty Ltd

ACN 069 211 561
Unit 12 7/15 Gundah Road Mt Kuring Gai
NSW 2080
02 84380300
02 84380310

Job No:	G09/2571
Hole No:	**BH01**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				GP	Sandy GRAVEL, medium to coarse grained, grey	M		FILL
						CL/CI	Silty CLAY, low to medium plasticity, brown, some gravel	≥Wp		
		D								
						CI/CH	CLAY, medium to high plasticity, grey mottled orange, some silt			RESIDUAL
		D		1.0						
							BH01 Terminated at 1 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

Network Geotechnics Pty Ltd

ACN 069 211 561
Unit 12 7/15 Gundah Road Mt Kuring Gai
NSW 2080
02 84380300
02 84380310

Job No:	G09/2571
Hole No:	**BH02**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				GP	Sandy GRAVEL, medium to coarse grained, grey	M		FILL
						CL/CI	Silty CLAY, low to medium plasticity, brown, some gravel	≤Wp		
		D								
		D		1.0						
							BH02 Terminated at 1 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

Network Geotechnics Pty Ltd

ACN 069 211 561
Unit 12 7/15 Gundah Road Mt Kuring Gai
NSW 2080
02 84380300
02 84380310

Job No:	G09/2571
Hole No:	**BH03**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				GP	Sandy GRAVEL, medium to coarse grained, grey	M		FILL
						CL/CI	Silty CLAY, low to medium plasticity, brown, some gravel	≤Wp		
		D								
						-	SHALE, extremely weathered, orange and grey	-		RESIDUAL
		D		1.0						
							BH03 Terminated at 1 m			
				2.0						

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

Network Geotechnics Pty Ltd

ACN 069 211 561
Unit 12 7/15 Gundah Road Mt Kuring Gai
NSW 2080
02 84380300
02 84380310

Job No:	G09/2571
Hole No:	**BH04**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Silty CLAY, low to medium plasticity, brown	≥Wp		TOPSOIL
						CI/CH	CLAY, medium to high plasticity, red brown, some silt			
		D								
						CL/CI	Silty CLAY, low to medium plasticity, orange mottled grey, some gravel			RESIDUAL
		D		1.0						
							BH04 Terminated at 1 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

Network Geotechnics Pty Ltd

ACN 069 211 561
Unit 12 7/15 Gundah Road Mt Kuring Gai
NSW 2080
02 84380300
02 84380310

Job No:	G09/2571
Hole No:	**BH05**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Silty CLAY, low to medium plasticity, brown	≥Wp		TOPSOIL
						CL/CI	Silty CLAY, low to medium plasticity, brown			RESIDUAL
		D								
						CI/CH	CLAY, medium to high plasticity, red mottled grey, traces of gravel and silt			
		D		1.0						
		D								
				2.0			BH05 Terminated at 1.5 m			

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

Network Geotechnics Pty Ltd

ACN 069 211 561
Unit 12 7/15 Gundah Road Mt Kuring Gai
NSW 2080
02 84380300
02 84380310

Job No:	G09/2571
Hole No:	**BH06**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Silty CLAY, low to medium plasticity, brown	≥Wp		TOPSOIL
						CL/CI	Silty CLAY, low to medium plasticity, brown			RESIDUAL
		D								
						CI/CH	CLAY, medium to high plasticity, red mottled grey, traces of gravel and silt			
		D		1.0						
		D								
				2.0			BH06 Terminated at 1.5 m			

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

Network Geotechnics Pty Ltd

ACN 069 211 561
Unit 12 7/15 Gundah Road Mt Kuring Gai
NSW 2080
02 84380300
02 84380310

Job No:	G09/2571
Hole No:	**BH07**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Silty CLAY, low to medium plasticity, brown	≤Wp		TOPSOIL
						CL/CH	Silty CLAY, low to medium plasticity, brown			RESIDUAL
		D								
		D		1.0		CL/CI	CLAY, medium to high plasticity, red mottled grey, traces of gravel and silt	≥Wp		
		D								
				2.0			BH07 Terminated at 1.5 m			

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Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

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02 84380310

Job No:	G09/2571
Hole No:	**BH08**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Silty CLAY, low to medium plasticity, brown	≤Wp		TOPSOIL
						CI/CH	CLAY, medium to high plasticity, red-brown, some silt	≥Wp		RESIDUAL
		D								
						CL/CI	Silty CLAY, low to medium plasticity, grey mottled orange, some gravel			
		D		1.0						
							BH08 Terminated at 1 m			
				2.0						

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BOREHOLE LOG

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Job No:	G09/2571
Hole No:	**BH09**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Silty CLAY, low to medium plasticity, grey-brown, traces of gravel	≤Wp		TOPSOIL
						CI/CH	CLAY, medium to high plasticity, orange-brown	≥W		RESIDUAL
		D								
						CI/CH	CLAY, medium to high plasticity, red mottled brown, traces of gravel			
		D		1.0						
							BH09 Terminated at 1 m			
				2.0						

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Job No:	G09/2571
Hole No:	**BH10**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Silty CLAY, low to medium plasticity, brown	≥Wp		TOPSOIL
						CL/CI	Silty CLAY, low to medium plasticity, grey	>Wp		RESIDUAL
		D								
						CI/CH	CLAY, medium to high plasticity, grey mottled brown			
		D		1.0						
							BH10 Terminated at 1 m			
				2.0						

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Job No:	G09/2571
Hole No:	**BH11**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Gravelly Silty CLAY, low to medium plasticity, grey	≤Wp		FILL
						CL/CI	Silty CLAY, low to medium plasticity, grey	>Wp		RESIDUAL
		D								
						CI/CH	CLAY, medium to high plasticity, orange-brown mottled grey, some silt	≥Wp		
		D		1.0						
							BH11 Terminated at 1 m			
				2.0						

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Job No:	G09/2571
Hole No:	**BH12**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Silty CLAY, low to medium plasticity, brown, traces of gravel	≥Wp		TOPSOIL
						CI/CH	Silty CLAY, medium to high plasticity, brown mottled orange			RESIDUAL
		D								
						CI/CH	Silty CLAY, medium to high plasticity, brown mottled orange			
		D		1.0						
							BH12 Terminated at 1 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

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Job No:	G09/2571
Hole No:	**BH13**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				ML	Gravelly SILT, low plasticity, dark grey, (burnt material)	≤Wp		FILL
						CI/CH	Silty CLAY, medium to high plasticity, brown mottled orange	≥Wp		RESIDUAL
		D								
						CI/CH	Silty CLAY, medium to high plasticity, brown mottled orange			
		D		1.0						
							BH13 Terminated at 1 m			
				2.0						

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Job No:	G09/2571
Hole No:	**BH14**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Silty CLAY, low to medium plasticity, brown, traces of gravel	≥Wp		FILL
		D								
		D		1.0		CI/CH	CLAY, medium to high plasticity, grey mottled orange, some silt			RESIDUAL
		D				CI/CH	CLAY, medium to high plasticity, grey, some silt	>Wp		
				2.0			BH14 Terminated at 1.5 m			

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

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BOREHOLE LOG

Job No:	G09/2571
Hole No:	**BH15**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Silty CLAY, low to medium plasticity, brown, traces of gravel	≥Wp		FILL
						CI/CH	CLAY, medium to high plasticity, grey mottled orange, some silt			RESIDUAL
		D								
		D		1.0		CI/CH	CLAY, medium to high plasticity, grey, some silt	>Wp		
		D								
				2.0			BH15 Terminated at 1.5 m			

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

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Job No:	G09/2571
Hole No:	**BH16**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Silty CLAY, low to medium plasticity, brown	≥Wp		FILL
		D				CL/CI	Silty CLAY, low to medium plasticity, grey mottled orange			
		D		1.0		CI/CH	Silty CLAY, medium to high plasticity, grey	>Wp		RESIDUAL
		D								
				2.0			BH16 Terminated at 1.5 m			

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

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ACN 069 211 561
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02 84380310

Job No:	G09/2571
Hole No:	**BH17**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL/CI	Silty CLAY, low to medium plasticity, brown, traces of gravel	≥Wp		FILL
		D								
		D				CL/CI	Silty CLAY, low to medium plasticity, grey mottled orange			
		D		1.0		CI/CH	Silty CLAY, medium to high plasticity, grey	>Wp		RESIDUAL
				2.0			BH17 Terminated at 1.5 m			

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

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ACN 069 211 561
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Job No:	G09/2571
Hole No:	**BH18**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	>Wp		TOPSOIL
						CI/CH	CLAY, medium to high plasticity, grey mottled orange-brown and red, some silt			RESIDUAL
		D								
		D		1.0			BH18 Terminated at 1 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

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02 84380310

Job No:	G09/2571
Hole No:	**BH19**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	>Wp		TOPSOIL
						CI/CH	CLAY, medium to high plasticity, grey mottled orange-brown and red, some silt			RESIDUAL
		D								
				1.0			BH19 Terminated at 0.5 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

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Job No:	G09/2571
Hole No:	**BH20**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	≥Wp		TOPSOIL
		D				CI/CH	CLAY, medium to high plasticity, grey mottled orange, some silt			RESIDUAL
		D		1.0						
							BH20 Terminated at 1 m			
				2.0						

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Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

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Job No:	G09/2571
Hole No:	**BH21**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	≤Wp		TOPSOIL
						CI/CH	CLAY, medium to high plasticity, grey mottled grey mottled orange, some silt			RESIDUAL
		D				-	SHALE, extremely weathered, orange brown	-		WEATHERED ROCK
				1.0			BH21 Terminated at 0.5 m			
				2.0						

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

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Job No:	G09/2571
Hole No:	**BH22**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	≤Wp		TOPSOIL
						CI/CH	CLAY, medium to high plasticity, grey mottled orange, some silt			RESIDUAL
		D								
				1.0			BH22 Terminated at 0.5 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

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ACN 069 211 561
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02 84380310

Job No:	G09/2571
Hole No:	**BH23**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	≥Wp		TOPSOIL
						CI/CH	CLAY, medium to high plasticity, grey mottled orange, some silt			RESIDUAL
		D								
				1.0			BH23 Terminated at 0.5 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

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Job No:	G09/2571
Hole No:	**BH24**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	≥Wp		TOPSOIL
						CI/CH	CLAY, medium to high plasticity, grey mottled orange, some silt			RESIDUAL
		D								
				1.0			BH24 Terminated at 0.5 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

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02 84380310

Job No:	G09/2571
Hole No:	**BH25**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	≥Wp		TOPSOIL
						CI/CH	CLAY, medium to high plasticity, grey mottled orange, some silt			RESIDUAL
		D								
				1.0			BH25 Terminated at 0.5 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

Network Geotechnics Pty Ltd

ACN 069 211 561
Unit 12 7/15 Gundah Road Mt Kuring Gai
NSW 2080
02 84380300
02 84380310

Job No:	G09/2571
Hole No:	**BH26**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	≥Wp		TOPSOIL
						CI/CH	CLAY, medium to high plasticity, grey mottled orange, some silt			RESIDUAL
		D								
				1.0		-	SHALE, extremely weathered, brown	-		WEATHERED ROCK
							BH26 Terminated at 1 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

Network Geotechnics Pty Ltd

ACN 069 211 561
Unit 12 7/15 Gundah Road Mt Kuring Gai
NSW 2080
02 84380300
02 84380310

Job No:	G09/2571
Hole No:	**BH27**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	≥Wp		TOPSOIL
						-	SHALE, extremely weathered, brown	-		WEATHERED ROCK
		D								
				1.0			BH27 Terminated at 0.5 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

Network Geotechnics Pty Ltd

ACN 069 211 561
Unit 12 7/15 Gundah Road Mt Kuring Gai
NSW 2080
02 84380300
02 84380310

Job No:	G09/2571
Hole No:	**BH28**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	≤Wp		TOPSOIL
						CI/CH	CLAY, medium to high plasticity, grey mottled orange, some silt			RESIDUAL
		D								
				1.0			BH28 Terminated at 0.5 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

BOREHOLE LOG

Network Geotechnics Pty Ltd

ACN 069 211 561
Unit 12 7/15 Gundah Road Mt Kuring Gai
NSW 2080
02 84380300
02 84380310

Job No:	G09/2571
Hole No:	**BH29**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	≤Wp		TOPSOIL
		D				-	SHALE, extremely weathered, brown	-		WEATHERED ROCK
				1.0			BH29 Terminated at 0.5 m			
				2.0						

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

BOREHOLE LOG

Network Geotechnics Pty Ltd

ACN 069 211 561
Unit 12 7/15 Gundah Road Mt Kuring Gai
NSW 2080
02 84380300
02 84380310

Job No:	G09/2571
Hole No:	**BH30**
Sheet:	PAGE 1 / 1
Started:	11/09/17
Finished:	11/09/17
Logged:	TPR
Checked:	VDS
RL Surface:	
Datum:	

Client: Richard Hall

Project: Proposed Residential Subdivision

Location: 510 Beach Road, Berry
GPS (-)

Equipment Type: Dingo drill Rig

Borehole Diameter: 100(O.D.) Inclination: Bearing:

method	water	samples, tests etc	DCP Blows per 150 mm	depth (m)	graphic log	USCS symbol	Material Description	Moisture condition	Consistency/ relative density	comments / notes, structure, and additional observations
ADT	None Encountered	D				CL	Silty CLAY, low plasticity, brown, traces of gravel	>Wp		TOPSOIL
						-	SHALE, extremely weathered, brown			
		D								
		D		1.0			BH30 Terminated at 1 m			
				2.0						WEATHERED ROCK

BOREHOLE LOG LOGS.GPJ NETWORK GEOTECHNICS PTY LTD.GDT 9/25/17

Refer To Explanation Sheets For Description Of Terms And Symbols Used.

