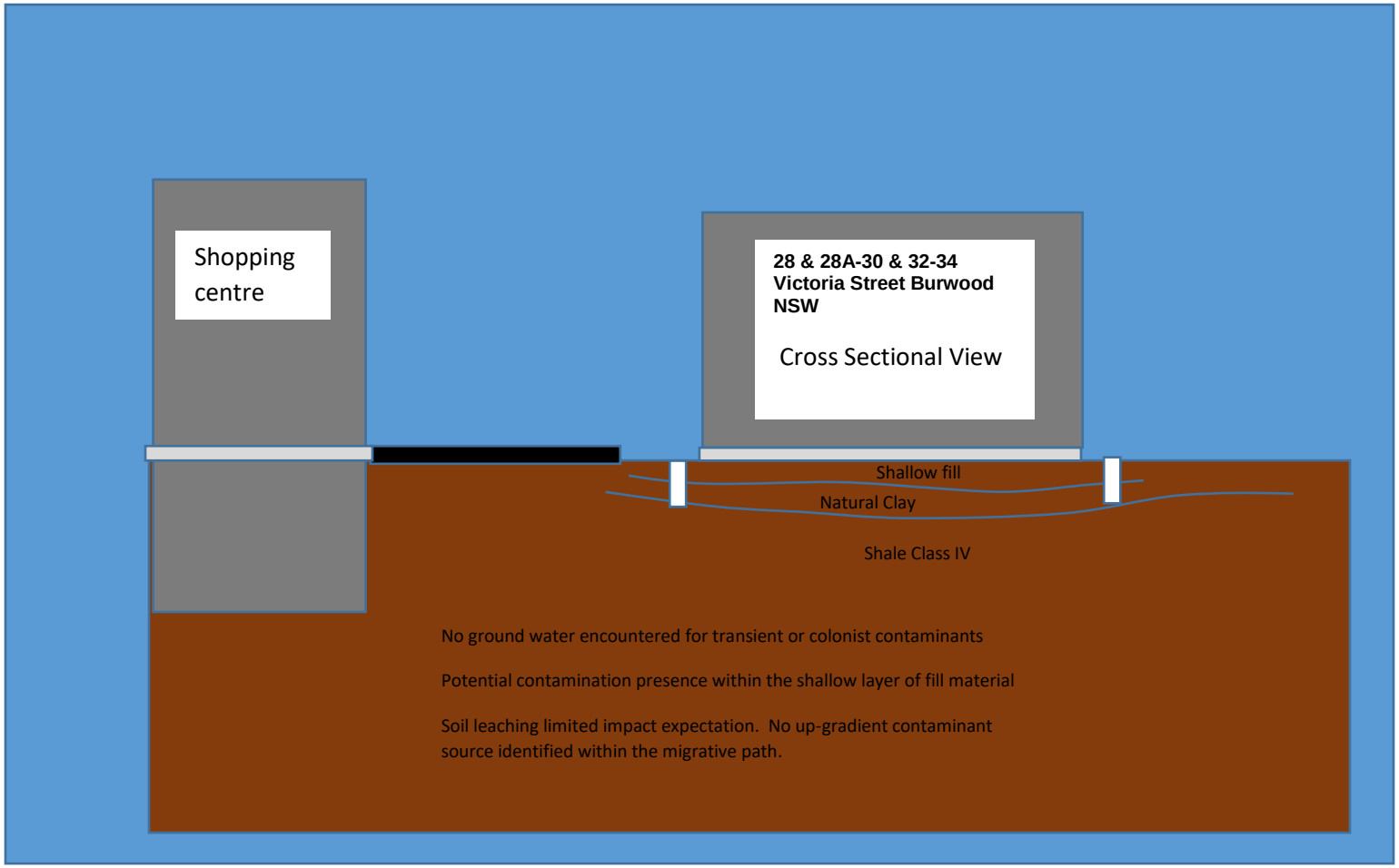
Bore Hole Cross Sectional Model



Primary & Secondary Contamination Sources are via historical imported fill materials with limited expectation of soil leaching transportation mechanisms impacting the site at this preliminary stage of the targeted investigation. Surface transportation of secondary contamination source has been considered with the limited likelihood of occurrence and no transient or colonist contaminants from groundwater movements would be expected to be encountered.

Conceptual Model

28-34 Victoria St Burwood NSW

Scale 1:30,000
Scale at A4

Image source Google Maps

FIMA
FUEL & INFRASTRUCTURE MANAGEMENT AUSTRALASIA

Produced by: Fuel & Infrastructure Management Australasia Pty Ltd

Bore Hole Identification	Description	Sample depth	Comment
165858/1	SB1	2m	Single sample approximately 2m. Advanced to shale
165858/2	SB2 & SB4	0.3m & 1.8m	Two(2) samples one within fill and one from natural clay
165858/3	SB3 & SB5	0.6m & 1.1m	Two(2) samples one just after the fill material and one mid clay level
165859/1	SB1	0.4m	Single Sample mid filler material
165859/2	SB2 & SB4	0.8m & 0.6m	Two(2) samples boundary of fill material and one shallow clay level
165859/3	SB3 & SB5	1.2m & 0.2m	Two(2) samples one lower clay level one surface

- Boreholes 165858 /1,2&3 where advanced on a falling gradient inside the boundary of the premises along Victoria Street. A gradient of depths where employed to cover the sampling conceptual model.
- Boreholes 165859 /1,2&3 where advanced on a falling gradient inside the boundary of the premises along the rear of the property. A gradient of depths where employed to cover the sampling conceptual model.

SITE PLAN & SAMLING LOCATIONS

28*34 Victoria Rd Burwood NSW

Scale 1:30,000
Scale at A4

Image source Google Maps

FIMA
FUEL & INFRASTRUCTURE MANAGEMENT AUSTRALASIA

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Key:

Surface Sample <1m

Key:

Sub Surface Sampling >1m

Soil Locality Map

Residential Site

28-34 Victoria St Burwood NSW

Scale 1:30,000
Scale at A4

Image source Google Maps

FIMA
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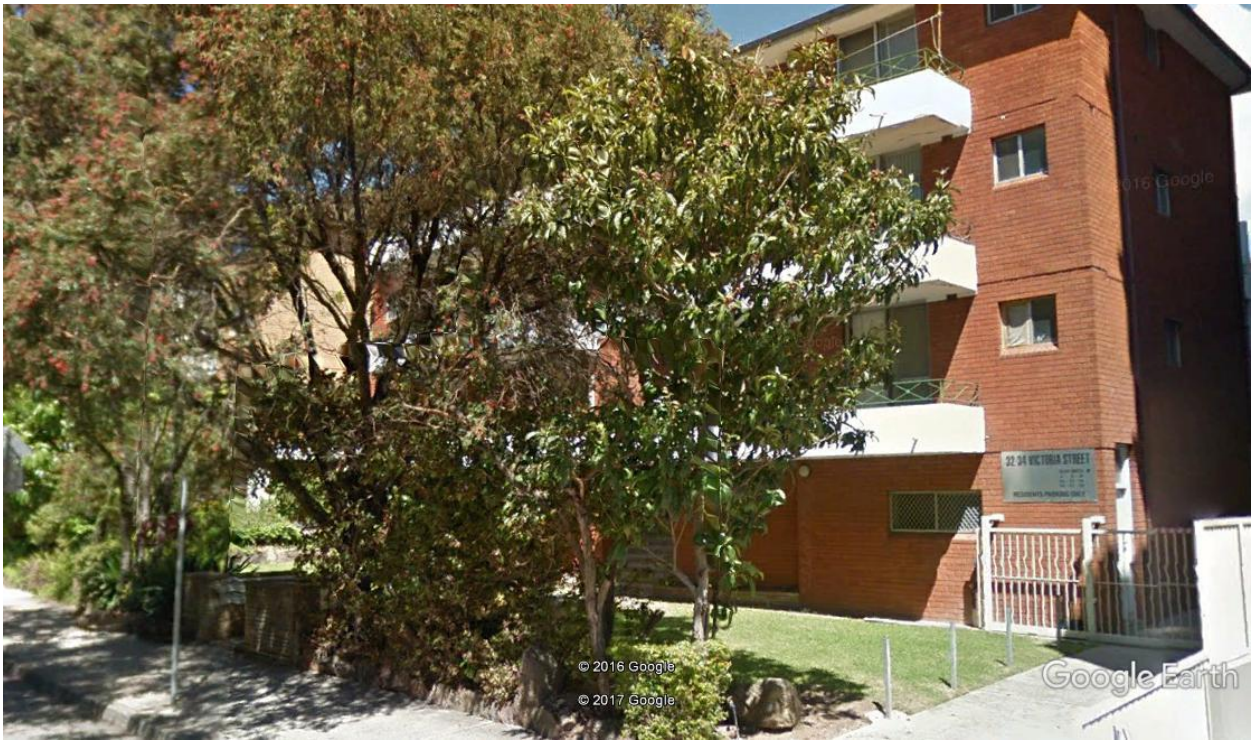
Produced by: Fuel & Infrastructure Management Australasia Pty Ltd

Targeted Site Soil Assessment



28 & 28A-30 & 32-34

Victoria Street Burwood

Report Number

DD44356

Date

28/05/2017

PROJECT DETAILS

Business Name:

FIMA (Fuel & Infrastructure Management Australasia P/L)

Project Number: DD 44356

Project Title: Targeted Site Soil Assessment

28 & 28A-30 & 32-34 Victoria Street Burwood

REPORT DETAILS
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Approved by:
Michael Husband
Technical Director

Review Date: 28th May 2017
File Name: DD 44356
Report Status: FINAL

Executive Summary

FIMA was engaged by Peter Sleiman of VSD Investments Pty Limited to undertake a Targeted site soil assessment of the three(3) residential sites located at 28 & 28A-30 & 32-34 Victoria Street Burwood referred to as 'the site' in this report. The full environmental site assessment included both soil and water Investigation. The purpose of the Investigation was to quantify the site soil contaminants relative to the adopted Soil Assessment Criteria - Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater Table 5.1 .

The Investigation has been undertaken in accordance with the requirements of the Office of Environment and Heritage (OEH) Guidelines for Consultants Reporting on Contaminated Sites (2011).

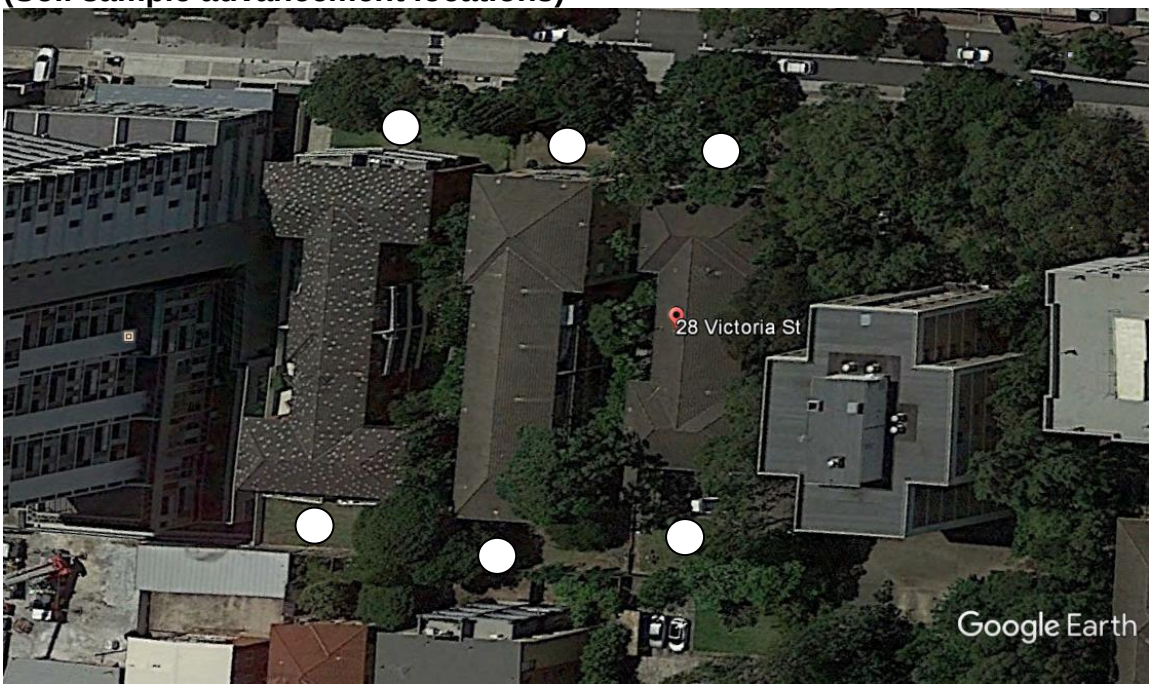
FIMA arrived onsite to assess the overall site conditions and take soil samples from the accessible representative areas. FIMA completed a search on the NSW EPA website of contaminated sites, this site was not found on the list of contaminated sites.

Observations from onsite assessment indicates the following:

- The soil sampling location had single or dual bores advanced whereby on all locations drilling encountered top soil over shallow gravelly sand over firm orange clay. Shale from 1.4m was encountered.

No anomalous observations were made during the field work and no soil analyst reported levels exceeding the adopted assessment criteria.

28 & 28A-30 & 32-34 Victoria Street Burwood NSW
(Soil sample advancement locations)



ENVIROLAB Results "Certificate of Analysis 165858"

Matrix	Acceptance	165858/1	165858/2	165858/3	165858/4	165858/5
Analyte Name	**Criteria**	**Result**	**Result**	**Result**	**Result**	**Result**
Benzene	1	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	130	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	25	<1.0	<1.0	<1.0	<1.0	<1.0
TRH C6-C9	65	<25	<25	<25	<25	<25
Total TRH +ve C10-C40	1000	<50	<50	<50	<50	<50
Arsenic, As	100 (A1)	0.06	<0.05	<0.05	<0.05	<0.05
Cadmium, Cd	20 (A1)	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium, Cr	100 (A1)	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	1000 (A1)	<0.01	<0.01	<0.01	<0.01	<0.01
Lead, Pb	300 (A1)	<0.03	<0.03	<0.03	<0.03	<0.03
Nickel, Ni	600 (A1)	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc, Zn	7000 (A1)	0.1	<0.02	0.2	0.1	0.5
Mercury	15 (A1)	<0.005	<0.005	<0.005	<0.005	<0.005

ENVIROLAB Results "Certificate of Analysis 165859"

Matrix	Acceptance	165859/1	165859/2	165859/3	165859/4	165859/5
Analyte Name	**Criteria**	**Result**	**Result**	**Result**	**Result**	**Result**
Benzene	1	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	130	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	25	<1.0	<1.0	<1.0	<1.0	<1.0
TRH C6-C9	65	<25	<25	<25	<25	<25
Total TRH +ve C10-C40	1000	<50	<50	<50	120	<50
Arsenic, As	100 (A1)	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium, Cd	20 (A1)	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium, Cr	100 (A1)	<0.01	<0.01	<0.01	<0.01	<0.01
Copper	1000 (A1)	<0.01	<0.01	<0.01	<0.01	<0.01
Lead, Pb	300 (A1)	<0.03	<0.03	<0.03	<0.03	<0.03
Nickel, Ni	600 (A1)	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc, Zn	7000 (A1)	0.03	0.1	0.1	0.1	<0.02
Mercury	15 (A1)	<0.005	<0.005	<0.005	<0.005	<0.005

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1 INTRODUCTION

This report presents the results of a targeted soil investigation commissioned by Mr Peter Sleiman on behalf of VSD Investments Pty Limited and undertaken for a proposed mixed-use development at 28 & 28A-30 & 32-34 Victoria Street Burwood NSW. The site has a gentle fall towards Victoria Street, with site surface levels ranging from between approximately RL19 m to RL17 m relative to Australian Height Datum (AHD).