Appendix D

Summary of Laboratory Test Results

				Description	BH1 0-0.1	BH2 0-0.1	BH3 0-0.1	BH4 0-0.1	BH5 0-0.1	BH5 0.9-1.0	BH5 1.4-1.5	BH6 0.4-0.5	BH6 1.4-1.5	BH7 0-0.1	BH7 0.4-0.5	BH7 0.9-1.0	BH7 1.4-1.5	BH8 0-0.1	BH9 0-0.1	BH10 0-0.1	BH11 0-0.1	BH13 0-0.1	BH14 0.4-0.5	BH15 0-0.1	BH16 0.4-0.5	BH17 0.4-0.5	BH19 0-0.1	BH20 0.9-1.0	BH22 0-0.1	BH25 0.4-0.5	BH27 0-0.1	BH29 0-0.1	BH30 0.9-1.0	BH130 0.9-1.0	BH120 0.9-1.0	DW1	DW2	Trip Spike	Trip Blank
				Sample Date	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	12/9/2017	11/9/2017	12/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	11/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017	12/9/2017
				Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Water	Water	Soil	Soil
Analyte Name	Units	HIL/HSL	EIL/ESL	Reporting Limit	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Benzene	mg/kg	0.5	50/65	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	[85%]	<0.1
Toluene	mg/kg	160	85/105	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	[89%]	<0.1
Ethylbenzene	mg/kg	55	70/125	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	[84%]	<0.1
Total Xylenes	mg/kg	40	105/45	0.3	N.A.	<0.3	N.A.	N.A.	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	N.A.	<0.3	N.A.	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	N.A.	<0.3	N.A.	N.A.	<0.3	N.A.	N.A.	N.A.	N.A.	<0.3	<0.3	<0.3	N.A.	N.A.	N.A.	<0.3
Total BTEX	mg/kg	-	-	0.6	N.A.	<0.6	N.A.	N.A.	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	N.A.	<0.6	N.A.	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	N.A.	<0.6	N.A.	N.A.	<0.6	N.A.	N.A.	N.A.	N.A.	<0.6	<0.6	<0.6	N.A.	N.A.	N.A.	<0.6
Naphthalene	mg/kg	3	170	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	<0.1
Benzene (F0)	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
TRH C6-C9	mg/kg	-	-	20	N.A.	<20	N.A.	N.A.	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	N.A.	<20	N.A.	N.A.	<20	N.A.	N.A.	N.A.	N.A.	<20	<20	<20	N.A.	N.A.	N.A.	N.A.
TRH C6-C10	mg/kg	-	-	25	N.A.	<25	N.A.	N.A.	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	N.A.	<25	N.A.	N.A.	<25	N.A.	N.A.	N.A.	N.A.	<25	<25	<25	N.A.	N.A.	N.A.	N.A.
TRH C6-C10 minus BTEX (F1)	mg/kg	45-50	180	25	N.A.	<25	N.A.	N.A.	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	N.A.	<25	N.A.	N.A.	<25	N.A.	N.A.	N.A.	N.A.	<25	<25	<25	N.A.	N.A.	N.A.	N.A.
TRH C10-C14	mg/kg	-	-	20	N.A.	<20	N.A.	N.A.	<20	<20	<20	<20	<20	22	<20	<20	<20	<20	<20	<20	<20	<20	<20	N.A.	<20	N.A.	N.A.	<20	N.A.	N.A.	N.A.	N.A.	<20	<20	<20	N.A.	N.A.	N.A.	N.A.
TRH C15-C28	mg/kg	-	-	45	N.A.	<45	N.A.	N.A.	<45	<45	<45	<45	<45	340	530	590	<45	<45	<45	<45	<45	<45	<45	N.A.	<45	N.A.	N.A.	<45	N.A.	N.A.	N.A.	N.A.	<45	<45	<45	N.A.	N.A.	N.A.	N.A.
TRH C29-C36	mg/kg	-	-	45	N.A.	<45	N.A.	N.A.	<45	<45	<45	<45	<45	650	1300	1500	<45	<45	<45	<45	<45	<45	<45	N.A.	<45	N.A.	N.A.	<45	N.A.	N.A.	N.A.	N.A.	<45	<45	<45	N.A.	N.A.	N.A.	N.A.
TRH C37-C40	mg/kg	-	-	100	N.A.	<100	N.A.	N.A.	<100	<100	<100	<100	<100	110	330	320	<100	<100	<100	<100	<100	<100	<100	N.A.	<100	N.A.	N.A.	<100	N.A.	N.A.	N.A.	N.A.	<100	<100	<100	N.A.	N.A.	N.A.	N.A.
TRH >C10-C16 (F2)	mg/kg	110-280	120	25	N.A.	<25	N.A.	N.A.	<25	<25	<25	<25	<25	25	<25	<25	<25	<25	<25	<25	<25	<25	<25	N.A.	<25	N.A.	N.A.	<25	N.A.	N.A.	N.A.	N.A.	<25	<25	<25	N.A.	N.A.	N.A.	N.A.
TRH >C10-C16 (F2) - Naphthalene	mg/kg	110-280	120	25	N.A.	<25	N.A.	N.A.	<25	<25	<25	<25	<25	25	<25	<25	<25	<25	<25	<25	<25	<25	<25	N.A.	<25	N.A.	N.A.	<25	N.A.	N.A.	N.A.	N.A.	<25	<25	<25	N.A.	N.A.	N.A.	N.A.
TRH >C16-C34 (F3)	mg/kg	-	300/1300	90	N.A.	<90	N.A.	N.A.	<90	<90	<90	<90	<90	770	1400	1600	<90	<90	<90	<90	<90	<90	<90	N.A.	<90	N.A.	N.A.	<90	N.A.	N.A.	N.A.	N.A.	<90	<90	<90	N.A.	N.A.	N.A.	N.A.
TRH >C34-C40 (F4)	mg/kg	-	2800/5600	120	N.A.	<120	N.A.	N.A.	<120	<120	<120	<120	<120	320	750	790	<120	<120	<120	<120	<120	<120	<120	N.A.	<120	N.A.	N.A.	<120	N.A.	N.A.	N.A.	N.A.	<120	<120	<120	N.A.	N.A.	N.A.	N.A.
TRH C10-C36 Total	mg/kg	-	-	110	N.A.	<110	N.A.	N.A.	<110	<110	<110	<110	<110	1000	1800	2100	<110	<110	<110	<110	<110	<110	<110	N.A.	<110	N.A.	N.A.	<110	N.A.	N.A.	N.A.	N.A.	<110	<110	<110	N.A.	N.A.	N.A.	N.A.
TRH C10-C40 Total	mg/kg	-	-	210	N.A.	<210	N.A.	N.A.	<210	<210	<210	<210	<210	1100	2100	2400	<210	<210	<210	<210	<210	<210	<210	N.A.	<210	N.A.	N.A.	<210	N.A.	N.A.	N.A.	N.A.	<210	<210	<210	N.A.	N.A.	N.A.	N.A.
Naphthalene	mg/kg	3	170	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
2-methylnaphthalene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
1-methylnaphthalene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Acenaphthylene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Acenaphthene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Fluorene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Phenanthrene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Anthracene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Fluoranthene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Pyrene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Benzo(a)anthracene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Chrysene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Benzo(b&j)fluoranthene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Benzo(k)fluoranthene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Benzo(a)pyrene	mg/kg	-	0.7	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Indeno(1,2,3-cd)pyrene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Dibenzo(ah)anthracene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Benzo(ghi)perylene	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Carcinogenic PAHs, BaP TEQ	TEQ (mg/kg)	3	-	0.3	N.A.	<0.3	N.A.	N.A.	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	N.A.	<0.3	N.A.	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	N.A.	<0.3	N.A.	N.A.	<0.3	N.A.	N.A.	N.A.	N.A.	<0.3	<0.3	<0.3	N.A.	N.A.	N.A.	N.A.
Total PAH (NEPM/WHO 16)	mg/kg	300	-	0.8	N.A.	<0.8	N.A.	N.A.	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	N.A.	<0.8	N.A.	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	N.A.	<0.8	N.A.	N.A.	<0.8	N.A.	N.A.	N.A.	N.A.	<0.8	<0.8	<0.8	N.A.	N.A.	N.A.	N.A.
Hexachlorobenzene (HCB)	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Alpha BHC	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Lindane	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Heptachlor	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Aldrin	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Beta BHC	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Delta BHC	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Heptachlor epoxide	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
o,p'-DDE	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Alpha Endosulfan	mg/kg	-	-	0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	<0.2	N.A.	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Gamma Chlordane	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Alpha Chlordane	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
trans-Nonachlor	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
p,p'-DDE	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Dieldrin	mg/kg	-	-	0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	<0.2	N.A.	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Endrin	mg/kg	-	-	0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	<0.2	N.A.	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
o,p'-DDD	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
o,p'-DDT	mg/kg	-	180	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Beta Endosulfan	mg/kg	-	-	0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	<0.2	N.A.	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
p,p'-DDD	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
p,p'-DDT	mg/kg	-	180	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Endosulfan sulphate	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Endrin Aldehyde	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Methoxychlor	mg/kg	300	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Endrin Ketone	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Isodrin	mg/kg	-	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Mirex	mg/kg	10	-	0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	<0.1	N.A.	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Total CLP OC Pesticides	mg/kg	-	-	1	N.A.	<1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<1	<1	N.A.	<1	N.A.	N.A.	<1	N.A.	<1	<1	N.A.	N.A.	<1	N.A.	<1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Dichlorvos	mg/kg	-	-	0.5	N.A.	<0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	<0.5	N.A.	<0.5	N.A.	N.A.	<0.5	N.A.	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	<0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Dimethoate	mg/kg	-	-	0.5	N.A.	<0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	<0.5	N.A.	<0.5	N.A.	N.A.	<0.5	N.A.	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	<0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Diazinon (Dimpylate)	mg/kg	-	-	0.5	N.A.	<0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	<0.5	N.A.	<0.5	N.A.	N.A.	<0.5	N.A.	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	<0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Fenitrothion	mg/kg	-	-	0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	<0.2	N.A.	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Malathion	mg/kg	160	-	0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	<0.2	N.A.	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	-	-	0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	<0.2	N.A.	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Parathion-ethyl (Parathion)	mg/kg	-	-	0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	<0.2	N.A.	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Bromophos Ethyl	mg/kg	-	-	0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	<0.2	N.A.	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Methidathion	mg/kg	-	-	0.5	N.A.	<0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	<0.5	N.A.	<0.5	N.A.	N.A.	<0.5	N.A.	<0.5	<0.5	N.A.	N.A.	<0.5	N.A.	<0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Ethion	mg/kg	-	-	0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	<0.2	N.A.	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Azinphos-methyl (Guthion)	mg/kg	-	-	0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	<0.2	N.A.	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Total OP Pesticides	mg/kg	-	-	1.7	N.A.	<1.7	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<1.7	<1.7	N.A.	<1.7	N.A.	N.A.	<1.7	N.A.	<1.7	<1.7	N.A.	N.A.	<1.7	N.A.	<1.7	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Arsenic, As	mg/kg	100	100	1	4	3	3	<1	<1	2	2	2	2	<1	N.A.	2	N.A.	2	3	N.A.	1	3	<1	<1	<1	<1	<1	3	6	1	5	2	2	2	2	N.A.	N.A.	N.A.	N.A.
Cadmium, Cd	mg/kg	20	-	0.3	0.4	0.5	0.4	<0.3	0.3	0.6	0.8	0.6	0.8	0.3	N.A.	0.6	N.A.	0.6	0.5	N.A.	0.4	1.1	<0.3	<0.3	<0.3	<0.3	<0.3	0.9	0.9	0.5	0.7	0.6	0.4	0.5	0.9	N.A.	N.A.	N.A.	N.A.
Chromium, Cr	mg/kg	100	190	0.5	12	18	16	10	15	35	35	33	34	10	N.A.	34	N.A.	25	21	N.A.	17	16	11	10	11	4.4	3.5	25	12	14	14	16	21	21	21	N.A.	N.A.	N.A.	N.A.
Copper, Cu	mg/kg	6000	60	0.5	34	14	32	6.0	5.7	11	11	14	13	7.3	N.A.	9.8	N.A.	14	4.8	N.A.	30	49	3.0	5.7	8.0	3.0	1.9	12	5.0	6.3	15	8.1	26	25	11	N.A.	N.A.	N.A.	N.A.
Lead, Pb	mg/kg	300	1100	1	10	10	11	21	10	15	14	15	15	31	N.A.	16	N.A.	37	14	N.A.	14	330	8	10	10	5	3	16	15	9	11	10	10	10	12	N.A.	N.A.	N.A.	N.A.
Nickel, Ni	mg/kg	400	30	0.5	4.9	4.0	7.5	1.8	2.0	2.5	1.6	2.5	1.6	2.3	N.A.	2.6	N.A.	2.5	2.5	N.A.	7.8	9.5	1.4	1.7	2.3	1.2	0.6	2.8	1.8	1.5	6.1	6.5	8.6	8.1	2.4	N.A.	N.A.	N.A.	N.A.
Zinc, Zn	mg/kg	7400	110	2	33	18	52	27	17	23	15	27	18	320	N.A.	67	N.A.	85	14	N.A.	110	280	7	12	13	5	3	17	12	8	39	23	50	49	15	N.A.	N.A.	N.A.	N.A.
Mercury	mg/kg	40	-	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	N.A.	<0.05	N.A.	<0.05	<0.05	N.A.	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	N.A.	N.A.	N.A.	N.A.
Asbestos Detected	No unit	Detection	-	0	No	N.A.	No	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	No	No	No	No	No	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Estimated Fibres	%w/w	-	-	0.01	<0.01	N.A.	<0.01	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.01	<0.01	<0.01	<0.01	<0.01	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