It is understood that the proposed development involves the construction a multi-story building with multi-basement levels. The investigation included the advancement of six (6) augured boreholes. Details of the field work undertaken are given in the report and bore logs are provided within the report appendices.

Historically an environmental in-situ waste classification assessment was conducted in conjunction with the geotechnical investigations both of which have been reported separately and not addressed within this report.

1.1 Project Objectives

The objectives of the assessment were as follows:

Assess the extent of potential contaminant impacts (if any) at the site related to adopted Soil Assessment Criteria - Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater Table 5.1. The Investigation was undertaken in accordance with the requirements of the Office of Environment and Heritage (OEH) Guidelines for Consultants Reporting on Contaminated Sites (2011).

1.2 Scope of Work

To achieve the objectives outlined in Section 1.1 FIMA conducted the following work:

- Application for Dial Before You Dig Plans.
- Completed Work Clearance Form.
- Conducted a site inspection to establish current site conditions, surrounding land uses and potential human and environmental receptors located near the site.
- Advanced soil assessment holes at six(6) locations across the site. All borehole locations were choses subject to providing a grid based assessment of the site.
- Collected samples of material from within each soil assessment location. A single or dual samples where extracted from the drill locations
- Analysed 10 primary soil samples in a laboratory for total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylenes (BTEX) and Metals 8;
- Assessed the reported concentrations of potential contaminants of concern in each soil and water sample against appropriate human health and environmental protection guidelines, and
- Prepared this factual report outlining the findings of the assessment.

2 LIMITATIONS OF THIS REPORT

The findings of this report are based on the Scope of Work outlined in Section 1.2. FIMA performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental consulting profession. No warranties, express or implied are made.

The results of this assessment are based upon the information documented and presented in this report. All conclusions and recommendations regarding the site are the professional opinions of FIMA personnel involved with the project. While normal assessments of data reliability have been made, FIMA assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of FIMA, or developments resulting from situations outside the scope of this project.

Subject to the Scope of the Work, FIMA assessment is strictly limited to assessing soil and groundwater at the site. Soil and groundwater samples were analysed for common contaminants and/or indicators of contamination only. The absence of targeted contaminants of concern in soil and groundwater samples cannot be interpreted as a guarantee that such materials, or other potentially toxic or hazardous compounds, do not exist at the site.

The results of this assessment are based on the site conditions identified at the time of the site inspection and validation sampling. FIMA will not be liable to revise the report to account for any changes in site characteristics, regulatory requirements, assessment criteria or the availability of additional information, subsequent to the issue date of this report.

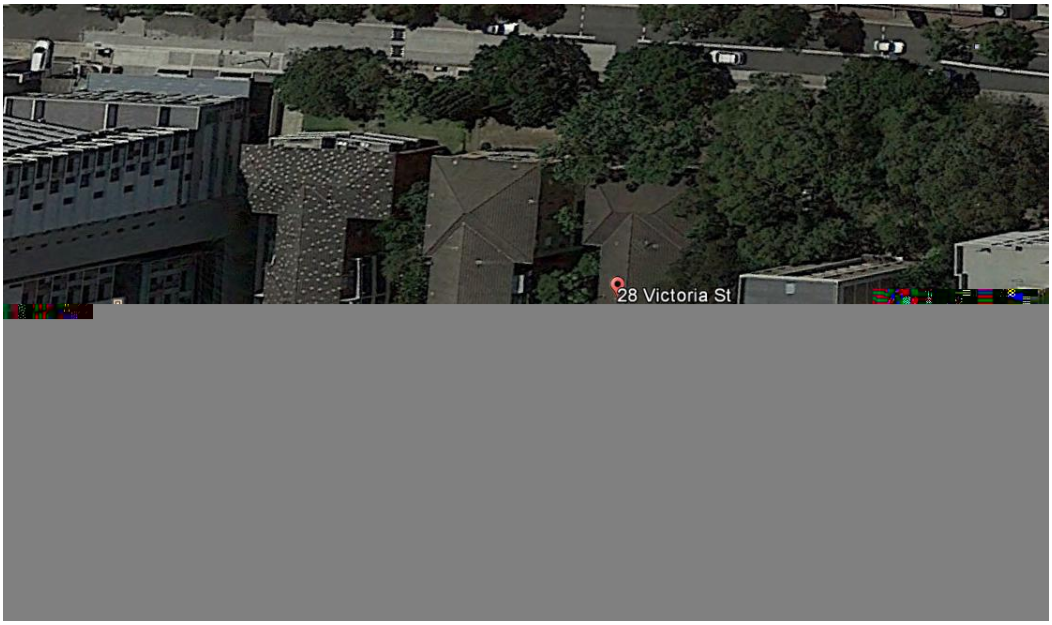
FIMA is not engaged in environmental consulting and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes.

3 SITE DESCRIPTION

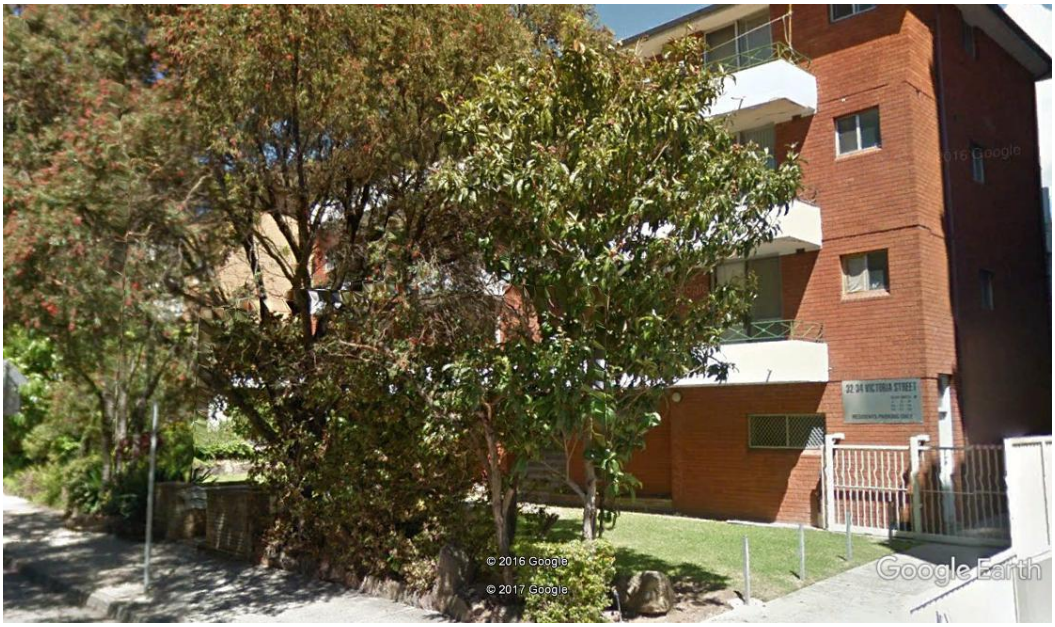
3.1 Table 1: Summary of Site Details

Description	
Street Address:	28 & 28A-30 & 32-34 Victoria Street Burwood NSW
Local Government Area:	Burwood

3.2 Site Layout and Features



The site is located in a predominantly suburban area of Burwood NSW.