		Column3	Description	DW1	DW2
			Sample Date	12/9/2017	12/9/2017
			Matrix	Water	Water
Analyte Name	**Units**	**Trigger Value**	**Reporting Limit**	**Result**	**Result**
Benzene	µg/L	950	0.5	<0.5	<0.5
Toluene	µg/L	ID	0.5	<0.5	<0.5
Ethylbenzene	µg/L	ID	0.5	<0.5	<0.5
m/p-xylene	µg/L	ID	1	<1	<1
o-xylene	µg/L	350	0.5	<0.5	<0.5
Total Xylenes	µg/L	-	1.5	<1.5	<1.5
Total BTEX	µg/L	-	3	<3	<3
Naphthalene	µg/L	16	0.5	<0.5	<0.5
TRH C6-C9	µg/L	-	40	<40	<40
Benzene (F0)	µg/L	-	0.5	<0.5	<0.5
TRH C6-C10	µg/L	-	50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	-	50	<50	<50
TRH C10-C14	µg/L	-	50	<50	<50
TRH C15-C28	µg/L	-	200	<200	<200
TRH C29-C36	µg/L	-	200	<200	<200
TRH C37-C40	µg/L	-	200	<200	<200
TRH >C10-C16 (F2)	µg/L	-	60	<60	<60
TRH >C16-C34 (F3)	µg/L	-	500	<500	<500
TRH >C34-C40 (F4)	µg/L	-	500	<500	<500
TRH C10-C36	µg/L	-	450	<450	<450
TRH C10-C40	µg/L	-	650	<650	<650
TRH >C10-C16 (F2) - Naphthalene	µg/L	-	60	<60	<60
Naphthalene	µg/L	16	0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	-	0.1	<0.1	<0.1
1-methylnaphthalene	µg/L	-	0.1	<0.1	<0.1
Acenaphthylene	µg/L	-	0.1	<0.1	<0.1
Acenaphthene	µg/L	-	0.1	<0.1	<0.1
Fluorene	µg/L	-	0.1	<0.1	<0.1
Phenanthrene	µg/L	ID	0.1	<0.1	<0.1
Anthracene	µg/L	ID	0.1	<0.1	<0.1
Fluoranthene	µg/L	ID	0.1	<0.1	<0.1
Pyrene	µg/L	-	0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	-	0.1	<0.1	<0.1
Chrysene	µg/L	-	0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	-	0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	-	0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	ID	0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	-	0.1	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	-	0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	-	0.1	<0.1	<0.1
Total PAH (18)	µg/L	-	1	<1	<1
Hexachlorobenzene (HCB)	µg/L	-	0.1	<0.1	<0.1
Alpha BHC	µg/L	-	0.1	<0.1	<0.1
Lindane (gamma BHC)	µg/L	-	0.1	<0.1	<0.1
Heptachlor	µg/L	-	0.1	<0.1	<0.1
Aldrin	µg/L	-	0.1	<0.1	<0.1
Beta BHC	µg/L	-	0.1	<0.1	<0.1
Delta BHC	µg/L	-	0.1	<0.1	<0.1
Heptachlor epoxide	µg/L	-	0.1	<0.1	<0.1
o,p'-DDE	µg/L	-	0.1	<0.1	<0.1
Alpha Endosulfan	µg/L	-	0.1	<0.1	<0.1
Gamma Chlordane	µg/L	-	0.1	<0.1	<0.1
Alpha Chlordane	µg/L	-	0.1	<0.1	<0.1
trans-Nonachlor	µg/L	-	0.1	<0.1	<0.1
p,p'-DDE	µg/L	-	0.1	<0.1	<0.1
Dieldrin	µg/L	-	0.1	<0.1	<0.1
Endrin	µg/L	-	0.1	<0.1	<0.1
o,p'-DDD	µg/L	-	0.1	<0.1	<0.1
o,p'-DDT	µg/L	-	0.1	<0.1	<0.1
Beta Endosulfan	µg/L	-	0.1	<0.1	<0.1
p,p'-DDD	µg/L	-	0.1	<0.1	<0.1
p,p'-DDT	µg/L	-	0.1	<0.1	<0.1
Endosulfan sulphate	µg/L	-	0.1	<0.1	<0.1
Endrin aldehyde	µg/L	-	0.1	<0.1	<0.1
Methoxychlor	µg/L	-	0.1	<0.1	<0.1
Endrin ketone	µg/L	-	0.1	<0.1	<0.1
Isodrin	µg/L	-	0.1	<0.1	<0.1
Mirex	µg/L	-	0.1	<0.1	<0.1
Dichlorvos	µg/L	-	0.5	<0.5	<0.5
Dimethoate	µg/L	-	0.5	<0.5	<0.5
Diazinon (Dimpylate)	µg/L	-	0.5	<0.5	<0.5
Fenitrothion	µg/L	-	0.2	<0.2	<0.2
Malathion	µg/L	-	0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	-	0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	µg/L	-	0.2	<0.2	<0.2
Bromophos Ethyl	µg/L	-	0.2	<0.2	<0.2
Methidathion	µg/L	-	0.5	<0.5	<0.5
Ethion	µg/L	-	0.2	<0.2	<0.2
Azinphos-methyl	µg/L	-	0.2	<0.2	<0.2
Arsenic, As	µg/L	13	1	**1**	**1**
Cadmium, Cd	µg/L	0.3	0.1	<0.1	<0.1
Chromium, Cr	µg/L	ID	1	**1**	<1
Copper, Cu	µg/L	1.9	1	**3**	**3**
Lead, Pb	µg/L	5.2	1	<1	<1
Nickel, Ni	µg/L	14.6	1	**1**	**1**
Zinc, Zn	µg/L	10.6	5	<5	<5
Mercury	mg/L	-	0.0001	<0.0001	<0.0001

Appendix E

Laboratory Analytical Report, Chain of Custody and Sample Receipt Documents

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Thalia Park-Ross	Manager	Adam Atkinson
Client	NETWORK GEOTECHNICS PTY LTD	Laboratory	SGS Melbourne EH&S
Address	31 Anvil Rd Seven Hills NSW 2147	Address	10/585 Blackburn Road Notting Hill Victoria 3168
Telephone	02 8438 0312 / 0411 112 824	Telephone	+61395743200
Facsimile	02 8438 0310	Facsimile	+61395743399
Email	tparkross@netgeo.com.au	Email	Au.SampleReceipt.Melbourne@sgs.com
Project	**G09/2571**	SGS Reference	**ME304135 R0**
Order Number	**G09/2571**	Date Received	15 Sep 2017
Samples	2	Date Reported	20 Sep 2017

COMMENTS

Accredited for compliance with ISO/IEC 17025- Testing. NATA accredited laboratory 2562(14420).

SIGNATORIES

C. Thurm

Chris Thurm
Chemist

MING

Weiming Dai
Inorganic Supervisor

Parameter	Units	LOR	Sample Number: ME304135.001 Sample Matrix: Soil Sample Date: 12 Sep 2017 Sample Name: BH220 0.9 - 1.0	Sample Number: ME304135.002 Sample Matrix: Soil Sample Date: 12 Sep 2017 Sample Name: BH230 0.9 - 1.0
Moisture Content Method: AN002 Tested: 18/9/2017				
% Moisture*	%w/w	1	**24.6**	**10.6**
Metals in Solids Method: MA1400_1 Tested: 18/9/2017				
Arsenic	mg/kg	2	<2	**3**
Cadmium	mg/kg	0.2	<0.2	<0.2
Chromium	mg/kg	2	**6**	**11**
Copper	mg/kg	2	**3**	**16**
Lead	mg/kg	2	**7**	**8**
Mercury	mg/kg	0.05	<0.05	<0.05
Nickel	mg/kg	2	<2	**4**
Zinc	mg/kg	2	**2**	**26**

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Metals in Solids **Method: MA1400_1**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Arsenic	LB015702	mg/kg	2	<2	0%	107%	NA	NA
Cadmium	LB015702	mg/kg	0.2	<0.2	0%	107%	NA	NA
Chromium	LB015702	mg/kg	2	<2	0%	110%	NA	NA
Copper	LB015702	mg/kg	2	<2	0%	109%	NA	NA
Lead	LB015702	mg/kg	2	<2	2%	100%	NA	NA
Mercury	LB015702	mg/kg	0.05	<0.05	0%	100%	NA	NA
Nickel	LB015702	mg/kg	2	<2	0%	110%	NA	NA
Zinc	LB015702	mg/kg	2	<2	0%	100%	NA	NA

Moisture Content **Method: ME-(AU)-[ENV]AN002**

Parameter	QC Reference	Units	LOR	DUP %RPD
% Moisture*	LB015703	%w/w	1	6%

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
MA1400_1	A weighed portion of as received sample is extracted in concentrated acid using microwave heating by the Microwave Digestion system. The sample and acid are placed in a microwave vessel (TFM), which is then capped and heated in the microwave unit. After cooling,the vessel contents are diluted with DI water, then filtered, centrifuged, or allowed to settle and analysed by ICP-MS.

FOOTNOTES

IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
LOR	Limit of Reporting
↑↓	Raised or Lowered Limit of Reporting
QFH	QC result is above the upper tolerance
QFL	QC result is below the lower tolerance
-	The sample was not analysed for this analyte
NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calcuated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here : http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Network Geotechnics Pty Ltd	Project Name/No:	G09/2571
Address:	Unit 12/9-15 Gundah Road, Mt Kuring-Gai	Purchase Order No:	
	NSW 2080	Results Required By:	21/9/17
		Telephone:	8438 0300
Contact Name:	Thalia	Facsimile:	8438 0310
		Email Results:	engineering@netgeo.com.au;

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Heavy Metals	TRH/BTEX/PAH	Total Phenols	PCB	OC/OP Pesticides	Ammonia/Nitrate	E Coli/T Coli/F Coli	Asbestos ID	CEC/pH	EC/pH	Chloride/Sulphate				
BH220 0.9-1.0	12/9/17			X		1	X														
BH230 0.9-1.0	12/9/17			X		1	X														

SGS Melbourne EHS

ME304135 COC
Received: 15 – Sep – 2017

Relinquished By: Thalia	Date/Time: 13/9/17	Received By: ALBERT MARCELLETTI	Date/Time Fri 15/9/17 11:00am
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

SAMPLE RECEIPT ADVICE

ME304135

CLIENT DETAILS

Contact	Thalia Park-Ross
Client	NETWORK GEOTECHNICS PTY LTD
Address	31 Anvil Rd Seven Hills NSW 2147
Telephone	02 8438 0312 / 0411 112 824
Facsimile	02 8438 0310
Email	tparkross@netgeo.com.au
Project	**G09/2571**
Order Number	**G09/2571**
Samples	2

LABORATORY DETAILS

Manager	Adam Atkinson
Laboratory	SGS Melbourne EH&S
Address	10/585 Blackburn Road Notting Hill Victoria 3168
Telephone	+61395743200
Facsimile	+61395743399
Email	Au.SampleReceipt.Melbourne@sgs.com
Samples Received	Fri 15/9/2017
Report Due	Thu 21/9/2017
SGS Reference	**ME304135**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Friday 15/9/2017. Results are expected to be ready by COB Thursday 21/9/2017. Please quote SGS reference ME304135 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	2
Date documentation received	15/9/2017	Type of documentation received	COC
Number of eskies/boxes received		Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	19C
Sufficient sample for analysis	Yes	Turnaround time requested	Standard

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

SAMPLE RECEIPT ADVICE

ME304135

CLIENT DETAILS

Client NETWORK GEOTECHNICS PTY LTD

Project G09/2571

SUMMARY OF ANALYSIS

No.	Sample ID	Metals in Solids	Moisture Content
001	BH220 0.9 - 1.0	8	1
002	BH230 0.9 - 1.0	8	1

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Thalia Park-Ross
Client	NETWORK GEOTECHNICS PTY LTD
Address	31 Anvil Rd Seven Hills NSW 2147
Telephone	02 8438 0312 / 0411 112 824
Facsimile	02 8438 0310
Email	tparkross@netgeo.com.au
Project	**G09-2571**
Order Number	(Not specified)
Samples	33

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE170266 R0**
Date Received	14/9/2017
Date Reported	21/9/2017

COMMENTS

Accredited for compliance with ISO/IEC 17025-Testing. NATA accredited laboratory 2562(4354).

A portion of the sample supplied has been sub-sampled for asbestos due to large sample volume according to SGS In-house procedures. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Environment, Health and Safety recommends supplying approximately 50-100g of sample in a separate container.

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemist

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

VOC's in Soil [AN433] Tested: 18/9/2017

PARAMETER	UOM	LOR	BH2 0-0.1 SOIL - 11/9/2017 SE170266.002	BH5 0-0.1 SOIL - 11/9/2017 SE170266.005	BH5 0.9-1.0 SOIL - 11/9/2017 SE170266.006	BH5 1.4-1.5 SOIL - 11/9/2017 SE170266.007	BH6 0.4-0.5 SOIL - 11/9/2017 SE170266.008
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH6 1.4-1.5 SOIL - 11/9/2017 SE170266.009	BH7 0-0.1 SOIL - 11/9/2017 SE170266.010	BH7 0.9-1.0 SOIL - 11/9/2017 SE170266.011	BH8 0-0.1 SOIL - 11/9/2017 SE170266.012	BH9 0-0.1 SOIL - 11/9/2017 SE170266.013
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH10 0-0.1 SOIL - 11/9/2017 SE170266.014	BH11 0-0.1 SOIL - 11/9/2017 SE170266.015	BH13 0-0.1 SOIL - 11/9/2017 SE170266.016	BH14 0.4-0.5 SOIL - 12/9/2017 SE170266.017	BH16 0.4-0.5 SOIL - 12/9/2017 SE170266.019
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH20 0.9-1.0 SOIL - 12/9/2017 SE170266.022	BH30 0.9-1.0 SOIL - 12/9/2017 SE170266.027	BH130 0.9-1.0 SOIL - 12/9/2017 SE170266.028	BH120 0.9-1.0 SOIL - 12/9/2017 SE170266.029	Trip Spike SOIL - 12/9/2017 SE170266.032
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[85%]
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[89%]
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[84%]
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	[84%]
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[86%]
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	-
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	-
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-

VOC's in Soil [AN433] Tested: 18/9/2017 (continued)

PARAMETER	UOM	LOR	Trip Blank SOIL - 12/9/2017 SE170266.033
Benzene	mg/kg	0.1	<0.1
Toluene	mg/kg	0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2
o-xylene	mg/kg	0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 18/9/2017

PARAMETER	UOM	LOR	BH2 0-0.1 SOIL - 11/9/2017 SE170266.002	BH5 0-0.1 SOIL - 11/9/2017 SE170266.005	BH5 0.9-1.0 SOIL - 11/9/2017 SE170266.006	BH5 1.4-1.5 SOIL - 11/9/2017 SE170266.007	BH6 0.4-0.5 SOIL - 11/9/2017 SE170266.008
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH6 1.4-1.5 SOIL - 11/9/2017 SE170266.009	BH7 0-0.1 SOIL - 11/9/2017 SE170266.010	BH7 0.9-1.0 SOIL - 11/9/2017 SE170266.011	BH8 0-0.1 SOIL - 11/9/2017 SE170266.012	BH9 0-0.1 SOIL - 11/9/2017 SE170266.013
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH10 0-0.1 SOIL - 11/9/2017 SE170266.014	BH11 0-0.1 SOIL - 11/9/2017 SE170266.015	BH13 0-0.1 SOIL - 11/9/2017 SE170266.016	BH14 0.4-0.5 SOIL - 12/9/2017 SE170266.017	BH16 0.4-0.5 SOIL - 12/9/2017 SE170266.019
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH20 0.9-1.0 SOIL - 12/9/2017 SE170266.022	BH30 0.9-1.0 SOIL - 12/9/2017 SE170266.027	BH130 0.9-1.0 SOIL - 12/9/2017 SE170266.028	BH120 0.9-1.0 SOIL - 12/9/2017 SE170266.029
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 18/9/2017

PARAMETER	UOM	LOR	BH2 0-0.1 SOIL - 11/9/2017 SE170266.002	BH5 0-0.1 SOIL - 11/9/2017 SE170266.005	BH5 0.9-1.0 SOIL - 11/9/2017 SE170266.006	BH5 1.4-1.5 SOIL - 11/9/2017 SE170266.007	BH6 0.4-0.5 SOIL - 11/9/2017 SE170266.008
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH6 1.4-1.5 SOIL - 11/9/2017 SE170266.009	BH7 0-0.1 SOIL - 11/9/2017 SE170266.010	BH7 0.9-1.0 SOIL - 11/9/2017 SE170266.011	BH8 0-0.1 SOIL - 11/9/2017 SE170266.012	BH9 0-0.1 SOIL - 11/9/2017 SE170266.013
TRH C10-C14	mg/kg	20	<20	**22**	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	**340**	**590**	<45	<45
TRH C29-C36	mg/kg	45	<45	**650**	**1500**	<45	<45
TRH C37-C40	mg/kg	100	<100	**110**	**320**	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	**25**	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	**25**	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	**770**	**1600**	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	**320**	**790**	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	**1000**	**2100**	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	**1100**	**2400**	<210	<210

PARAMETER	UOM	LOR	BH10 0-0.1 SOIL - 11/9/2017 SE170266.014	BH11 0-0.1 SOIL - 11/9/2017 SE170266.015	BH13 0-0.1 SOIL - 11/9/2017 SE170266.016	BH14 0.4-0.5 SOIL - 12/9/2017 SE170266.017	BH16 0.4-0.5 SOIL - 12/9/2017 SE170266.019
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 18/9/2017 (continued)

PARAMETER	UOM	LOR	BH20 0.9-1.0 SOIL - 12/9/2017 SE170266.022	BH30 0.9-1.0 SOIL - 12/9/2017 SE170266.027	BH130 0.9-1.0 SOIL - 12/9/2017 SE170266.028	BH120 0.9-1.0 SOIL - 12/9/2017 SE170266.029
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 18/9/2017

PARAMETER	UOM	LOR	BH2 0-0.1 SOIL - 11/9/2017 SE170266.002	BH5 0-0.1 SOIL - 11/9/2017 SE170266.005	BH5 0.9-1.0 SOIL - 11/9/2017 SE170266.006	BH5 1.4-1.5 SOIL - 11/9/2017 SE170266.007	BH6 0.4-0.5 SOIL - 11/9/2017 SE170266.008
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH6 1.4-1.5 SOIL - 11/9/2017 SE170266.009	BH7 0-0.1 SOIL - 11/9/2017 SE170266.010	BH7 0.9-1.0 SOIL - 11/9/2017 SE170266.011	BH8 0-0.1 SOIL - 11/9/2017 SE170266.012	BH9 0-0.1 SOIL - 11/9/2017 SE170266.013
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	**0.1**	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 18/9/2017 (continued)

PARAMETER	UOM	LOR	BH10 0-0.1 SOIL - 11/9/2017 SE170266.014	BH11 0-0.1 SOIL - 11/9/2017 SE170266.015	BH13 0-0.1 SOIL - 11/9/2017 SE170266.016	BH14 0.4-0.5 SOIL - 12/9/2017 SE170266.017	BH16 0.4-0.5 SOIL - 12/9/2017 SE170266.019
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH20 0.9-1.0 SOIL - 12/9/2017 SE170266.022	BH30 0.9-1.0 SOIL - 12/9/2017 SE170266.027	BH130 0.9-1.0 SOIL - 12/9/2017 SE170266.028	BH120 0.9-1.0 SOIL - 12/9/2017 SE170266.029
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ	0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 18/9/2017

PARAMETER	UOM	LOR	BH2 0-0.1 SOIL - 11/9/2017 SE170266.002	BH8 0-0.1 SOIL - 11/9/2017 SE170266.012	BH9 0-0.1 SOIL - 11/9/2017 SE170266.013	BH11 0-0.1 SOIL - 11/9/2017 SE170266.015	BH15 0-0.1 SOIL - 12/9/2017 SE170266.018
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 18/9/2017 (continued)

PARAMETER	UOM	LOR	BH17 0.4-0.5 SOIL - 12/9/2017 SE170266.020	BH19 0-0.1 SOIL - 12/9/2017 SE170266.021	BH25 0.4-0.5 SOIL - 12/9/2017 SE170266.024	BH29 0-0.1 SOIL - 12/9/2017 SE170266.026
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1

OP Pesticides in Soil [AN420] Tested: 18/9/2017

PARAMETER	UOM	LOR	BH2 0-0.1 SOIL - 11/9/2017 SE170266.002	BH8 0-0.1 SOIL - 11/9/2017 SE170266.012	BH9 0-0.1 SOIL - 11/9/2017 SE170266.013	BH11 0-0.1 SOIL - 11/9/2017 SE170266.015	BH15 0-0.1 SOIL - 12/9/2017 SE170266.018
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH17 0.4-0.5 SOIL - 12/9/2017 SE170266.020	BH19 0-0.1 SOIL - 12/9/2017 SE170266.021	BH25 0.4-0.5 SOIL - 12/9/2017 SE170266.024	BH29 0-0.1 SOIL - 12/9/2017 SE170266.026
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 20/9/2017

PARAMETER	UOM	LOR	BH1 0-0.1 SOIL - 11/9/2017 SE170266.001	BH2 0-0.1 SOIL - 11/9/2017 SE170266.002	BH3 0-0.1 SOIL - 11/9/2017 SE170266.003	BH4 0-0.1 SOIL - 11/9/2017 SE170266.004	BH5 0-0.1 SOIL - 11/9/2017 SE170266.005
Arsenic, As	mg/kg	1	4	3	3	<1	<1
Cadmium, Cd	mg/kg	0.3	0.4	0.5	0.4	<0.3	0.3
Chromium, Cr	mg/kg	0.5	12	18	16	10	15
Copper, Cu	mg/kg	0.5	34	14	32	6.0	5.7
Lead, Pb	mg/kg	1	10	10	11	21	10
Nickel, Ni	mg/kg	0.5	4.9	4.0	7.5	1.8	2.0
Zinc, Zn	mg/kg	2	33	18	52	27	17