3.3 Adjoining Land Uses

At the time of the assessment land uses adjacent to the site were as follows:

- North – Shopping Centre
- East – office / residential buildings
- West – Residential
- South – Residential

3.4 Site Topography

The site is on a low falling gradient towards George street, westerly direction

Surface water drainage from the site would flow off-site down gradient following council storm water management system.

This information was based on both visual information and topographic assessment. The site has an approximate fall of 2m from an above datum RL19 to approximately above datum RL17

3.5 Soils and Hydrology

Soil and hydrology information was obtained from Douglas Partners report Project 84835.00 June 2015.

Acid Sulphate Soils-The boreholes indicate that the site is underlain by shallow residual soils which are not associated with Acid Sulphate Soils (ASS) and therefore ASS are not expected on this site. This observation concurs with the Douglas reporting Project 84835.00 June 2015.

3.6 Sensitive Receptors

The site receptor assessment provides no immediate sensitive receptors and no immediate surface water bodies impact this assessment.

4 SITE ASSESSMENT

4.1 Overview

An environmental technician experienced in the handling of potentially contaminated soil and ground water undertook the fieldwork. The scope of the work included: A site inspection, collection of water samples from onsite monitoring wells, location of services, collection of soil samples, reinstatement of all excavations.

A “Sources-Pathways-Receptors” assessment provided the following conceptual input variables which in turn assist in the determination of soil sampling localities and depth of drill advancements.

The abbreviated “Sources-Pathways-Receptors” model adopted for this limited investigation shows the decision variables in the assessment and conceptual model development.

Primary Source Assessment

Soil Contamination (TBD)

Operational Spills & Leaks (N/A)

Up Gradient Ingress (N/A)

Secondary Source Assessment

Surface Soils (N/A)

Subsurface soils >1m (TBD)

Surface soil sediment & water (N/A)

TBD – To Be Determined

N/A – Not Applicable subject to land usages and tactile inspections of the target site.

Transport Mechanisms

Leaching and subsurface transportation

No erosion or atmospheric dispersion considered subject to fully sealed concrete surfaces.

No surface run off or storm water transport was considered as tactile assessment provided no evidence surface staining or contamination event.

Exposure Pathways

Soil (Possible)

Air (N/A)

Water (TBD)

Surface (Possible)

TBD – To Be Determined

N/A – Not Applicable subject to land usages

Consideration to water exposure pathways would be undertaken subject to the subsurface identification of contamination.

Receptors

Subject to limited primary source contamination potential and a limited secondary source of contamination, combined with limited transportation mechanisms and exposure pathways only relevant if site contamination exists a receptor synopsis was not initially undertaken and would only be of necessary consideration if subsurface contamination existed.

Subject to the above site assessment of potential contaminants, soil drilling locations and depths where determined as per attachment 1, Site soil locality map.

Drilling to identify primary soil contaminations forms the principle purpose of this limited investigation. The specific sub surface secondary contamination bands, 0.5m to 2m, are those of principle consideration given the site surface is exposed vegitation formation and the pathways are predominantly leaching and plume diffusion if contamination exists.

The front and rear yard areas of the non-commercial properties presented the potential for surface contamination given the area was paved however the land use provides no indication of any direct contamination sources.

4.2 Soil Sampling Locations and Assessment

Soil assessment holes were advanced at 6 locations across the site. The sampling locations were selected based on the location availability and provided a nodal point location for the grid based analysis. Locality ensured probability of picking up potential contamination was high.

FIMA collected soil samples from each soil assessment hole. Soil samples were collected at various depths within each hole. The depth at which each soil/fill material sample was collected from are shown in the borelogs presented in Attachment C. A total of 12 soil samples were collected at the site with 10 being submitted to a NATA accredited laboratory (ENVIROLAB).

4.2.1 Drilling Methods and Soil Sampling Methodology

Augur drilling rig equipped with 125mm diameter solid flight augers was used to advance 6 soil assessment holes at the site. The soil assessment holes were advanced to a minimum depth of 2.0m below ground level, no water bearing zone was encountered.

4.2.2 Sample Analysis

The samples were sent to ENVIROLAB in accordance with QA/QC Guidelines. See section 5.3.2 for further details.

Soil Fieldwork Notes

The fill material and natural soils encountered in each soil assessment hole are described in the borelogs presented in Attachment C.

Bore hole 1 – was advanced at the rear of the up-gradient building of the assessment area. This location provided a single soil sample with no site anomalous observations noted.

Bore hole 2 – was advanced at the rear of the middle building of the assessment area. This location provided two (2) soil samples with no site anomalous observations noted.

Bore hole 3 –was advanced at the rear of the down-gradient building of the assessment area. This location provided two (2) soil samples with no site anomalous observations noted.

Bore hole 4 – was advanced at the front of the up-gradient building of the assessment area. This location provided a single soil sample with no site anomalous observations noted.

Bore hole 5 – was advanced at the front of the middle building of the assessment area. This location provided two (2) soil samples with no site anomalous observations noted.

Bore hole 6 –was advanced at the front of the down-gradient building of the assessment area. This location provided two (2) soil samples with no site anomalous observations noted.

Bore locations 1, 2 & 3 where sampled and reported separately to bore locations 4, 5 & 6. A blank was obtained from both front and rear sampling events.

5 QUALITY ASSURANCE/QUALITY CONTROL QA/QC

5.1 Data Quality Objectives

The Data Quality Objectives (DQOs) define the quality and quantity of data needed to support decisions relating to the environmental condition of a site. It outlines the defining criteria that a data collection design should satisfy, including when, where, how and how many samples to be collected. The DQO process is a seven (7) step planning approach to outline the project goals, decisions, constraints and an assessment of the project un certainties and how to address these when they arise.

The DQOs for the sampling and analysis investigations were to:

State the Problem.

Determine if ground contamination exists across the site and if so, why and what new environmental data, and what resources are available to resolve the problem within the allocated deadlines of the Project.

Identify the Decision.

Determine the decisions that need to be made on the contamination and the new environmental data required to make them if contamination exists. This includes considering relevant site criteria for each medium (fill, soil and sediment), considering whether a proposed use of the 95% UCL on the mean concentrations or results for all chemicals of potential concern were less than the site criteria.

Identify Inputs to Decision.

Identification of the information needed to allow informed, defensible decisions and specify which inputs require new environmental measurements.

Define the Study Boundaries.

Specify the spatial and temporal aspects of the environmental media that the data must represent to support decisions. To identify the boundaries (both spatial and temporal) of the investigation and to identify any restrictions that may hinder the assessment process.

Develop a Decision Rule.

To define the parameter(s) of interest, specify the action level and provide a logical basis for choosing from alternative actions. This may include defining acceptable limits for chemicals of concern detected in field blanks, volatile-spiked trip samples, laboratory method blanks to ensure the action levels exceed the measurement detection limits.

Specify Limits on Decision Errors.

Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data. Incorrect decisions are caused by using data that is not representative of site conditions because of sampling or analytical error, leading to a conclusion that is inappropriate for the site in question.

Optimise the Design for Obtaining Data.

Identify a resource-effective sampling and analysis design for general data that are expected to satisfy the DQOs.

5.2 DATA QUALITY INDICATORS

DATA QUALITY OBJECTIVE	REQUIREMENT	DATA QUALITY INDICATOR
PRECISION		
Intra-laboratory Duplicates	1 per 20 samples	RPDs <50%
Inter laboratory Duplicates	1 per 20 samples	RPDs <50%
Laboratory Duplicates	Minimum of 1 per batch per analyte	RPDs <50%
ACCURACY		
Laboratory Matrix Spikes	1 per batch per volatile/semi-volatile analyte	Recoveries 50% to 150%
Laboratory Surrogate Spikes	1 per volatile/semi-volatile analyte samples (as appropriate)	Recoveries 70%-130%
Laboratory Method Blanks	At least 1 per batch per analyte tested for	Results <Limit of Reporting
Laboratory Control Samples	At least 1 per batch per analyte tested for	Result <Limit of Reporting
Trip Blanks	1 per lab batch for volatile analytes	Result <Limit of Reporting
Trip Spikes	1 per lab batch for volatile analytes	Recoveries 60-100%
Representatives		
Sampling methodology	Appropriate for the sample type of analytes	Meet Requirement
Samples extracted and analysed within holding times	Specific to each analyte	Meet Requirement
Comparability		
Sampling approach	Consistent for each sample	Meet Requirement
Analysis methodology	Consistent methodology for each sample	Meet Requirement
Handling conditions and sampler	Consistent for each sample	Meet Requirement
Field observations and analytical	Field observations to support analytical results	Meet Requirement

Consistent laboratory Limit of Reporting (LOR)	Consistent between primary and secondary laboratories	Meet Requirement
Completeness		
Chain of Custody Documentation	Appropriately completed	Meet Requirement
Field Sampling Documentation	Appropriately completed	Meet Requirement
Satisfactory quality assurance/quality control procedures	In accordance with relevant guidance	Meet Requirement

5.3 QA/QC Sampling and Analysis Methodology

5.3.1 Soil Sampling Methods

FIMA returned to site to undertake soil assessment at the site. The sampler wore a clean pair of disposable nitrile gloves at each sampling location to minimize potential cross contamination of samples. Soil samples were collected using a split spoon sampler. Samples were collected in a 250ml laboratory supplied glass jar and plastic zip lock bags marked with appropriate sample identification.

Care was taken to minimize volatile and semi-volatile organic compound losses during sampling by minimizing the head space in each sample jar. The bagged sample was screened for the presence of volatile organic compounds (VOC's) using a photo-ionisation detector (PID).

The jarred samples were placed on ice in an esky immediately after sampling to minimize potential losses of volatile and semi-volatile compounds during transport.

The soil profile of each borehole was logged in the field to include soil type, colour, moisture conditions, grain size, inclusions, staining, odour and the results of PID screening.

A Chain of Custody (COC) form was completed for the samples. The samples and the COC were sent to ENVIROLAB (Sydney).

Samples from each soil assessment hole were analysed for TRH, BTEX and Metals 8. Soil samples were selected for analysis on the basis of field observations. No field screening with a PID was undertaken.

A total of 10 primary soil samples were selected for laboratory analysis. Laboratory analysis was undertaken by Envirolab (Sydney) using NATA accredited analytical methods. Please see Attachment C for Laboratory Methods used.

5.4 Environmental Quality Criteria

For the purpose of assessing the results of analytical testing of soils at the Site, the following guidelines were considered:

- NSW DEC (2006) Guidelines for the NSW Auditor Scheme (Second Edition);
- NSW EPA Contaminated Sites – Guidelines for Assessing Service Station Sites 1994.
- CRC Care (2011) Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater, and
- NEPC (1999) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM) and the subsequent amendment (Amended NEPM, 2013) officially approved by the Standing Council of Environment and Water (SCEW) on 11 April 2013.

In accordance with the decision-making process for assessing urban redevelopment sites (Appendix 1, EPA, 2006), soil concentrations were compared against the following soil investigation levels (SILs);

- Health-based criteria for the current and proposed land use: Amended NEPM (2013) Health-based Investigation levels (HILa) for Commercial/Industrial land use, the Health Screening Levels (HSLs) and the CRC Care (2011) Soil Health Screening Levels for Direct Contact (HSLs).
- Environmental Criteria: Amended NEPM (2013) Ecological Screening Levels (ESLs) and Ecological Investigation Levels (EILs) for Commercial/Industrial Land Use.

The National Environment Protection Council (NEPC) has amended the National Environment Protection (Assessment of Site Contamination) Measure 1999 on the 11th April 2013. It is understood that the amendment (ASC NEPM, 2013) took effect in each jurisdiction on 16th May 2013, the day after it was registered on the Federal Register of Legislative Instruments (FRLI).

FIMA has adopted the most recent Amended NEPM (2013) Tier 1 Guidelines over the criteria listed in NSW DEC (2006) as it is the most recent guidance available that has been approved by the NSW EPA under Section 105 of the Contaminated Land Management Act, 1997.

6 ANALYTICAL RESULTS SUMMARY

Soil analytical results are summarized and compared to the relevant assessment criteria in Attachment A

The laboratory certificate of anlysis for the soil samples collected at the site is presented as Attachment B

The reported concentration of Benzene was less than the laboratory LOR (limit of reporting –detection limit) to which was less than the adopted assessment criteria.

Toluene - The reported concentration of Toluene was less than the laboratory LOR (limit of reporting –detection limit) to which was less than the adopted assessment criteria.

Ethylbenzene - The reported concentration of Ethylbenzene was less than the laboratory LOR (limit of reporting –detection limit) to which was less than the adopted assessment criteria.

Xylene (total) - The reported concentration of Xylene (total) was less than the laboratory LOR (limit of reporting –detection limit) to which was less than the adopted assessment criteria.

TPH (C6-C10) Less BTEX (F1) - The reported concentration of TPH (C6-C10) Less BTEX (F1) was less than the laboratory LOR (limit of reporting –detection limit) to which was less than the adopted assessment criteria.

TPH (>C10-C16) Less Naphthalene (F2) - The reported concentration of TPH (>C10-C16) Less Naphthalene (F2) was less than the laboratory LOR (limit of reporting –detection limit) to which was less than the adopted assessment criteria.

TPH (>C16-C34) - The reported concentration of TPH (>C16-C34) was less than the laboratory LOR (limit of reporting –detection limit) to which was less than the adopted assessment criteria.

TPH (>C34-C40) - The reported concentration of TPH (>C34-C40) was less than the laboratory LOR (limit of reporting –detection limit) to which was less than the adopted assessment criteria.

Naphthalene - The reported concentration of Naphthalene was less than the laboratory LOR (limit of reporting –detection limit) to which was less than the adopted assessment criteria.

Total PAHs - The reported concentration of Total PAHs was less than the laboratory LOR (limit of reporting –detection limit) to which was less than the adopted assessment criteria.

Field observations and analytical results indicate that there was no hydrocarbon impact in soil at the site from sample locations above the adopted assessment guidelines.

7 PRELIMINARY CONCEPTUAL SITE MODEL

7.1 Principal Contaminants of Concern (PCC)

For the purposes of this study the Principal Contaminants of Concern (PCC) were considered to be:

- Potential impact of historical fill material. Full gamut of analytes for the adopted assessment criteria both none volatile and volatile.
- Monocyclic aromatic hydrocarbons (benzene, toluene, ethyl benzene and xylenes – BTEX) associated with the potential of hydrocarbon fill content
- Light, mid and heavy-fraction petroleum hydrocarbons (TPH C6-C36) associated with the fuel and oil products.

See attached Conceptual Model Schematic Attachment

Table: Contamination Fate and Transport – The fate of the PCC identified above is summarized in the following table:

PCC	FATE & TRANSPORT
Non-volatile contaminants including lead and heavy fraction hydrocarbons.	Non-volatile contaminants are expected to be bound within the fill matrix and are hence less mobile. The mobility of these contaminants would depend on a range of factors including age of the fill, soil porosity, solubility in water and surface water infiltration.
Volatile contaminants including light-fraction TPH and BTEX.	Volatile contaminants are usually more mobile when compared to the non-volatile compounds. The potential for migration of volatile contaminants such as light-fraction TPH is relatively high in sandy soil with a high water table. These contaminants break down rapidly as a result of microbial activity and availability of nutrients including nitrogen, oxygen etc. The mobile contaminants would be expected to move down to the rock surface or groundwater table and migrate down gradient from the source. The mobility would depend on a range of factors like the porosity, confining layers within the aquifer, solubility in groundwater etc.