PARAMETER	UOM	LOR	BH5 0.9-1.0 SOIL - 11/9/2017 SE170266.006	BH5 1.4-1.5 SOIL - 11/9/2017 SE170266.007	BH6 0.4-0.5 SOIL - 11/9/2017 SE170266.008	BH6 1.4-1.5 SOIL - 11/9/2017 SE170266.009	BH7 0-0.1 SOIL - 11/9/2017 SE170266.010
Arsenic, As	mg/kg	1	2	2	2	2	<1
Cadmium, Cd	mg/kg	0.3	0.6	0.8	0.6	0.8	0.3
Chromium, Cr	mg/kg	0.5	35	35	33	34	10
Copper, Cu	mg/kg	0.5	11	11	14	13	7.3
Lead, Pb	mg/kg	1	15	14	15	15	31
Nickel, Ni	mg/kg	0.5	2.5	1.6	2.5	1.6	2.3
Zinc, Zn	mg/kg	2	23	15	27	18	320

PARAMETER	UOM	LOR	BH7 0.9-1.0 SOIL - 11/9/2017 SE170266.011	BH8 0-0.1 SOIL - 11/9/2017 SE170266.012	BH9 0-0.1 SOIL - 11/9/2017 SE170266.013	BH11 0-0.1 SOIL - 11/9/2017 SE170266.015	BH13 0-0.1 SOIL - 11/9/2017 SE170266.016
Arsenic, As	mg/kg	1	2	2	3	1	3
Cadmium, Cd	mg/kg	0.3	0.6	0.6	0.5	0.4	1.1
Chromium, Cr	mg/kg	0.5	34	25	21	17	16
Copper, Cu	mg/kg	0.5	9.8	14	4.8	30	49
Lead, Pb	mg/kg	1	16	37	14	14	330
Nickel, Ni	mg/kg	0.5	2.6	2.5	2.5	7.8	9.5
Zinc, Zn	mg/kg	2	67	85	14	110	280

PARAMETER	UOM	LOR	BH14 0.4-0.5 SOIL - 12/9/2017 SE170266.017	BH15 0-0.1 SOIL - 12/9/2017 SE170266.018	BH16 0.4-0.5 SOIL - 12/9/2017 SE170266.019	BH17 0.4-0.5 SOIL - 12/9/2017 SE170266.020	BH19 0-0.1 SOIL - 12/9/2017 SE170266.021
Arsenic, As	mg/kg	1	<1	<1	<1	<1	<1
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	11	10	11	4.4	3.5
Copper, Cu	mg/kg	0.5	3.0	5.7	8.0	3.0	1.9
Lead, Pb	mg/kg	1	8	10	10	5	3
Nickel, Ni	mg/kg	0.5	1.4	1.7	2.3	1.2	0.6
Zinc, Zn	mg/kg	2	7	12	13	5	3

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 20/9/2017 (continued)

PARAMETER	UOM	LOR	BH20 0.9-1.0 SOIL - 12/9/2017 SE170266.022	BH22 0-0.1 SOIL - 12/9/2017 SE170266.023	BH25 0.4-0.5 SOIL - 12/9/2017 SE170266.024	BH27 0-0.1 SOIL - 12/9/2017 SE170266.025	BH29 0-0.1 SOIL - 12/9/2017 SE170266.026
Arsenic, As	mg/kg	1	3	6	1	5	2
Cadmium, Cd	mg/kg	0.3	0.9	0.9	0.5	0.7	0.6
Chromium, Cr	mg/kg	0.5	25	12	14	14	16
Copper, Cu	mg/kg	0.5	12	5.0	6.3	15	8.1
Lead, Pb	mg/kg	1	16	15	9	11	10
Nickel, Ni	mg/kg	0.5	2.8	1.8	1.5	6.1	6.5
Zinc, Zn	mg/kg	2	17	12	8	39	23

PARAMETER	UOM	LOR	BH30 0.9-1.0 SOIL - 12/9/2017 SE170266.027	BH130 0.9-1.0 SOIL - 12/9/2017 SE170266.028	BH120 0.9-1.0 SOIL - 12/9/2017 SE170266.029
Arsenic, As	mg/kg	1	2	2	2
Cadmium, Cd	mg/kg	0.3	0.4	0.5	0.9
Chromium, Cr	mg/kg	0.5	21	21	21
Copper, Cu	mg/kg	0.5	26	25	11
Lead, Pb	mg/kg	1	10	10	12
Nickel, Ni	mg/kg	0.5	8.6	8.1	2.4
Zinc, Zn	mg/kg	2	50	49	15

Mercury in Soil [AN312] Tested: 20/9/2017

PARAMETER	UOM	LOR	BH1 0-0.1 SOIL - 11/9/2017 SE170266.001	BH2 0-0.1 SOIL - 11/9/2017 SE170266.002	BH3 0-0.1 SOIL - 11/9/2017 SE170266.003	BH4 0-0.1 SOIL - 11/9/2017 SE170266.004	BH5 0-0.1 SOIL - 11/9/2017 SE170266.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH5 0.9-1.0 SOIL - 11/9/2017 SE170266.006	BH5 1.4-1.5 SOIL - 11/9/2017 SE170266.007	BH6 0.4-0.5 SOIL - 11/9/2017 SE170266.008	BH6 1.4-1.5 SOIL - 11/9/2017 SE170266.009	BH7 0-0.1 SOIL - 11/9/2017 SE170266.010
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH7 0.9-1.0 SOIL - 11/9/2017 SE170266.011	BH8 0-0.1 SOIL - 11/9/2017 SE170266.012	BH9 0-0.1 SOIL - 11/9/2017 SE170266.013	BH11 0-0.1 SOIL - 11/9/2017 SE170266.015	BH13 0-0.1 SOIL - 11/9/2017 SE170266.016
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH14 0.4-0.5 SOIL - 12/9/2017 SE170266.017	BH15 0-0.1 SOIL - 12/9/2017 SE170266.018	BH16 0.4-0.5 SOIL - 12/9/2017 SE170266.019	BH17 0.4-0.5 SOIL - 12/9/2017 SE170266.020	BH19 0-0.1 SOIL - 12/9/2017 SE170266.021
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH20 0.9-1.0 SOIL - 12/9/2017 SE170266.022	BH22 0-0.1 SOIL - 12/9/2017 SE170266.023	BH25 0.4-0.5 SOIL - 12/9/2017 SE170266.024	BH27 0-0.1 SOIL - 12/9/2017 SE170266.025	BH29 0-0.1 SOIL - 12/9/2017 SE170266.026
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH30 0.9-1.0 SOIL - 12/9/2017 SE170266.027	BH130 0.9-1.0 SOIL - 12/9/2017 SE170266.028	BH120 0.9-1.0 SOIL - 12/9/2017 SE170266.029
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 19/9/2017

PARAMETER	UOM	LOR	BH1 0-0.1 SOIL - 11/9/2017 SE170266.001	BH2 0-0.1 SOIL - 11/9/2017 SE170266.002	BH3 0-0.1 SOIL - 11/9/2017 SE170266.003	BH4 0-0.1 SOIL - 11/9/2017 SE170266.004	BH5 0-0.1 SOIL - 11/9/2017 SE170266.005
% Moisture	%w/w	0.5	9.5	11	9.5	12	11

PARAMETER	UOM	LOR	BH5 0.9-1.0 SOIL - 11/9/2017 SE170266.006	BH5 1.4-1.5 SOIL - 11/9/2017 SE170266.007	BH6 0.4-0.5 SOIL - 11/9/2017 SE170266.008	BH6 1.4-1.5 SOIL - 11/9/2017 SE170266.009	BH7 0-0.1 SOIL - 11/9/2017 SE170266.010
% Moisture	%w/w	0.5	21	19	22	19	7.9

PARAMETER	UOM	LOR	BH7 0.9-1.0 SOIL - 11/9/2017 SE170266.011	BH8 0-0.1 SOIL - 11/9/2017 SE170266.012	BH9 0-0.1 SOIL - 11/9/2017 SE170266.013	BH10 0-0.1 SOIL - 11/9/2017 SE170266.014	BH11 0-0.1 SOIL - 11/9/2017 SE170266.015
% Moisture	%w/w	0.5	21	19	10	20	19

PARAMETER	UOM	LOR	BH13 0-0.1 SOIL - 11/9/2017 SE170266.016	BH14 0.4-0.5 SOIL - 12/9/2017 SE170266.017	BH15 0-0.1 SOIL - 12/9/2017 SE170266.018	BH16 0.4-0.5 SOIL - 12/9/2017 SE170266.019	BH17 0.4-0.5 SOIL - 12/9/2017 SE170266.020
% Moisture	%w/w	0.5	19	15	19	17	11

PARAMETER	UOM	LOR	BH19 0-0.1 SOIL - 12/9/2017 SE170266.021	BH20 0.9-1.0 SOIL - 12/9/2017 SE170266.022	BH22 0-0.1 SOIL - 12/9/2017 SE170266.023	BH25 0.4-0.5 SOIL - 12/9/2017 SE170266.024	BH27 0-0.1 SOIL - 12/9/2017 SE170266.025
% Moisture	%w/w	0.5	13	25	20	17	31

PARAMETER	UOM	LOR	BH29 0-0.1 SOIL - 12/9/2017 SE170266.026	BH30 0.9-1.0 SOIL - 12/9/2017 SE170266.027	BH130 0.9-1.0 SOIL - 12/9/2017 SE170266.028	BH120 0.9-1.0 SOIL - 12/9/2017 SE170266.029	Trip Blank SOIL - 12/9/2017 SE170266.033
% Moisture	%w/w	0.5	13	10	11	24	<0.5

Fibre Identification in soil [AN602] Tested: 20/9/2017

PARAMETER	UOM	LOR	BH1 0-0.1 SOIL - 11/9/2017 SE170266.001	BH3 0-0.1 SOIL - 11/9/2017 SE170266.003	BH13 0-0.1 SOIL - 11/9/2017 SE170266.016	BH14 0.4-0.5 SOIL - 12/9/2017 SE170266.017	BH15 0-0.1 SOIL - 12/9/2017 SE170266.018
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH16 0.4-0.5 SOIL - 12/9/2017 SE170266.019	BH17 0.4-0.5 SOIL - 12/9/2017 SE170266.020
Asbestos Detected	No unit	-	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01

VOCs in Water [AN433] Tested: 15/9/2017

PARAMETER	UOM	LOR	DW1 WATER - 12/9/2017 SE170266.030	DW2 WATER - 12/9/2017 SE170266.031
Benzene	µg/L	0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5
m/p-xylene	µg/L	1	<1	<1
o-xylene	µg/L	0.5	<0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5	<1.5
Total BTEX	µg/L	3	<3	<3
Naphthalene	µg/L	0.5	<0.5	<0.5

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 15/9/2017

PARAMETER	UOM	LOR	DW1 WATER - 12/9/2017 SE170266.030	DW2 WATER - 12/9/2017 SE170266.031
TRH C6-C9	µg/L	40	<40	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 18/9/2017

PARAMETER	UOM	LOR	DW1 WATER - 12/9/2017 SE170266.030	DW2 WATER - 12/9/2017 SE170266.031
TRH C10-C14	µg/L	50	<50	<50
TRH C15-C28	µg/L	200	<200	<200
TRH C29-C36	µg/L	200	<200	<200
TRH C37-C40	µg/L	200	<200	<200
TRH >C10-C16 (F2)	µg/L	60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500
TRH C10-C36	µg/L	450	<450	<450
TRH C10-C40	µg/L	650	<650	<650
TRH >C10-C16 (F2) - Naphthalene	µg/L	60	<60	<60

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 18/9/2017

PARAMETER	UOM	LOR	DW1 WATER - 12/9/2017 SE170266.030	DW2 WATER - 12/9/2017 SE170266.031
Naphthalene	µg/L	0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	<1	<1