8 CONCLUSIONS

Laboratory investigation provided evidence that contamination at this site was below the adopted assessment criteria limits. No soil sample extracted from across the site was noted as failing against the criteria.

It can be concluded from this targeted assessment that the site is not a contamination risk for soil exposure and is suitable for Residential use.

REFERENCES

- Geological Survey of NSW (1965), Tweed Heads 1:250,000 Geological Series Sheet (1965). National Maps www.nationalmap.gov.au
- National Environment Protection (Assessment of Site Contamination) Measure (2013), 'Schedule B (1) – Guidelines on the Investigation Levels for Soil and Groundwater.'
- NSW EPA (1994) 'Guidelines for Assessing Service Stations.'
- Department of Industries – Resources and Energy www.resourcesandenergy.gov.au
- NSW Government (2016), NSW Spatial Information Exchange Website, http://www.sixmaps.gov.au

Attachment A
Laboratory results

Attachment B

Site sampling Plan
Conceptual Model
Site Locality Map

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

SAMPLE RECEIPT ADVICE

Client Details	
Client	NEO Consulting Pty Ltd
Attention	Nick Caltabiano

Sample Login Details	
Your Reference	N3103-A
Envirolab Reference	**165858**
Date Sample Received	27/04/2017
Date Instructions Received	27/04/2017
Date Results Expected to be Reported	**28/04/2017**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	5 soils
Turnaround Time Requested	1 day
Temperature on receipt (°C)	13.5
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

Sample and Testing Details on following page

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

Sample Id	*vTRH(C6-C10)/BTEXN in Soil*	*svTRH (C10-C40) in Soil*	*Acid Extractable metals in soil*	*Asbestos ID - soils*	*Metals in TCLP USEPA1311*
SB1-2-2	✓	✓	✓	✓	✓
SB2-0.3-0.3	✓	✓	✓	✓	✓
SB3-0.6-0.6	✓	✓	✓	✓	✓
SB4-1.8-1.8	✓	✓	✓	✓	✓
SB5-1.1-1.1	✓	✓	✓	✓	✓

The '✓' indicates the testing you have requested. ***THIS IS NOT A REPORT OF THE RESULTS****.*

12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 165858

Client:
NEO Consulting Pty Ltd
PO Box 279
Riverstone
NSW 2765

Attention: Nick Caltabiano

Sample log in details:

Your Reference:	**N3103-A**		
No. of samples:	5 soils		
Date samples received / completed instructions received	27/04/17	/	27/04/17

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	28/04/17	/	28/04/17
Date of Preliminary Report:	Not Issued		

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025 - Testing **Tests not covered by NATA are denoted with *.**

Results Approved By:

David Springer
General Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	165858-1	165858-2	165858-3	165858-4	165858-5
Your Reference	----------	SB1-2	SB2-0.3	SB3-0.6	SB4-1.8	SB5-1.1
Depth	- ----------	2	0.3	0.6	1.8	1.1
Date Sampled		27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
TRHC_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRHC_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPHC_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	98	84	107	100	100

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	165858-1	165858-2	165858-3	165858-4	165858-5
Your Reference	----------	SB1-2	SB2-0.3	SB3-0.6	SB4-1.8	SB5-1.1
	-					
Depth	----------	2	0.3	0.6	1.8	1.1
Date Sampled		27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	89	84	88	87	89

Acid Extractable metals in soil						
Our Reference:	UNITS	165858-1	165858-2	165858-3	165858-4	165858-5
Your Reference	---------- -	SB1-2	SB2-0.3	SB3-0.6	SB4-1.8	SB5-1.1
Depth	----------	2	0.3	0.6	1.8	1.1
Date Sampled		27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Lead	mg/kg	16	7	17	19	21

Acid Extractable metals in soil		
Our Reference:	UNITS	165858-6
Your Reference	---------- -	SB1-2 - [TRIPLICATE]
Depth	----------	2
Date Sampled		27/04/2017
Type of sample		Soil
Date prepared	-	27/04/2017
Date analysed	-	27/04/2017
Lead	mg/kg	9

Moisture Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- - ---------- 	165858-1 SB1-2 2 27/04/2017 Soil	165858-2 SB2-0.3 0.3 27/04/2017 Soil	165858-3 SB3-0.6 0.6 27/04/2017 Soil	165858-4 SB4-1.8 1.8 27/04/2017 Soil	165858-5 SB5-1.1 1.1 27/04/2017 Soil
Date prepared	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Moisture	%	11	13	11	8.0	8.1

Asbestos ID - soils						
Our Reference:	UNITS	165858-1	165858-2	165858-3	165858-4	165858-5
Your Reference	---------- -	SB1-2	SB2-0.3	SB3-0.6	SB4-1.8	SB5-1.1
Depth	----------	2	0.3	0.6	1.8	1.1
Date Sampled		27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Sample mass tested	g	Approx. 35g	Approx. 35g	Approx. 40g	Approx. 30g	Approx. 35g
Sample Description	-	Beige coarse-grained soil & rocks	Beige coarse-grained soil & rocks	Beige coarse-grained soil & rocks	Beige coarse-grained soil & rocks	Beige coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Metals in TCLP USEPA1311						
Our Reference:	UNITS	165858-1	165858-2	165858-3	165858-4	165858-5
Your Reference	----------	SB1-2	SB2-0.3	SB3-0.6	SB4-1.8	SB5-1.1
	-					
Depth	----------	2	0.3	0.6	1.8	1.1
Date Sampled		27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date analysed	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017	28/04/2017
pH of soil for fluid# determ.	pH units	8.2	7.8	7.6	7.4	8.0
pH of soil TCLP (after HCl)	pH units	1.6	1.4	1.4	1.4	1.3
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	4.9	4.9	4.9	4.9	4.9
Arsenic in TCLP	mg/L	0.06	<0.05	<0.05	<0.05	<0.05
Cadmium in TCLP	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium in TCLP	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Copper in TCLP	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Lead in TCLP	mg/L	<0.03	<0.03	<0.03	<0.03	<0.03
Nickel in TCLP	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc in TCLP	mg/L	0.1	<0.02	0.2	0.1	0.5
Mercury in TCLP	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Metals-020	Determination of various metals by ICP-AES.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004.
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/04/2017	165858-1	27/04/2017 || 27/04/2017	LCS-5	27/04/2017
Date analysed	-			27/04/2017	165858-1	27/04/2017 || 27/04/2017	LCS-5	27/04/2017
TRH C_6 - C_9	mg/kg	25	Org-016	<25	165858-1	<25 || <25	LCS-5	110%
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	165858-1	<25 || <25	LCS-5	110%
Benzene	mg/kg	0.2	Org-016	<0.2	165858-1	<0.2 || <0.2	LCS-5	124%
Toluene	mg/kg	0.5	Org-016	<0.5	165858-1	<0.5 || <0.5	LCS-5	108%
Ethylbenzene	mg/kg	1	Org-016	<1	165858-1	<1 || <1	LCS-5	104%
m+p-xylene	mg/kg	2	Org-016	<2	165858-1	<2 || <2	LCS-5	108%
o-Xylene	mg/kg	1	Org-016	<1	165858-1	<1 || <1	LCS-5	103%
naphthalene	mg/kg	1	Org-014	<1	165858-1	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	105	165858-1	98 || 99 || RPD: 1	LCS-5	102%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/04/2017	165858-1	27/04/2017 || 27/04/2017	LCS-5	27/04/2017
Date analysed	-			27/04/2017	165858-1	27/04/2017 || 27/04/2017	LCS-5	27/04/2017
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	165858-1	<50 || <50	LCS-5	94%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	165858-1	<100 || <100	LCS-5	92%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	165858-1	<100 || <100	LCS-5	70%
TRH>C_{10}-C_{16}	mg/kg	50	Org-003	<50	165858-1	<50 || <50	LCS-5	94%
TRH>C_{16}-C_{34}	mg/kg	100	Org-003	<100	165858-1	<100 || <100	LCS-5	92%
TRH>C_{34}-C_{40}	mg/kg	100	Org-003	<100	165858-1	<100 || <100	LCS-5	70%
Surrogate o-Terphenyl	%		Org-003	92	165858-1	89 || 88 || RPD: 1	LCS-5	94%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			27/04/2017	165858-1	27/04/2017 || 27/04/2017	LCS-4	27/04/2017
Date analysed	-			27/04/2017	165858-1	27/04/2017 || 27/04/2017	LCS-4	27/04/2017
Lead	mg/kg	1	Metals-020	<1	165858-1	16 || 27 || RPD: 51	LCS-4	105%