OC Pesticides in Water [AN420] Tested: 18/9/2017

PARAMETER	UOM	LOR	DW1 WATER - 12/9/2017 SE170266.030	DW2 WATER - 12/9/2017 SE170266.031
Hexachlorobenzene (HCB)	µg/L	0.1	<0.1	<0.1
Alpha BHC	µg/L	0.1	<0.1	<0.1
Lindane (gamma BHC)	µg/L	0.1	<0.1	<0.1
Heptachlor	µg/L	0.1	<0.1	<0.1
Aldrin	µg/L	0.1	<0.1	<0.1
Beta BHC	µg/L	0.1	<0.1	<0.1
Delta BHC	µg/L	0.1	<0.1	<0.1
Heptachlor epoxide	µg/L	0.1	<0.1	<0.1
o,p'-DDE	µg/L	0.1	<0.1	<0.1
Alpha Endosulfan	µg/L	0.1	<0.1	<0.1
Gamma Chlordane	µg/L	0.1	<0.1	<0.1
Alpha Chlordane	µg/L	0.1	<0.1	<0.1
trans-Nonachlor	µg/L	0.1	<0.1	<0.1
p,p'-DDE	µg/L	0.1	<0.1	<0.1
Dieldrin	µg/L	0.1	<0.1	<0.1
Endrin	µg/L	0.1	<0.1	<0.1
o,p'-DDD	µg/L	0.1	<0.1	<0.1
o,p'-DDT	µg/L	0.1	<0.1	<0.1
Beta Endosulfan	µg/L	0.1	<0.1	<0.1
p,p'-DDD	µg/L	0.1	<0.1	<0.1
p,p'-DDT	µg/L	0.1	<0.1	<0.1
Endosulfan sulphate	µg/L	0.1	<0.1	<0.1
Endrin aldehyde	µg/L	0.1	<0.1	<0.1
Methoxychlor	µg/L	0.1	<0.1	<0.1
Endrin ketone	µg/L	0.1	<0.1	<0.1
Isodrin	µg/L	0.1	<0.1	<0.1
Mirex	µg/L	0.1	<0.1	<0.1

OP Pesticides in Water [AN420] Tested: 18/9/2017

PARAMETER	UOM	LOR	DW1 WATER - 12/9/2017 SE170266.030	DW2 WATER - 12/9/2017 SE170266.031
Dichlorvos	µg/L	0.5	<0.5	<0.5
Dimethoate	µg/L	0.5	<0.5	<0.5
Diazinon (Dimpylate)	µg/L	0.5	<0.5	<0.5
Fenitrothion	µg/L	0.2	<0.2	<0.2
Malathion	µg/L	0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	µg/L	0.2	<0.2	<0.2
Bromophos Ethyl	µg/L	0.2	<0.2	<0.2
Methidathion	µg/L	0.5	<0.5	<0.5
Ethion	µg/L	0.2	<0.2	<0.2
Azinphos-methyl	µg/L	0.2	<0.2	<0.2

pH in water [AN101] Tested: 15/9/2017

PARAMETER	UOM	LOR	DW1 WATER - 12/9/2017 SE170266.030	DW2 WATER - 12/9/2017 SE170266.031
pH**	No unit	-	**6.0**	**6.0**

Conductivity and TDS by Calculation - Water [AN106] Tested: 15/9/2017

PARAMETER	UOM	LOR	DW1 WATER - 12/9/2017 SE170266.030	DW2 WATER - 12/9/2017 SE170266.031
Conductivity @ 25 C	µS/cm	2	**290**	**300**

Metals in Water (Dissolved) by ICPOES [AN320] Tested: 19/9/2017

PARAMETER	UOM	LOR	DW1 WATER - 12/9/2017 SE170266.030	DW2 WATER - 12/9/2017 SE170266.031
Total Hardness by Calculation	mg CaCO3/L	5	37	46

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 20/9/2017

PARAMETER	UOM	LOR	DW1 WATER - 12/9/2017 SE170266.030	DW2 WATER - 12/9/2017 SE170266.031
Arsenic, As	µg/L	1	1	1
Cadmium, Cd	µg/L	0.1	<0.1	<0.1
Chromium, Cr	µg/L	1	1	<1
Copper, Cu	µg/L	1	3	3
Lead, Pb	µg/L	1	<1	<1
Nickel, Ni	µg/L	1	1	1
Zinc, Zn	µg/L	5	<5	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 21/9/2017

PARAMETER	UOM	LOR	DW1 WATER - 12/9/2017 SE170266.030	DW2 WATER - 12/9/2017 SE170266.031
Mercury	mg/L	0.0001	<0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode (glass plus reference electrode) and is calibrated against 3 buffers purchased commercially. For soils, an extract with water is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN106	Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as µmhos/cm or µS/cm @ 25°C. For soils, an extract with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Total Dissolved Salts can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. SGS use 0.6. Reference APHA 2510 B.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN320	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components.
AN320	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements. Reference APHA 3120 B.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here : http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

E-MAILED
14/9/17 @ 12.14

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Network Geotechnics Pty Ltd	Project Name/No:	G09/2571
Address:	Unit 12/9-15 Gundah Road, Mt Kuring-Gai	Purchase Order No:	
	NSW 2080	Results Required By:	21/9/17
		Telephone:	8438 0300
Contact Name:	Thalia	Facsimile:	8438 0310
		Email Results:	engineering@netgeo.com.au;

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Heavy Metals	TRH/BTEX/PAH	Total Phenols	PCB	OC/OP Pesticides	Ammonia/Nitrate	E Coli/T Coli/F Coli	Asbestos ID	CEC/pH	EC/pH	Chloride/Sulphate
BH1 0-0.1	11/9/17	1		X		1	X							X			
BH1 0.4-0.5	11/9/17			X		1											
BH1 0.9-1.0	11/9/17			X		1											
BH2 0-0.1	11/9/17	2		X		1	X	X			X						
BH2 0.4-0.5	11/9/17			X		1											
BH2 0.9-1.0	11/9/17			X		1											
BH3 0-0.1	11/9/17	3		X		1	X							X			
BH3 0.4-0.5	11/9/17			X		1											
BH3 0.9-1.0	11/9/17			X		1											

SGS EHS Alexandria Laboratory
SE170266 COC
Received: 14 – Sep – 2017

Relinquished By: Thalia	Date/Time: 13/9/17	Received By:	Date/Time 13/09/17 @ 2:45
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: (Yes) No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Network Geotechnics Pty Ltd	Project Name/No:	G09/2571
Address:	Unit 12/9-15 Gundah Road, Mt Kuring-Gai	Purchase Order No:	
	NSW 2080	Results Required By:	21/9/17
		Telephone:	8438 0300
Contact Name:	Thalia	Facsimile:	8438 0310
		Email Results:	engineering@netgeo.com.au;

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Heavy Metals	TRH/BTEX/PAH	Total Phenols	PCB	OC/OP Pesticides	Ammonia/Nitrate	E Coli/T Coli/F Coli	Asbestos ID	CEC/pH	EC/pH	Chloride/Sulphate					
BH4 0-0.1	11/9/17	4		X		1	X															
BH4 0.4-0.5	11/9/17			X		1																
BH4 0.9-1.0	11/9/17			X		1																
BH5 0-0.1	11/9/17	5		X		1	X	X														
BH5 0.4-0.5	11/9/17			X		1																
BH5 0.9-1.0	11/9/17	6		X		1	X	X														
BH5 1.4-1.5	11/9/17	7		X		1	X	X														
BH6 0-0.1	11/9/17			X		1																
BH6 0.4-0.5	11/9/17	8		X		1	X	X														

Relinquished By: Thalia	Date/Time: 13/9/17	Received By:	Date/Time 13/09/17 @ 2:45
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Network Geotechnics Pty Ltd	Project Name/No:	G09/2571
Address:	Unit 12/9-15 Gundah Road, Mt Kuring-Gai	Purchase Order No:	
	NSW 2080	Results Required By:	21/9/17
		Telephone:	8438 0300
Contact Name:	Thalia	Facsimile:	8438 0310
		Email Results:	engineering@netgeo.com.au;

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Heavy Metals	TRH/BTEX/PAH	Total Phenols	PCB	OC/OP Pesticides	Ammonia/Nitrate	E Coli/T Coli/F Coli	Asbestos ID	CEC/pH	EC/pH	Chloride/Sulphate					
BH6 0.9-1.0	11/9/17			X		1																
BH6 1.4-1.5	11/9/17	9		X		1	X	X														
BH7 0-0.1	11/9/17	10		X		1	X	X														
BH7 0.4-0.5	11/9/17			X		1																
BH7 0.9-1.0	11/9/17	11		X		1	X	X														
BH7 1.4-1.5	11/9/17			X		1																
BH8 0-0.1	11/9/17	12		X		1	X	X			X											
BH8 0.4-0.5	11/9/17			X		1																
BH8 0.9-1.0	11/9/17			X		1																

Relinquished By: Thalia	Date/Time: 13/9/17	Received By:	Date/Time 13/09/17 @ 2:45
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: (Yes) No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Network Geotechnics Pty Ltd	Project Name/No:	G09/2571
Address:	Unit 12/9-15 Gundah Road, Mt Kuring-Gai	Purchase Order No:	
	NSW 2080	Results Required By:	21/9/17
		Telephone:	8438 0300
Contact Name:	Thalia	Facsimile:	8438 0310
		Email Results:	engineering@netgeo.com.au;

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Heavy Metals	TRH/BTEX/PAH	Total Phenols	PCB	OC/OP Pesticides	Ammonia/Nitrate	E Coli/T Coli/F Coli	Asbestos ID	CEC/pH	EC/pH	Chloride/Sulphate					
BH9 0-0.1	11/9/17	13		X		1	X	X			X											
BH9 0.4-0.5	11/9/17			X		1																
BH9 0.9-1.0	11/9/17			X		1																
BH10 0-0.1	11/9/17	14		X		1		X														
BH10 0.4-0.5	11/9/17			X		1																
BH10 0.9-1.0	11/9/17			X		1																
BH11 0-0.1	11/9/17	15		X		1	X	X			X											
BH11 0.4-0.5	11/9/17			X		1																
BH11 0.9-1.0	11/9/17			X		1																

Relinquished By: Thalia	Date/Time: 13/9/17	Received By:	Date/Time 13/09/17 @ 2:45
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Network Geotechnics Pty Ltd	Project Name/No:	G09/2571
Address:	Unit 12/9-15 Gundah Road, Mt Kuring-Gai	Purchase Order No:	
	NSW 2080	Results Required By:	21/9/17
		Telephone:	8438 0300
Contact Name:	Thalia	Facsimile:	8438 0310
		Email Results:	engineering@netgeo.com.au;

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Heavy Metals	TRH/BTEX/PAH	Total Phenols	PCB	OC/OP Pesticides	Ammonia/Nitrate	E Coli/T Coli/F Coli	Asbestos ID	CEC/pH	EC/pH	Chloride/Sulphate					
BH12 0-0.1	11/9/17			X		1																
BH12 0.4-0.5	11/9/17			X		1																
BH12 0.9-1.0	11/9/17			X		1																
BH13 0-0.1	11/9/17	16		X		1	X	X						X								
BH13 0.4-0.5	11/9/17			X		1																
BH13 0.9-1.0	11/9/17			X		1																
BH14 0-0.1	12/9/17			X		1																
BH14 0.4-0.5	12/9/17	17		X		1	X	X						X								
BH14 0.9-1.0	12/9/17			X		1																

Relinquished By: Thalia	Date/Time: 13/9/17	Received By:	Date/Time 13/09/17 @ 2:45
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: (Yes) No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Network Geotechnics Pty Ltd	Project Name/No:	G09/2571
Address:	Unit 12/9-15 Gundah Road, Mt Kuring-Gai	Purchase Order No:	
	NSW 2080	Results Required By:	21/9/17
		Telephone:	8438 0300
Contact Name:	Thalia	Facsimile:	8438 0310
		Email Results:	engineering@netgeo.com.au;

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Heavy Metals	TRH/BTEX/PAH	Total Phenols	PCB	OC/OP Pesticides	Ammonia/Nitrate	E Coli/T Coli/F Coli	Asbestos ID	CEC/pH	EC/pH	Chloride/Sulphate					
BH14 1.4-1.5	12/9/17			X		1																
BH15 0-0.1	12/9/17	18		X		1	X				X			X								
BH15 0.4-0.5	12/9/17			X		1																
BH15 0.9-1.0	12/9/17			X		1																
BH15 1.4-1.5	12/9/17			X		1																
BH16 0-0.1	12/9/17			X		1																
BH16 0.4-0.5	12/9/17	19		X		1	X	X						X								
BH16 0.9-1.0	12/9/17			X		1																
BH16 1.4-1.5	12/9/17			X		1																