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	PQL	METHOD	Blank
Date extracted	-			28/04/2017
Date analysed	-			28/04/2017
Arsenic in TCLP	mg/L	0.05	Metals-020 ICP-AES	<0.05
Cadmium in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	PQL	METHOD	Blank
Chromium in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01
Copper in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02
Zinc in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02
Mercury in TCLP	mg/L	0.0005	Metals-021 CV-AAS	<0.000 5

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	165858-2	27/04/2017
Date analysed	-	[NT]	[NT]	165858-2	27/04/2017
$TRHC_6$ - C_9	mg/kg	[NT]	[NT]	165858-2	114%
$TRHC_6$ - C_{10}	mg/kg	[NT]	[NT]	165858-2	114%
Benzene	mg/kg	[NT]	[NT]	165858-2	129%
Toluene	mg/kg	[NT]	[NT]	165858-2	112%
Ethylbenzene	mg/kg	[NT]	[NT]	165858-2	107%
m+p-xylene	mg/kg	[NT]	[NT]	165858-2	111%
o-Xylene	mg/kg	[NT]	[NT]	165858-2	106%
naphthalene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	165858-2	100%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	165858-2	27/04/2017
Date analysed	-	[NT]	[NT]	165858-2	27/04/2017
$TRHC_{10}$ - C_{14}	mg/kg	[NT]	[NT]	165858-2	89%
$TRHC_{15}$ - C_{28}	mg/kg	[NT]	[NT]	165858-2	91%
$TRHC_{29}$ - C_{36}	mg/kg	[NT]	[NT]	165858-2	76%
$TRH>C_{10}$-C_{16}	mg/kg	[NT]	[NT]	165858-2	89%
$TRH>C_{16}$-C_{34}	mg/kg	[NT]	[NT]	165858-2	91%
$TRH>C_{34}$-C_{40}	mg/kg	[NT]	[NT]	165858-2	76%
Surrogate o-Terphenyl	%	[NT]	[NT]	165858-2	84%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	165858-2	27/04/2017
Date analysed	-	[NT]	[NT]	165858-2	27/04/2017
Lead	mg/kg	[NT]	[NT]	165858-2	92%
QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	LCS-W1	28/04/2017
Date analysed	-	[NT]	[NT]	LCS-W1	28/04/2017
Arsenic in TCLP	mg/L	[NT]	[NT]	LCS-W1	101%
Cadmium in TCLP	mg/L	[NT]	[NT]	LCS-W1	100%
Chromium in TCLP	mg/L	[NT]	[NT]	LCS-W1	100%
Copper in TCLP	mg/L	[NT]	[NT]	LCS-W1	100%
Lead in TCLP	mg/L	[NT]	[NT]	LCS-W1	97%
Nickel in TCLP	mg/L	[NT]	[NT]	LCS-W1	96%
Zinc in TCLP	mg/L	[NT]	[NT]	LCS-W1	98%
Mercury in TCLP	mg/L	[NT]	[NT]	LCS-W1	98%

Report Comments:

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 165858-1 for Pb. Therefore a triplicate result has been issued as laboratory sample number 165858-6.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples 165858-1 to 5 were sub-sampled from jars provided by the client.

Asbestos ID was analysed by Approved Identifier: Lucy Zhu
Asbestos ID was authorised by Approved Signatory: Paul Ching

INS: Insufficient sample for this test
NR: Test not required
<: Less than
PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than
NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

SYDNEY LAB - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

PERTH LAB - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

MELBOURNE LAB - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph 03 9763 2500 / melbourne@envirolab.com.au

BRISBANE OFFICE - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 / brisbane@envirolab.com.au

ADELAIDE OFFICE - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 08 8369 0722/ 0406 350 706
adelaide@envirolab.com.au

Client: NEO Consulting Pty Ltd

Contact Person: Nick Caltabiano

Project Manager: Nick Caltabiano

Sampler: MH

Address: PO Box 279
Riverstone NSW 2765

Phone: **Mobile:** 0416680375

Email: nick@neoconsulting.com.au

Client Project Name / Number / Site *(ie report title)*: N3103-B

PO No.:

Envirolab Quote No. :

Date results required: ____/____/____ 24 hr

Or choose: standard (same day) / 1 day / 2 day / 3 day
Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Report format: esdat / equis /

Lab Comments:

Sample Information					Tests Required										Comments
Envirolab Sample ID	Client Sample ID or information	Depth	Date Sampled	Type of Sample	BTEX	TRH	Lead	Asbestos	TCLP metals 8						Provide as much information about the sample as you can
1	SB1 - 0.4	0.4m	27.4.17	Soil	✓	✓	✓	✓	✓						
2	SB2 - 0.8	0.8m	27.4.17	Soil	✓	✓	✓	✓	✓						
3	SB3 - 1.2	1.2m	27.4.17	Soil	✓	✓	✓	✓	✓						
4	SB4 - 0.6	0.6m	27.4.17	Soil	✓	✓	✓	✓	✓						
5	SB5 - 0.2	0.2m	27.4.17	Soil	✓	✓	✓	✓	✓						

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

Job No: 165859

Date Received: 27/4/17

Time Received: 12:00

Received by: DW

Temp: Cool/Ambient

Cooling: Ice/Icepack 13.5

Security: Intact/Broken/None

Relinquished by *(Company)*:

Print Name:

Date & Time:

Signature:

Received by *(Company)*: ELS

Print Name: DOUG

Date & Time: 27/4/17 12:00

Signature:

Lab use only:

Samples Received: Cool / Ambient *(circle one)*

Temperature Received at: _____ *(if applicable)*

Transported by: Hand delivered / courier *(circle one)*

WHITE - LAB COPY / BLUE - CLIENT COPY / PINK - RETAIN IN BOOK

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

SAMPLE RECEIPT ADVICE

Client Details	
Client	NEO Consulting Pty Ltd
Attention	Nick Caltabiano

Sample Login Details	
Your Reference	N3103-B
Envirolab Reference	**165859**
Date Sample Received	27/04/2017
Date Instructions Received	27/04/2017
Date Results Expected to be Reported	**28/04/2017**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	5 soils
Turnaround Time Requested	1 day
Temperature on receipt (°C)	13.5
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

Sample and Testing Details on following page

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

Sample Id	*vTRH(C6-C10)/BTEXN in Soil*	*svTRH (C10-C40) in Soil*	*Acid Extractable metals in soil*	*Asbestos ID - soils*	*Metals in TCLP USEPA1311*
SB1-0.4-0.4	✓	✓	✓	✓	✓
SB2-0.8-0.8	✓	✓	✓	✓	✓
SB3-1.2-1.2	✓	✓	✓	✓	✓
SB4-0.6-0.6	✓	✓	✓	✓	✓
SB5-0.2-0.2	✓	✓	✓	✓	✓

The '✓' indicates the testing you have requested. ***THIS IS NOT A REPORT OF THE RESULTS****.*

12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 165859

Client:
NEO Consulting Pty Ltd
PO Box 279
Riverstone
NSW 2765

Attention: Nick Caltabiano

Sample log in details:

Your Reference:	**N3103-B**		
No. of samples:	5 soils		
Date samples received / completed instructions received	27/04/17	/	27/04/17

Analysis Details:
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	28/04/17	/	28/04/17
Date of Preliminary Report:	Not Issued		

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025 - Testing **Tests not covered by NATA are denoted with *.**

Results Approved By:

David Springer
General Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	165859-1	165859-2	165859-3	165859-4	165859-5
Your Reference	----------	SB1-0.4	SB2-0.8	SB3-1.2	SB4-0.6	SB5-0.2
Depth	----------	0.4	0.8	1.2	0.6	0.2
Date Sampled		27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	103	96	99	98	106

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	165859-1	165859-2	165859-3	165859-4	165859-5
Your Reference	---------- -	SB1-0.4	SB2-0.8	SB3-1.2	SB4-0.6	SB5-0.2
Depth	----------	0.4	0.8	1.2	0.6	0.2
Date Sampled		27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	27/04/2017	27/04/2017	28/04/2017	28/04/2017	28/04/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	120	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	120	<50
Surrogate o-Terphenyl	%	84	87	87	88	86

Acid Extractable metals in soil						
Our Reference:	UNITS	165859-1	165859-2	165859-3	165859-4	165859-5
Your Reference	----------	SB1-0.4	SB2-0.8	SB3-1.2	SB4-0.6	SB5-0.2
	-					
Depth	----------	0.4	0.8	1.2	0.6	0.2
Date Sampled		27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Lead	mg/kg	4	13	11	12	8

Moisture						
Our Reference:	UNITS	165859-1	165859-2	165859-3	165859-4	165859-5
Your Reference	----------	SB1-0.4	SB2-0.8	SB3-1.2	SB4-0.6	SB5-0.2
	-					
Depth	----------	0.4	0.8	1.2	0.6	0.2
Date Sampled		27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Date analysed	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Moisture	%	13	10	8.8	10	11

Asbestos ID - soils						
Our Reference:	UNITS	165859-1	165859-2	165859-3	165859-4	165859-5
Your Reference	---------- -	SB1-0.4	SB2-0.8	SB3-1.2	SB4-0.6	SB5-0.2
Depth	----------	0.4	0.8	1.2	0.6	0.2
Date Sampled		27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Sample mass tested	g	Approx. 35g	Approx. 40g	Approx. 35g	Approx. 35g	Approx. 35g
Sample Description	-	Beige coarse-grained soil & rocks	Beige coarse-grained soil & rocks	Beige coarse-grained soil & rocks	Beige coarse-grained soil & rocks	Beige coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Metals in TCLP USEPA1311						
Our Reference:	UNITS	165859-1	165859-2	165859-3	165859-4	165859-5
Your Reference	----------	SB1-0.4	SB2-0.8	SB3-1.2	SB4-0.6	SB5-0.2
	-					
Depth	----------	0.4	0.8	1.2	0.6	0.2
Date Sampled		27/04/2017	27/04/2017	27/04/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017	28/04/2017
Date analysed	-	28/04/2017	28/04/2017	28/04/2017	28/04/2017	28/04/2017
pH of soil for fluid# determ.	pH units	7.9	7.6	7.6	7.0	6.9
pH of soil TCLP (after HCl)	pH units	1.8	1.7	1.6	1.5	1.6
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	4.8	4.8	4.8	4.9	4.9
Arsenic in TCLP	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium in TCLP	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium in TCLP	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Copper in TCLP	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Lead in TCLP	mg/L	<0.03	<0.03	<0.03	<0.03	<0.03
Nickel in TCLP	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Zinc in TCLP	mg/L	0.03	0.1	0.1	0.1	<0.02
Mercury in TCLP	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Metals-020	Determination of various metals by ICP-AES.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004.
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/04/2017	[NT]	[NT]	LCS-5	27/04/2017
Date analysed	-			27/04/2017	[NT]	[NT]	LCS-5	27/04/2017
TRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-5	110%
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-5	110%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-5	124%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-5	108%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-5	104%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-5	108%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-5	103%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	105	[NT]	[NT]	LCS-5	102%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/04/2017	[NT]	[NT]	LCS-5	27/04/2017
Date analysed	-			27/04/2017	[NT]	[NT]	LCS-5	27/04/2017
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-5	94%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-5	92%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-5	70%
TRH >C_{10}-C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-5	94%
TRH >C_{16}-C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-5	92%
TRH >C_{34}-C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-5	70%
Surrogate o-Terphenyl	%		Org-003	92	[NT]	[NT]	LCS-5	94%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			27/04/2017	[NT]	[NT]	LCS-4	27/04/2017
Date analysed	-			27/04/2017	[NT]	[NT]	LCS-4	27/04/2017
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-4	105%

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD
Date extracted	-			28/04/2017	165859-1	28/04/2017 || 28/04/2017
Date analysed	-			28/04/2017	165859-1	28/04/2017 || 28/04/2017
Arsenic in TCLP	mg/L	0.05	Metals-020 ICP-AES	<0.05	165859-1	<0.05 || <0.05
Cadmium in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01	165859-1	<0.01 || <0.01

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD
Chromium in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01	165859-1	<0.01 || <0.01
Copper in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01	165859-1	<0.01 || <0.01
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	165859-1	<0.03 || <0.03
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	165859-1	<0.02 || <0.02
Zinc in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	165859-1	0.03 || 0.03 || RPD: 0
Mercury in TCLP	mg/L	0.0005	Metals-021 CV-AAS	<0.0005	165859-1	<0.0005 || <0.0005

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	LCS-W1	28/04/2017
Date analysed	-	[NT]	[NT]	LCS-W1	28/04/2017
Arsenic in TCLP	mg/L	[NT]	[NT]	LCS-W1	101%
Cadmium in TCLP	mg/L	[NT]	[NT]	LCS-W1	100%
Chromium in TCLP	mg/L	[NT]	[NT]	LCS-W1	100%
Copper in TCLP	mg/L	[NT]	[NT]	LCS-W1	100%
Lead in TCLP	mg/L	[NT]	[NT]	LCS-W1	97%
Nickel in TCLP	mg/L	[NT]	[NT]	LCS-W1	96%
Zinc in TCLP	mg/L	[NT]	[NT]	LCS-W1	98%
Mercury in TCLP	mg/L	[NT]	[NT]	LCS-W1	98%

QUALITY CONTROL Metals in TCLP USEPA1311	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	165859-2	28/04/2017
Date analysed	-	[NT]	[NT]	165859-2	28/04/2017
Arsenic in TCLP	mg/L	[NT]	[NT]	165859-2	104%
Cadmium in TCLP	mg/L	[NT]	[NT]	165859-2	104%
Chromium in TCLP	mg/L	[NT]	[NT]	165859-2	103%
Copper in TCLP	mg/L	[NT]	[NT]	165859-2	101%
Lead in TCLP	mg/L	[NT]	[NT]	165859-2	98%
Nickel in TCLP	mg/L	[NT]	[NT]	165859-2	99%
Zinc in TCLP	mg/L	[NT]	[NT]	165859-2	102%
Mercury in TCLP	mg/L	[NT]	[NT]	165859-2	101%

Report Comments:

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples 165859-1 to 5 were sub-sampled from jars provided by the client.

Asbestos ID was analysed by Approved Identifier: Lucy Zhu
Asbestos ID was authorised by Approved Signatory: Paul Ching

INS: Insufficient sample for this test
NR: Test not required
<: Less than
PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than
NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.