Relinquished By: Thalia	Date/Time: 13/9/17	Received By:	Date/Time 13/09/17 @ 2.40pm
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Network Geotechnics Pty Ltd	Project Name/No:	G09/2571
Address:	Unit 12/9-15 Gundah Road, Mt Kuring-Gai	Purchase Order No:	
	NSW 2080	Results Required By:	21/9/17
		Telephone:	8438 0300
Contact Name:	Thalia	Facsimile:	8438 0310
		Email Results:	engineering@netgeo.com.au;

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Heavy Metals	TRH/BTEX/PAH	Total Phenols	PCB	OC/OP Pesticides	Ammonia/Nitrate	E Coli/T Coli/F Coli	Asbestos ID	CEC/pH	EC/pH	Chloride/Sulphate					
BH17 0-0.1	12/9/17			X		1																
BH17 0.4-0.5	12/9/17	20		X		1	X				X			X								
BH17 0.9-1.0	12/9/17			X		1																
BH17 1.4-1.5	12/9/17			X		1																
BH18 0-0.1	12/9/17			X		1																
BH18 0.4-0.5	12/9/17			X		1																
BH18 0.9-1.0	12/9/17			X		1																
BH19 0-0.1	12/9/17	21		X		1	X				X											
BH19 0.4-0.5	12/9/17			X		1																

Relinquished By: Thalia	Date/Time: 13/9/17	Received By:	Date/Time 13/09/17 @ 2:45
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

CHAIN OF CUSTODY & ANALYSIS REQUEST

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Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Network Geotechnics Pty Ltd	Project Name/No:	G09/2571
Address:	Unit 12/9-15 Gundah Road, Mt Kuring-Gai	Purchase Order No:	
	NSW 2080	Results Required By:	21/9/17
		Telephone:	8438 0300
Contact Name:	Thalia	Facsimile:	8438 0310
		Email Results:	engineering@netgeo.com.au;

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Heavy Metals	TRH/BTEX/PAH	Total Phenols	PCB	OC/OP Pesticides	Ammonia/Nitrate	E Coli/T Coli/F Coli	Asbestos ID	CEC/pH	EC/pH	Chloride/Sulphate					
BH20 0-0.1	12/9/17			X		1																
BH20 0.4-0.5	12/9/17			X		1																
BH20 0.9-1.0	12/9/17	22		X		1	X	X														
BH21 0-0.1	12/9/17			X		1																
BH21 0.4-0.5	12/9/17			X		1																
BH22 0-0.1	12/9/17	23		X		1	X															
BH22 0.4-0.5	12/9/17			X		1																
BH23 0-0.1	12/9/17			X		1																
BH23 0.4-0.5	12/9/17			X		1																

Relinquished By: Thalia	Date/Time: 13/9/17	Received By:	Date/Time 13/09/17 @2:45
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Network Geotechnics Pty Ltd	Project Name/No:	G09/2571
Address:	Unit 12/9-15 Gundah Road, Mt Kuring-Gai	Purchase Order No:	
	NSW 2080	Results Required By:	21/9/17
		Telephone:	8438 0300
Contact Name:	Thalia	Facsimile:	8438 0310
		Email Results:	engineering@netgeo.com.au;

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Heavy Metals	TRH/BTEX/PAH	Total Phenols	PCB	OC/OP Pesticides	Ammonia/Nitrate	E Coli/T Coli/F Coli	Asbestos ID	CEC/pH	EC/pH	Chloride/Sulphate					
BH24 0-0.1	12/9/17			X		1																
BH24 0.4-0.5	12/9/17			X		1																
BH25 0-0.1	12/9/17			X		1																
BH25 0.4-0.5	12/9/17	24		X		1	X				X											
BH26 0-0.1	12/9/17			X		1																
BH26 0.4-0.5	12/9/17			X		1																
BH27 0-0.1	12/9/17	25		X		1	X															
BH27 0.4-0.5	12/9/17			X		1																
BH28 0-0.1	12/9/17			X		1																

Relinquished By: Thalia	Date/Time: 13/9/17	Received By:	Date/Time 13/09/17 @2:45
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: (Yes)/ No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

CHAIN OF CUSTODY & ANALYSIS REQUEST

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Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
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Company Name:	Network Geotechnics Pty Ltd	Project Name/No:	G09/2571
Address:	Unit 12/9-15 Gundah Road, Mt Kuring-Gai	Purchase Order No:	
	NSW 2080	Results Required By:	21/9/17
		Telephone:	8438 0300
Contact Name:	Thalia	Facsimile:	8438 0310
		Email Results:	engineering@netgeo.com.au;

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Heavy Metals	TRH/BTEX/PAH	Total Phenols	PCB	OC/OP Pesticides	Ammonia/Nitrate	E Coli/T Coli/F Coli	Asbestos ID	CEC/pH	EC/pH	Chloride/Sulphate					
BH28 0.4-0.5	12/9/17			X		1																
BH29 0-0.1	12/9/17	24		X		1	X				X											
BH29 0.4-0.5	12/9/17			X		1																
BH30 0-0.1	12/9/17			X		1																
BH30 0.4-0.5	12/9/17			X		1																
BH30 0.9-1.0	12/9/17	27		X		1	X	X														
BH130 0.9-1.0	12/9/17	28		X		1	X	X														
BH120 0.9-1.0	12/9/17	29		X		1	X	X														

Relinquished By: Thalia	Date/Time: 13/9/17	Received By:	Date/Time 13/09/17 @ 2:45
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

SGS

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Alexandria NSW 2015
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Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Network Geotechnics Pty Ltd	Project Name/No:	G09/2571
Address:	Unit 12/9-15 Gundah Road, Mt Kuring-Gai	Purchase Order No:	
	NSW 2080	Results Required By:	21/9/17
		Telephone:	8438 0300
Contact Name:	Thalia	Facsimile:	8438 0310
		Email Results:	engineering@netgeo.com.au;

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	8 Heavy Metals	TRH/BTEX/PAH	Total Phenols	PCB	OC/OP Pesticides	Ammonia/Nitrate	E Coli/T Coli/F Coli	Asbestos ID	CEC/pH	EC/pH	Chloride/Sulphate	Total hardness	BTEX			
DW1	12/9/17	30		X		1	X	X			X					X		X				
DW2	12/9/17	31		X		1	X	X			X					X		X				
Trip spike		32		X		1													X			
Trip blank		33		X		1													X			

Relinquished By: Thalia	Date/Time: 13/9/17	Received By:	Date/Time 13/09/17 @ 2:45
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: (Yes) No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

RE: G09/2571

Thalia Park-Ross <tparkross@netgeo.com.au>

Thu 14/09/2017 3:46 PM

To:AU.SampleReceipt.Sydney (Sydney) <AU.SampleReceipt.Sydney@sgs.com>;

Hi Emily,

The first set of photos is BH24 and second set is BH25.

Sorry for the mix up.

Regards,

Thalia Park-Ross | B Env Sci | Environmental Scientist | **NETWORK GEOTECHNICS**
e tparkross@netgeo.com.au | **p** (02) 8438 0300 | **m** 0431 501 761 | **f** (02) 8438 0310
w www.netgeo.com.au | **a** 31 Anvil Road, Seven Hills NSW 2147


Please consider the environment before you print this email.

From: AU.SampleReceipt.Sydney (Sydney) [mailto:AU.SampleReceipt.Sydney@sgs.com]
Sent: Thursday, 14 September 2017 3:39 PM
To: Thalia Park-Ross
Subject: G09/2571

Dear Thalia,

2 sets of BH25 received.
BH24 not received.
Please advise which is the right BH25.
Thank You.

Regards,

Emily Yin
Environment, Health & Safety
Sample Receipt

SGS Australia Pty Ltd
Unit 16, 33 Maddox Street
Alexandria NSW 2015

Phone: +61 (0)2 8594 0400
Fax: +61 (0)2 8594 0499
E-mail: au.samplereceipt.sydney@sgs.com

SAMPLE RECEIPT ADVICE

SE170266

CLIENT DETAILS

Contact	Thalia Park-Ross
Client	NETWORK GEOTECHNICS PTY LTD
Address	31 Anvil Rd Seven Hills NSW 2147
Telephone	02 8438 0312 / 0411 112 824
Facsimile	02 8438 0310
Email	tparkross@netgeo.com.au
Project	**G09-2571**
Order Number	(Not specified)
Samples	33

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 14/9/2017
Report Due	Thu 21/9/2017
SGS Reference	**SE170266**

SUBMISSION DETAILS

This is to confirm that 33 samples were received on Thursday 14/9/2017. Results are expected to be ready by COB Thursday 21/9/2017. Please quote SGS reference SE170266 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	31 Soil, 2 Water
Date documentation received	13/9/2017	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	13.5°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

60 soil samples have been placed on hold.
Asbestos will be sub sampled from the jar provided, as a separate bag was not supplied for analysis.

SAMPLE RECEIPT ADVICE

SE170266

CLIENT DETAILS

Client NETWORK GEOTECHNICS PTY LTD

Project G09-2571

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	Total Recoverable Metals in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH1 0-0.1	-	-	-	7	-	-	-
002	BH2 0-0.1	29	14	26	7	10	12	8
003	BH3 0-0.1	-	-	-	7	-	-	-
004	BH4 0-0.1	-	-	-	7	-	-	-
005	BH5 0-0.1	-	-	26	7	10	12	8
006	BH5 0.9-1.0	-	-	26	7	10	12	8
007	BH5 1.4-1.5	-	-	26	7	10	12	8
008	BH6 0.4-0.5	-	-	26	7	10	12	8
009	BH6 1.4-1.5	-	-	26	7	10	12	8
010	BH7 0-0.1	-	-	26	7	10	12	8
011	BH7 0.9-1.0	-	-	26	7	10	12	8
012	BH8 0-0.1	29	14	26	7	10	12	8
013	BH9 0-0.1	29	14	26	7	10	12	8
014	BH10 0-0.1	-	-	26	-	10	12	8
015	BH11 0-0.1	29	14	26	7	10	12	8
016	BH13 0-0.1	-	-	26	7	10	12	8
017	BH14 0.4-0.5	-	-	26	7	10	12	8
018	BH15 0-0.1	29	14	-	7	-	-	-
019	BH16 0.4-0.5	-	-	26	7	10	12	8
020	BH17 0.4-0.5	29	14	-	7	-	-	-
021	BH19 0-0.1	29	14	-	7	-	-	-
022	BH20 0.9-1.0	-	-	26	7	10	12	8
023	BH22 0-0.1	-	-	-	7	-	-	-
024	BH25 0.4-0.5	29	14	-	7	-	-	-

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE170266

CLIENT DETAILS

Client NETWORK GEOTECHNICS PTY LTD Project G09-2571

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	Total Recoverable Metals in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
025	BH27 0-0.1	-	-	-	7	-	-	-
026	BH29 0-0.1	29	14	-	7	-	-	-
027	BH30 0.9-1.0	-	-	26	7	10	12	8
028	BH130 0.9-1.0	-	-	26	7	10	12	8
029	BH120 0.9-1.0	-	-	26	7	10	12	8
032	Trip Spike	-	-	-	-	-	12	-
033	Trip Blank	-	-	-	-	-	12	-

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE170266

CLIENT DETAILS

Client NETWORK GEOTECHNICS PTY LTD

Project G09-2571

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content
001	BH1 0-0.1	2	1	1
002	BH2 0-0.1	-	1	1
003	BH3 0-0.1	2	1	1
004	BH4 0-0.1	-	1	1
005	BH5 0-0.1	-	1	1
006	BH5 0.9-1.0	-	1	1
007	BH5 1.4-1.5	-	1	1
008	BH6 0.4-0.5	-	1	1
009	BH6 1.4-1.5	-	1	1
010	BH7 0-0.1	-	1	1
011	BH7 0.9-1.0	-	1	1
012	BH8 0-0.1	-	1	1
013	BH9 0-0.1	-	1	1
014	BH10 0-0.1	-	-	1
015	BH11 0-0.1	-	1	1
016	BH13 0-0.1	2	1	1
017	BH14 0.4-0.5	2	1	1
018	BH15 0-0.1	2	1	1
019	BH16 0.4-0.5	2	1	1
020	BH17 0.4-0.5	2	1	1
021	BH19 0-0.1	-	1	1
022	BH20 0.9-1.0	-	1	1
023	BH22 0-0.1	-	1	1
024	BH25 0.4-0.5	-	1	1

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE170266

CLIENT DETAILS

Client NETWORK GEOTECHNICS PTY LTD

Project G09-2571

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Moisture Content	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
025	BH27 0-0.1	1	1	-	-
026	BH29 0-0.1	1	1	-	-
027	BH30 0.9-1.0	1	1	-	-
028	BH130 0.9-1.0	1	1	-	-
029	BH120 0.9-1.0	1	1	-	-
030	DW1	-	-	12	8
031	DW2	-	-	12	8
033	Trip Blank	-	1	-	-

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE170266

CLIENT DETAILS

Client NETWORK GEOTECHNICS PTY LTD Project G09-2571

SUMMARY OF ANALYSIS

No.	Sample ID	Conductivity and TDS by Calculation - Water	Mercury (dissolved) in Water	Metals in Water (Dissolved) by ICPOES	OC Pesticides in Water	OP Pesticides in Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	pH in water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water
030	DW1	1	1	1	28	13	22	1	7	10
031	DW2	1	1	1	28	13	22	1	7	10

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Thalia Park-Ross
Client	NETWORK GEOTECHNICS PTY LTD
Address	31 Anvil Rd Seven Hills NSW 2147
Telephone	02 8438 0312 / 0411 112 824
Facsimile	02 8438 0310
Email	tparkross@netgeo.com.au
Project	**G09-2571 Additional**
Order Number	(Not specified)
Samples	35

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE170266A R0**
Date Received	22/9/2017
Date Reported	27/9/2017

COMMENTS

Accredited for compliance with ISO/IEC 17025- Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Akheeqar Beniameen
Chemist

Ly Kim Ha
Organic Section Head

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 25/9/2017

PARAMETER	UOM	LOR	BH7 0.4-0.5 SOIL - 12/9/2017 SE170266A.034	BH7 1.4-1.5 SOIL - 12/9/2017 SE170266A.035
Benzene (F0)	mg/kg	0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20
TRH C6-C10	mg/kg	25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 25/9/2017

PARAMETER	UOM	LOR	BH7 0.4-0.5 SOIL - 12/9/2017 SE170266A.034	BH7 1.4-1.5 SOIL - 12/9/2017 SE170266A.035
TRH C10-C14	mg/kg	20	<20	<20
TRH C15-C28	mg/kg	45	**530**	<45
TRH C29-C36	mg/kg	45	**1300**	<45
TRH C37-C40	mg/kg	100	**330**	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	**1400**	<90
TRH >C34-C40 (F4)	mg/kg	120	**750**	<120
TRH C10-C36 Total	mg/kg	110	**1800**	<110
TRH C10-C40 Total	mg/kg	210	**2100**	<210

Moisture Content [AN002] Tested: 25/9/2017

PARAMETER	UOM	LOR	BH7 0.4-0.5 SOIL - 12/9/2017 SE170266A.034	BH7 1.4-1.5 SOIL - 12/9/2017 SE170266A.035
% Moisture	%w/w	0.5	**7.4**	**19**

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN433	VOCs and C6-C9/C6-C10 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here : http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

STATEMENT OF QA/QC PERFORMANCE

SE170266A R0

CLIENT DETAILS

Contact	Thalia Park-Ross
Client	NETWORK GEOTECHNICS PTY LTD
Address	31 Anvil Rd Seven Hills NSW 2147
Telephone	02 8438 0312 / 0411 112 824
Facsimile	02 8438 0310
Email	tparkross@netgeo.com.au
Project	**G09-2571 Additional**
Order Number	(Not specified)
Samples	35

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE170266A R0**
Date Received	22 Sep 2017
Date Reported	27 Sep 2017

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Matrix Spike	TRH (Total Recoverable Hydrocarbons) in Soil	3 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	2 Soil
Date documentation received	22/9/17@8:49am	Type of documentation received	Email
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	13.5°C	Sufficient sample for analysis	Yes
Turnaround time requested	Three Days		

HOLDING TIME SUMMARY

SE170266A R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH7 0.4-0.5	SE170266A.034	LB132927	12 Sep 2017	22 Sep 2017	26 Sep 2017	25 Sep 2017	30 Sep 2017	27 Sep 2017
BH7 1.4-1.5	SE170266A.035	LB132927	12 Sep 2017	22 Sep 2017	26 Sep 2017	25 Sep 2017	30 Sep 2017	27 Sep 2017

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH7 0.4-0.5	SE170266A.034	LB132926	12 Sep 2017	22 Sep 2017	26 Sep 2017	25 Sep 2017	04 Nov 2017	27 Sep 2017
BH7 1.4-1.5	SE170266A.035	LB132926	12 Sep 2017	22 Sep 2017	26 Sep 2017	25 Sep 2017	04 Nov 2017	27 Sep 2017

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH7 0.4-0.5	SE170266A.034	LB132929	12 Sep 2017	22 Sep 2017	26 Sep 2017	25 Sep 2017	04 Nov 2017	27 Sep 2017
BH7 1.4-1.5	SE170266A.035	LB132929	12 Sep 2017	22 Sep 2017	26 Sep 2017	25 Sep 2017	04 Nov 2017	27 Sep 2017

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil — **Method: ME-(AU)-[ENV]AN433**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH7 0.4-0.5	SE170266A.034	%	60 - 130%	86
	BH7 1.4-1.5	SE170266A.035	%	60 - 130%	94
d4-1,2-dichloroethane (Surrogate)	BH7 0.4-0.5	SE170266A.034	%	60 - 130%	80
	BH7 1.4-1.5	SE170266A.035	%	60 - 130%	95
d8-toluene (Surrogate)	BH7 0.4-0.5	SE170266A.034	%	60 - 130%	79
	BH7 1.4-1.5	SE170266A.035	%	60 - 130%	78
Dibromofluoromethane (Surrogate)	BH7 0.4-0.5	SE170266A.034	%	60 - 130%	74
	BH7 1.4-1.5	SE170266A.035	%	60 - 130%	86

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB132926.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB132929.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	89
		d4-1,2-dichloroethane (Surrogate)	%	-	97
		d8-toluene (Surrogate)	%	-	78

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE170602.008	LB132927.011	% Moisture	%w/w	0.5	5.1	4.7	51	9
SE170620.002	LB132927.033	% Moisture	%w/w	0.5	12	11	39	5

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE170617.002	LB132926.014		TRH C10-C14	mg/kg	20	0	0	200	0
			TRH C15-C28	mg/kg	45	218	183	52	17
			TRH C29-C36	mg/kg	45	328	308	44	6
			TRH C37-C40	mg/kg	100	0	0	200	0
			TRH C10-C36 Total	mg/kg	110	546	491	51	11
			TRH C10-C40 Total	mg/kg	210	432	389	81	10
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	0	0	200	0
			TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	-0.03	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	432	389	52	10
			TRH >C34-C40 (F4)	mg/kg	120	0	0	200	0
SE170620.001	LB132926.022		TRH C10-C14	mg/kg	20	NVL	<20	200	0
			TRH C15-C28	mg/kg	45	NVL	<45	200	0
			TRH C29-C36	mg/kg	45	NVL	<45	200	0
			TRH C37-C40	mg/kg	100	NVL	<100	200	0
			TRH C10-C36 Total	mg/kg	110	NVL	<110	200	0
			TRH C10-C40 Total	mg/kg	210	NVL	<210	200	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	NVL	<25	200	0
			TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	NVL	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	NVL	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	NVL	<120	200	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE170620.002	LB132929.015		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.6	4.0	30	12
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	4.5	30	5
			d8-toluene (Surrogate)	mg/kg	-	3.8	3.7	30	4
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.5	4.5	30	0
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB132926.002		TRH C10-C14	mg/kg	20	49	40	60 - 140	123
		TRH C15-C28	mg/kg	45	45	40	60 - 140	113
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	78
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	47	40	60 - 140	118
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	98
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	70

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB132929.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	89
		TRH C6-C9	mg/kg	20	<20	23.2	60 - 140	72
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.2	5	60 - 140	83
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.6	5	60 - 140	92
		d8-toluene (Surrogate)	mg/kg	-	4.5	5	60 - 140	91
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.2	5	60 - 140	84
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	108

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE170614.001	LB132926.023		TRH C10-C14	mg/kg	20	47	<20	40	118
			TRH C15-C28	mg/kg	45	190	170	40	33 ⑤
			TRH C29-C36	mg/kg	45	100	89	40	28 ⑤
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	330	260	-	-
			TRH C10-C40 Total	mg/kg	210	310	250	-	-
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	47	<25	40	118
			TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	47	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	240	250	40	-5 ⑤
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE170266A.03	LB132929.004		TRH C6-C10	mg/kg	25	<25	<25	24.65	90
4			TRH C6-C9	mg/kg	20	<20	<20	23.2	74
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.0	3.7	-	79
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.2	4.0	-	85
			d8-toluene (Surrogate)	mg/kg	-	4.5	4.0	-	90
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	4.3	-	81
		VPH F	Benzene (F0)	mg/kg	0.1	2.1	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	130

MATRIX SPIKE DUPLICATES

SE170266A R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

RE: Report Job SE170266, your reference G09-2571, order number

Thalia Park-Ross <tparkross@netgeo.com.au>

Fri 22/09/2017 8:49 AM

To AU.SampleReceipt.Sydney (Sydney) <AU.SampleReceipt.Sydney@sgs.com>;

SGS EHS Alexandria Laboratory

SE170266A COC
Received: 22 – Sep – 2017

Hi, #34 BH7 0.4 - 0.5

Please test samples TP7 0.4-0.5 and TP7 1.4-1.5 for TRH.

Results by Tuesday 27/9/17 please. #35 BH7 1.4 - 1.5

Regards,

Thalia Park-Ross | B Env Sci | Environmental Scientist | NETWORK GEOTECHNICS
e tparkross@netgeo.com.au | p (02) 8438 0300 | m 0431 501 761 | f (02) 8438 0310
w www.netgeo.com.au | a 31 Anvil Road, Seven Hills NSW 2147

Please consider the environment before you print this email.

-----Original Message-----
From: AU.Environmental.Sydney@SGS.com [mailto:AU.Environmental.Sydney@SGS.com]
Sent: Thursday, 21 September 2017 5:56 PM
To: Sydney Engineering; Thalia Park-Ross
Subject: Report Job SE170266, your reference G09-2571, order number

Dear Thalia,

Please find attached the report for SGS job SE170266, your reference G09-2571, order number .

-IMPORTANT INFORMATION ABOUT YOUR REPORT- To align with NEPM 1999 (2013), SGS Environmental has changed the way Silica Gel Clean-up of TRH extracts is reported. TPH Silica Gel has now become TRH – Silica. NEPM 1999(2013) seeks to clarify TRH and TPH in Schedule B3, 10.2.7.

If you have any questions or concerns, please don't hesitate to contact your SGS Client Services representative.

Regards,
Natalie Grove

SAMPLE RECEIPT ADVICE

SE170266A

CLIENT DETAILS

Contact	Thalia Park-Ross
Client	NETWORK GEOTECHNICS PTY LTD
Address	31 Anvil Rd Seven Hills NSW 2147
Telephone	02 8438 0312 / 0411 112 824
Facsimile	02 8438 0310
Email	tparkross@netgeo.com.au
Project	**G09-2571 Additional**
Order Number	(Not specified)
Samples	35

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Fri 22/9/2017
Report Due	Wed 27/9/2017
SGS Reference	**SE170266A**

SUBMISSION DETAILS

This is to confirm that 35 samples were received on Friday 22/9/2017. Results are expected to be ready by COB Wednesday 27/9/2017. Please quote SGS reference SE170266A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	2 Soil
Date documentation received	22/9/17@8:49am	Type of documentation received	Email
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	13.5°C	Sufficient sample for analysis	Yes
Turnaround time requested	Three Days		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

SAMPLE RECEIPT ADVICE

SE170266A

CLIENT DETAILS

Client NETWORK GEOTECHNICS PTY LTD

Project G09-2571 Additional

SUMMARY OF ANALYSIS

No.	Sample ID	Moisture Content	TRH (Total Recoverable Hydrocarbons) in Soil	Volatile Petroleum Hydrocarbons in Soil
034	BH7 0.4-0.5	1	10	8
035	BH7 1.4-1.5	1	10	8

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .