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Project 85919.00
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GSY:mm

Attention: Stephen Craig

Email: stephenc@impactygroup.com.au

Dear Sirs

Preliminary Waste Classification
Aged Care Facility
20-21 Boorea Avenue, Lakemba

1. Executive Summary

This report describes the methodology and results of a preliminary waste classification undertaken by Douglas Partners Pty Ltd (DP) on *in situ* material located at the site within the grounds of 21 Boorea Avenue, Lakemba. The results are summarised in the following Table 1.

Table 1: Summary of Waste Classification

Material Identification	In ground fill and natural materials
Approximate Area	1800 m^2 as shown on the attached architectural drawing (proposed basement outline).
Material Description	Fill comprising sand, sandy clay and gravel fill to depths between of 0.3 m and 1.0 m; and Natural soil and weathered rock comprising firm to hard clay, silty clay and shaly clay to depths of between 3.0 m and 4.3 m overlying extremely low strength and very low strength shale and laminite.
Preliminary Classification	Fill: General Solid Waste (non-putrescible) for sand, sandy clay and gravel filling to depths of between 0.3 m and 1.0 m; and Natural soil and weathered rock: Virgin Excavated Natural Material (VENM)
Conditions	Appropriate segregation and validation of overlying fill and VENM
References	NSW EPA *Waste Classification Guidelines* (2014) *Protection of the Environment Operations Act 1997* (POEO Act) NSW EPA web site

Note: The waste classification provided is preliminary only and is subject to confirmation during excavation, through visual and analytical processes.

Reference should be made to the following sections of the report for information on the materials subject to the classification, the methodology, guidelines used and analytical results associated with this preliminary waste classification. In particular reference must be made to Section 9 Conditions and Section 10 Limitations.

2. Introduction

This preliminary waste classification was commissioned by Impact Group on 6 April 2017 and was undertaken with reference to the DP Proposal dated 27 March 2017.

The site is irregular in shape with an area of 3 175 m^2 with a typical width of 58 m and an average length of approximately 60 m. The site is currently occupied by a house and warehouse. It is located at the northern end of Boorea Avenue cul-de-sac and bounded by industrial developments to the north and south, residential to the east and a stormwater canal to the west.

At the time of the investigation it was understood that the new building site is proposed for bulk excavation to a maximum depth of 3.5 m below existing ground level (bgl) to allow for the construction of a one level basement.

Most of the excavated material will be surplus to the development and require disposal off site. The subject of this preliminary waste classification is therefore the *in situ* material within the footprint of the proposed building excavation, as shown on the attached architectural masterplan of Thomson Adsett Drawing A201, dated May 2017.

The preliminary waste classification was conducted with reference to the NSW Environment Protection Authority (EPA) *Waste Classification Guidelines, Part 1: Classifying Waste*, November 2014 (EPA, 2014). In assessing materials as virgin excavated natural materials (VENM) the POEO Act and NSW EPA web site were also referenced.

3. Scope of Works

The scope of works was as follows:

- Inspection of the site to assess the potential for contamination;
- Drilling of four bores (Bores 2 to 5) in the accessible areas of proposed bulk excavation to depths of approximately 10 m using a truck mounted drilling rig, with augers used to the top of rock at depths of between 1.3 m and 3.5 m and then NMLC-sized diamond core drilling.
- Logging of the sub-surface profile encountered in each borehole;
- Collection of samples from each borehole;
- Dispatch of 8 primary samples to a NATA accredited laboratory (Envirolab Services Pty Ltd) for quantitative analysis for the identified contaminants of concern; and
- Preparation of this preliminary *in situ* waste classification report.

4. Site Information and Potential for Contamination

At the time of conducting the field work for the waste classification (May 2017), the site was mainly sealed with concrete slabs inside the warehouses and concrete pavements in the open areas.

A review of historical aerial photographs indicates that the site was cleared, vacant land before 1930 and was mainly industrial by 2003. The eastern and western sides of Boorea Road were residential by 1930 and have remained as residential since that time.

Reference to the Sydney 1:100 000 Geological Series Sheet indicates that the site is underlain by Ashfield Shale which typically comprises dark grey shale and laminite.

Reference to the Acid Sulphate Soil Risk Map published by the Department of Land and Water Conservation indicates that the site is in an area of no known occurrence of acid sulphate soil conditions.

On the basis of the above information the following potential sources of contamination have been identified for the site:

- Imported fill;
- Previous structures (potential hazardous materials such as asbestos); and
- Previous industrial activities (not known).

The main contaminants of concern are considered to comprise the following:

- Eight priority metals: arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc;
- Total recoverable hydrocarbons (TRH);
- Benzene, toluene, ethylbenzene and xylenes (BTEX);
- Polycyclic aromatic hydrocarbons (PAH);
- Organochlorine pesticides (OCP);
- Organophosphorous pesticides (OPP);
- Total phenols;
- Polychlorinated biphenyls (PCB); and
- Asbestos.

5. Field Work Rationale and Methodology

The area subject to the preliminary waste classification is approximately 1 800 m^2. The proposed average depth of basement excavation is approximately 3.5 m bgl. There is a potential for the identified potential sources of contamination to impact on the contamination status of surface soils and fill primarily, with a lower potential for impacts on natural soils. Leachable contaminants, at high concentrations in the fill and surface soils, may impact on the upper levels of the natural soils beneath. On this basis, the sampling focussed primarily on the surface soil and fill.

Given the preliminary nature of the assessment, samples were recovered from the upper levels of the four boreholes drilled to depths of approximately 10 m as shown on the attached Drawing 1.

The inspection and environmental sampling was performed by a staff from DP. All sampling data was recorded on DP chain-of-custody sheets, and the general sampling procedure comprised:

- Collection of representative soil samples directly from the auger;
- Transfer of samples into laboratory-prepared glass jars, capping immediately, minimising the headspace within the sample jar;
- Labelling of sample containers with individual and unique identification, including project number, sample location and sample depth;
- Placing the glass jars into a cooled, insulated and sealed container for transport to the laboratory; and
- Use of chain of custody documentation so that sample tracking and custody could be cross-checked at any point in the transfer of samples from the field to the laboratory. Copies of completed chain of custody forms are attached.

The borehole locations are shown on the attached Drawing 1.

6. Field Work Observations

The borehole logs are attached which should be read in conjunction with the attached explanatory notes that define classification methods and terms used to describe the soils and rocks. In summary, the subsurface profile encountered in the bores comprised the following:

- Pavement – Mainly concrete and base to about 200 mm depth;
- Filling – sand, sandy clay and gravel to depths between 0.3 m and 1.0 m;
- Clay – firm to stiff, grey brown clay to depths ranging from 1.8 m to 3.0 m;
- Silty Clay – stiff to very stiff, orange brown silty clay to depths ranging from 2.4 m to 3.6 m;
- Shaly Clay – very stiff to hard, brown and light grey shaly clay in two bores to depths ranging from 3.2 m to 4.3 m; and
- Rock – extremely low strength shale over low to high strength laminate. Medium or high strength laminate was encountered below depths of 4.5 m to 5.5 m.

There were no obvious indications of gross contamination (e.g. staining or odours) or anthropogenic materials within the boreholes.

7. Waste Classification Criteria

EPA (2014) contains a six step procedure for determining the type of waste and the waste classification. Part of the procedure, for materials not classified as special waste or pre-classified waste, is a comparison of analytical data initially against contaminant threshold (CT) values specific to

a waste category. Alternatively, the data can be assessed against specific contaminant concentration (SCC) thresholds when used in conjunction with toxicity characteristic leaching procedure (TCLP) thresholds.

The CT, SCC, and TCLP values relevant to this preliminary waste classification are shown in the attached Table 4.

The POEO Act defines virgin excavated natural material (VENM) as:

'*natural material (such as clay, gravel, sand, soil or rock fines):*

(a) that has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities and

(b) that does not contain any sulfidic ores or soils or any other waste

As a means of assessing the presence of manufactured chemicals or process residues, the analytical data for samples of natural soils were compared against published background concentrations, as shown in the attached Table 4.

8. Waste Classification

The following Table 2 presents the results of the six step procedure outlined in EPA (2014) for determining the type of waste and the waste classification. This process applies to the fill (including surface soils) at the site, which do not meet the definition of VENM. It should be noted that based on the results the fill from boreholes has been classified together.

Table 2: Six Step Classification Procedure

Step	Comments	Rationale
1. Is the waste special waste?	No	No asbestos-containing materials (ACM), clinical or related waste, or waste tyres were observed in the boreholes; Asbestos was not detected by the analytical laboratory.
2. Is the waste liquid waste?	No	The fill comprised a soil matrix.
3. Is the waste "pre-classified"?	No	The fill is not pre-classified with reference to EPA (2014).
4. Does the waste possess hazardous waste characteristics?	No	The waste was not observed to contain or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances, corrosive substances, coal tar, batteries, lead paint or dangerous goods containers.

Step	Comments	Rationale
5. Determining a wastes classification using chemical assessment	Conducted	Refer to Table 4 (attached).
6. Is the waste putrescible or non-putrescible?	No	The fill does not contain materials considered to be putrescible [a].

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

All sample analysis was conducted by Envirolab Services Pty Ltd in accordance with the chain-of-custody prepared by DP. Based on a review of the laboratory reported QC results, it is considered that the laboratory test data obtained are reliable and useable for this assessment. The laboratory test results certificates are attached.

As shown in the attached Table 4, all contaminant concentrations for the analysed fill samples were within the contaminant thresholds (CT1s) for General Solid Waste (GSW) with the exception of B(a)P in sample BH2/0.5 (1.8 mg/kg). TCLP tests for PAH were conducted for this sample. The SCC and TCLP concentrations for that sample were within the contaminant thresholds SCC1 and TCLP1, for GSW, respectively.

Based on the observations at the time of sampling and the reported analytical results, the fill (including surface soils) described as brown, grey and dark grey sand, sandy clay and clay with gravel fill to depths of between 0.3 m and 1.0 m within the sampled portion of the area subject to classification as shown on Drawing 1, is preliminarily classified as **General Solid Waste (non-putrescible)**, as defined in EPA (2014).

The following Table 3 presents the results of the assessment of natural soils and bedrock at the site with reference to the VENM definition and EPA advice outlined in Section 7.

Table 3: VENM Classification Procedure

Item	Comments	Rationale
1. Is the material natural?	Yes	Clay, silty clay, shaly clay, shale and laminate.
2. Is the material impacted by manufactured chemicals or process residues?	No	There were no visual indicators of chemical contamination of the materials in the test pits. Contaminant concentrations were within typical background levels (Table 4).
3. Are the materials acid sulphate soils?	No	A review of the Acid Sulfate Soil Risk Map shows the site in an area of no ASS occurrence.
4. Are there current or previous land uses that have (or may have) contaminated the materials?	No	Previous land uses may have impacted on surface soils overlying the materials. Low chemical concentrations indicate no likely impact on the natural materials.

Based on the outcomes presented in Table 3, the natural soils and bedrock within the sampled portion of the area subject to classification as shown on Drawing 1, are preliminarily classified as **VENM**. If during excavation the natural *in situ* soil is found to contain possible signs of contamination or is cross-contaminated with any non-VENM materials the excavated natural soil cannot be classified as VENM. In this regard, it is also recommended that care should be taken during the bulk excavation of the VENM to prevent cross contamination between the VENM and non-VENM materials.

The materials classified as VENM are pre-classified as General Solid Waste (non-putrescible) under EPA (2014). Furthermore, VENM may be applied to land in an off-site location without the requirement of a licence under the POEO Act.

9. Conditions

The assigned preliminary waste classifications are subject to appropriate segregation of the fill and VENM.

Given the preliminary nature of the assigned waste classification, which was based on limited sampling, it is recommended that the waste classification be confirmed by a qualified environmental consultant *ex situ* prior to and during bulk excavation.

Both the receiving site and the site disposing of the material should satisfy the requirements of the licence before disposal of the material is undertaken. Note that appropriate prior arrangement with the receiving site/relevant authorities should be obtained prior to the disposal of any material off site. The receiving site should check to ensure that the material received matches the description provided in this report and contains no cross contamination. The handling, transport and disposal of the materials should be conducted in accordance with regulatory and statutory requirements

10. Limitations

Douglas Partners (DP) has prepared this report for this project at 20-21 Boorea Avenue Lakemba in accordance with DP's proposal SYD170350 dated 27 March 2017 and acceptance received from Impact Group dated 6 April 2017. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Lebanese Muslim Association for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in conditions across the site between and beyond the sampling locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations

or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The results provided in the report are indicative of the surface and sub-surface conditions only at the specific sampling locations, and then only to the depths investigated and at the time the work was carried out. Surface and sub-surface conditions can change as a result of human influences, and such changes may occur after DP's field testing has been completed.

Asbestos has not been detected by observation or by laboratory analysis, either on the surface or within the stockpile at the test locations sampled and analysed. If observed during bulk excavations, building demolition materials such as concrete, brick, tile are considered as indicative of the possible presence of hazardous building materials (HBM), including asbestos.

Although the sampling plan adopted for this preliminary waste classification is considered appropriate to achieve the stated project objectives (noting that EPA (2014) does not specify a required sampling density), there are necessarily parts of the site that have not been sampled and analysed. This is either due to undetected variations in conditions, budget constraints, parts of the site being inaccessible and not available for inspection/sampling, or due to vegetation preventing visual inspection and reasonable access. It is therefore considered possible that hazardous building materials, including asbestos, may be present in unobserved or untested parts of the site, between and beyond sampling locations, and hence no warranty can be given that hazardous building materials are not present in the fill or surface soils at the site.

Part 5.6, Section 143 of The Protection of the Environment Operations Act 1997 states that it is an offence for waste to be transported to a place that cannot lawfully be used as a facility to accept that waste. It is the duty of the owner and transporter of the waste to ensure that the waste is disposed of appropriately. DP does not accept liability for the unlawful disposal of waste materials from any site. DP accepts no responsibility for the material tracking, loading, management, transport or disposal of waste from the site.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life.

This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP.

Yours faithfully
Douglas Partners Pty Ltd

Geoff Young
Principal

Reviewed by

Paul Gorman
Senior Associate

Attachments: Notes About This Report
Drawing 1
Architectural Drawing C.02 (Project 5912)
Borehole Logs and Explanatory Notes
Table 4: Soil Laboratory Results Summary – Waste Classification
NATA Laboratory Certificates, Chain-of-Custody Documentation & Sample Receipt Advice

About this Report

Douglas Partners

Introduction

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

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

Copyright

Borehole and Test Pit Logs

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

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

Groundwater

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

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

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

Reports

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

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

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

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

About this Report

Site Anomalies

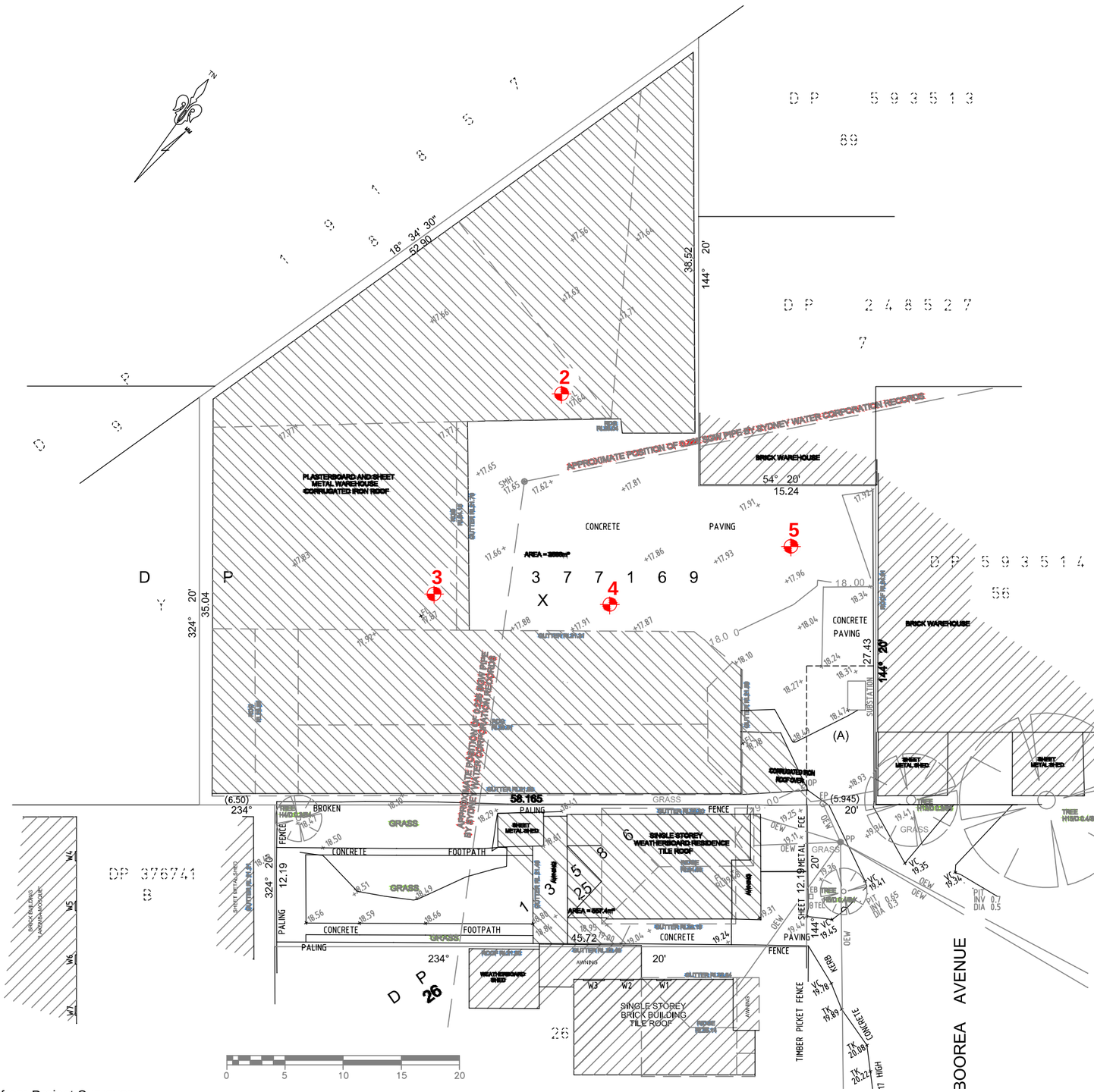
In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later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

Information for Contractual Purposes

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

Site Inspection

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



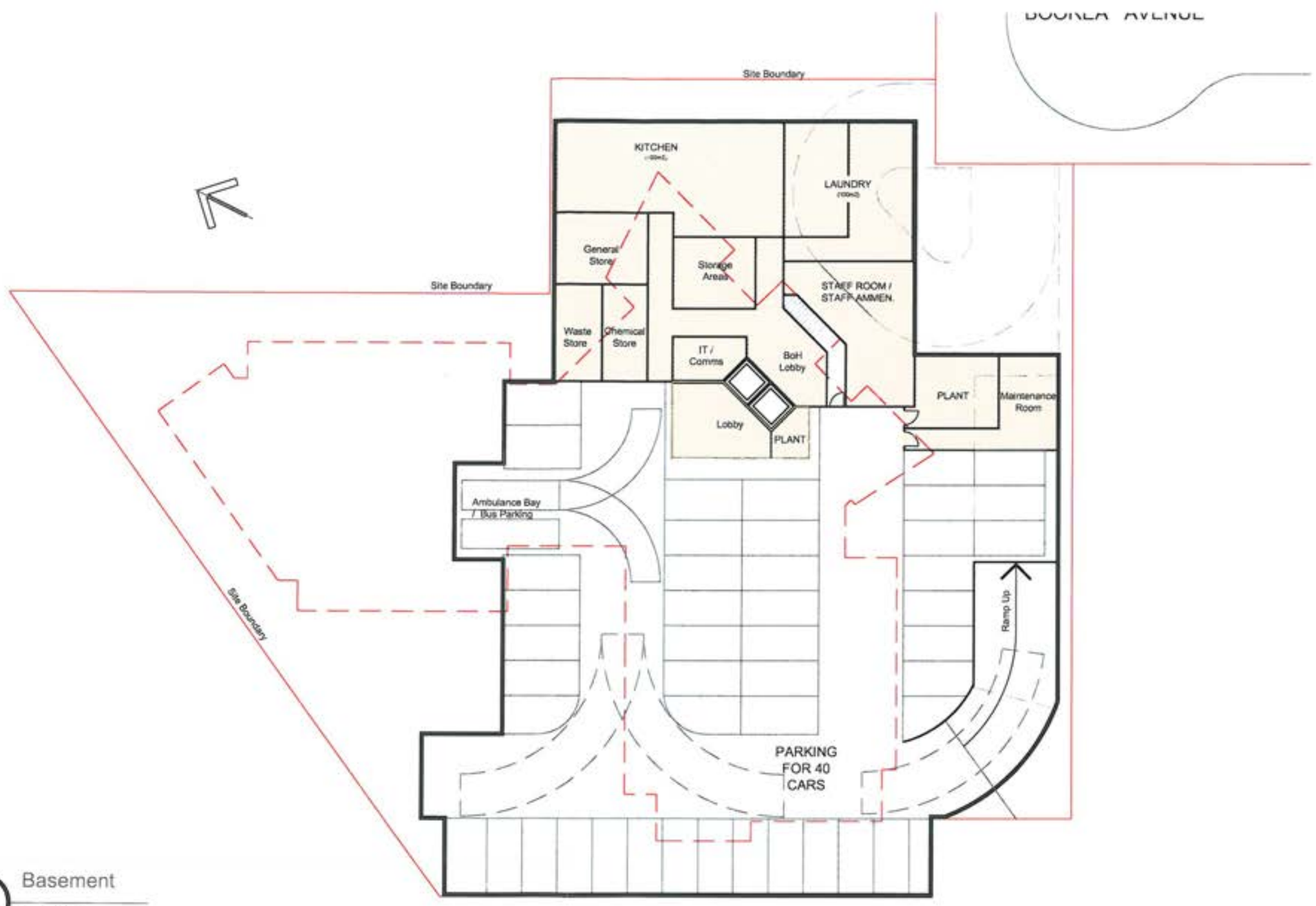
Locality Plan

NOTE:
1: Base drawing from Project Surveyors (Dwg D03888-DETAIL, dated 21.3.2017)
2: Test locations are approximate only and are shown with reference to existing features.

LEGEND

Borehole location

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Lebanese Muslim Association	TITLE: **Location of Boreholes**	PROJECT No: 85919.00
	OFFICE: Sydney / DRAWN BY: PSCH	**Aged Care Facility**	DRAWING No: 1
	SCALE: 1:400 @ A3 / DATE: 12.5.2017	**20-21 Boorea Avenue, LAKEMBA**	REVISION: 0



1 Basement
1 : 300

PROJECT
Residential Aged Care Masterplan - 112 beds
ADDRESS
Wangee Road Lakemba NSW 2195
CLIENT
Lebanese Muslim Association

DRAWING
Basement Level

NORTH

Thomson Adsett
Level 2,
66 Wentworth Ave
Surry Hills NSW 2010
PO Box K342
Haymarket NSW 1240
Phone: (02) 9003 3000
Fax: (02) 9003 9099
NOMINATED ARCHITECTS: G K Lane(3451), D W Moams (4344), R J Pufleth(5376), C L Straw(7468), C Glanville(3107)
Email:syd@thomsonadsett.com
Website:www.thomsonadsett.com

SCALE
1:200
A3 SHEET
DATE
31/07/2015

PROJECT NUMBER
15.0027.12
DRAWING NUMBER
SK-003
ISSUE
1

Sampling Methods

Douglas Partners

Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:

  4,6,7
  N=13

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

  15, 30/40 mm

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

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

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

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

Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are based on Australian Standard AS 1726-1993, Geotechnical Site Investigations Code. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	20 - 63
Medium gravel	6 - 20
Fine gravel	2.36 - 6
Coarse sand	0.6 - 2.36
Medium sand	0.2 - 0.6
Fine sand	0.075 - 0.2

The proportions of secondary constituents of soils are described as:

Term	Proportion	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	20 - 35%	Sandy Clay
Slightly	12 - 20%	Slightly Sandy Clay
With some	5 - 12%	Clay with some sand
With a trace of	0 - 5%	Clay with a trace of sand

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	vs	<12
Soft	s	12 - 25
Firm	f	25 - 50
Stiff	st	50 - 100
Very stiff	vst	100 - 200
Hard	h	>200

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	SPT N value	CPT qc value (MPa)
Very loose	vl	<4	<2
Loose	l	4 - 10	2 -5
Medium dense	md	10 - 30	5 - 15
Dense	d	30 - 50	15 - 25
Very dense	vd	>50	>25

Soil Descriptions

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Transported soils - formed somewhere else and transported by nature to the site; or
- Filling - moved by man.

Transported soils may be further subdivided into:

- Alluvium - river deposits
- Lacustrine - lake deposits
- Aeolian - wind deposits
- Littoral - beach deposits
- Estuarine - tidal river deposits
- Talus - scree or coarse colluvium
- Slopewash or Colluvium - transported downslope by gravity assisted by water. Often includes angular rock fragments and boulders.

Rock Strength

Rock strength is defined by the Point Load Strength Index ($Is_{(50)}$) and refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects. The test procedure is described by Australian Standard 4133.4.1 - 2007. The terms used to describe rock strength are as follows:

Term	Abbreviation	Point Load Index $Is_{(50)}$ MPa	Approximate Unconfined Compressive Strength MPa*
Extremely low	EL	<0.03	<0.6
Very low	VL	0.03 - 0.1	0.6 - 2
Low	L	0.1 - 0.3	2 - 6
Medium	M	0.3 - 1.0	6 - 20
High	H	1 - 3	20 - 60
Very high	VH	3 - 10	60 - 200
Extremely high	EH	>10	>200

* Assumes a ratio of 20:1 for UCS to $Is_{(50)}$. It should be noted that the UCS to $Is_{(50)}$ ratio varies significantly for different rock types and specific ratios should be determined for each site.

Degree of Weathering

The degree of weathering of rock is classified as follows:

Term	Abbreviation	Description
Extremely weathered	EW	Rock substance has soil properties, i.e. it can be remoulded and classified as a soil but the texture of the original rock is still evident.
Highly weathered	HW	Limonite staining or bleaching affects whole of rock substance and other signs of decomposition are evident. Porosity and strength may be altered as a result of iron leaching or deposition. Colour and strength of original fresh rock is not recognisable
Moderately weathered	MW	Staining and discolouration of rock substance has taken place
Slightly weathered	SW	Rock substance is slightly discoloured but shows little or no change of strength from fresh rock
Fresh stained	Fs	Rock substance unaffected by weathering but staining visible along defects
Fresh	Fr	No signs of decomposition or staining

Degree of Fracturing

The following classification applies to the spacing of natural fractures in diamond drill cores. It includes bedding plane partings, joints and other defects, but excludes drilling breaks.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with some fragments
Fractured	Core lengths of 40-200 mm with some shorter and longer sections
Slightly Fractured	Core lengths of 200-1000 mm with some shorter and longer sections
Unbroken	Core lengths mostly > 1000 mm

Rock Descriptions

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} \geq 100 \text{ mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or better. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e. drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

For sedimentary rocks the following terms may be used to describe the spacing of bedding partings:

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Symbols & Abbreviations

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Introduction

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

Drilling or Excavation Methods

C	Core drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U_{50}	Undisturbed tube sample (50mm)
W	Water sample
pp	Pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	Lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

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

Coating or Infilling Term

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

Coating Descriptor

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

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

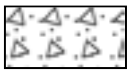
Symbols & Abbreviations

Graphic Symbols for Soil and Rock

General


Asphalt

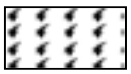

Road base

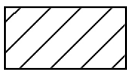

Concrete


Filling

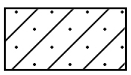
Soils


Topsoil


Peat

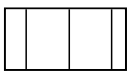

Clay


Silty clay

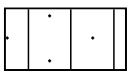

Sandy clay

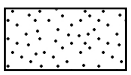

Gravelly clay

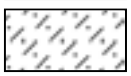

Shaly clay

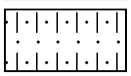

Silt


Clayey silt


Sandy silt


Sand


Clayey sand


Silty sand


Gravel


Sandy gravel


Cobbles, boulders

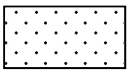

Talus

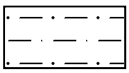
Sedimentary Rocks

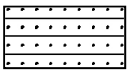

Boulder conglomerate

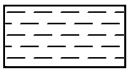

Conglomerate


Conglomeratic sandstone

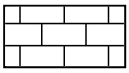

Sandstone


Siltstone


Laminite

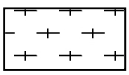

Mudstone, claystone, shale


Coal


Limestone

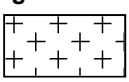
Metamorphic Rocks

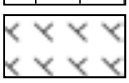

Slate, phyllite, schist

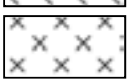

Gneiss

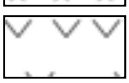

Quartzite

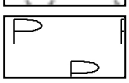
Igneous Rocks


Granite


Dolerite, basalt, andesite


Dacite, epidote


Tuff, breccia


Porphyry

BOREHOLE LOG

CLIENT: Lebanese Muslim Association
PROJECT: AMAN Residential Aged Care Facility
LOCATION: 20-21 Boorea Avenue, Lakemba

SURFACE LEVEL: RL 17.7 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 2
PROJECT No: 85919.00
DATE: 28/4 - 1/5/2017
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	0.13	CONCRETE							A/E			
	0.18	ASPHALTIC CONCRETE							A/E			
		FILLING - dark grey sandy clay filling with some roadbase gravel, wet							A/E			
1	1.0	CLAY - firm to stiff, light grey-brown clay, moist							S			1,2,5 N = 7
2									A/E			
	2.5	SILTY CLAY - stiff, light brown silty clay, wet				▼			S			6,5,5 N = 10
3									E			
	3.6	SHALY CLAY - hard, orange-brown shaly clay with ironstone bands, damp						Note: Unless otherwise stated, rock is fractured along rough planar bedding dipping 0°- 10°				
4									S			6,14,22 N = 36
	4.3	SHALE - extremely low strength, light grey-brown shale/laminite										
	4.55							4.45m: CORE LOSS: 100mm				
	4.65	LAMINITE - low to medium strength, highly to moderately weathered, fractured, grey-brown laminite with approximately 20% fine sandstone laminations						4.6-4.63m: Cs 4.65m: B0°, cly, 5mm 4.78m: B0°, fe, cly, 10mm 4.93m: J60°, pl, ro, fe 5.06 & 5.10m: B0°, cly, 5mm 5.23m: J, sv, un, ro, fe 5.3-5.46m: B (x3) 0°, fe, cly, 3-5mm				PL(A) = 0.35
5												
	5.5	LAMINITE - medium to high strength, fresh, slightly fractured and unbroken, light grey to grey laminite with approximately 20% fine sandstone laminations							C	96	85	PL(A) = 0.96
6												
												PL(A) = 0.68
7								7.16 & 7.46m: B0°, cly co, 1-3mm				
												PL(A) = 1.01
8								8.06m: J, sv, pl, ro, si				
									C	100	100	PL(A) = 1.02
9								8.82-8.83m: fg				
												PL(A) = 0.64
								9.66-9.67m: fg				

RIG: DT100 **DRILLER:** SV **LOGGED:** SI **CASING:** HW to 4.0m

TYPE OF BORING: Diatube to 0.13m; Solid flight auger to 4.0m; Rotary to 4.45m; NMLC-Coring to 10.1m

WATER OBSERVATIONS: Free groundwater observed at 2.6m whilst augering

REMARKS: Standpipe installed to 10.0m (screen 2.0-10.0m; gravel 1.8-10.0m; bentonite 1.3-1.8m; backfill to GL with gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics | Environment | Groundwater

BOREHOLE LOG

CLIENT: Lebanese Muslim Association
PROJECT: AMAN Residential Aged Care Facility
LOCATION: 20-21 Boorea Avenue, Lakemba

SURFACE LEVEL: RL 17.7 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 2
PROJECT No: 85919.00
DATE: 28/4 - 1/5/2017
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	10.1	Bore discontinued at 10.1m										
	11											
	12											
	13											
	14											
	15											
	16											
	17											
	18											
	19											

RIG: DT100 **DRILLER:** SV **LOGGED:** SI **CASING:** HW to 4.0m

TYPE OF BORING: Diatube to 0.13m; Solid flight auger to 4.0m; Rotary to 4.45m; NMLC-Coring to 10.1m

WATER OBSERVATIONS: Free groundwater observed at 2.6m whilst augering

REMARKS: Standpipe installed to 10.0m (screen 2.0-10.0m; gravel 1.8-10.0m; bentonite 1.3-1.8m; backfill to GL with gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics | Environment | Groundwater

BOREHOLE LOG

CLIENT: Lebanese Muslim Association
PROJECT: AMAN Residential Aged Care Facility
LOCATION: 20-21 Boorea Avenue, Lakemba

SURFACE LEVEL: RL 17.9 AHD **BORE No:** 3
EASTING: **PROJECT No:** 85919.00
NORTHING: **DATE:** 27 - 28/4/2017
DIP/AZIMUTH: 90°/-- **SHEET** 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
	0.17	CONCRETE							A/E			
	0.27	FILLING - grey sand and roadbase gravel filling							A/E			
		CLAY - firm, light grey-brown clay, moist							A/E			
1									S			1,2,5 N = 7
	1.6	SILTY CLAY - stiff, light brown silty clay, moist										
2		2.2m: becoming wet				▼			S			3,7,7 N = 14
3	3.0	SILTY CLAY - stiff to very stiff, light brown silty clay, wet						Note: Unless otherwise stated, rock is fractured along rough planar bedding dipping 0°- 10°	A/E			
4	4.3	LAMINITE - extremely low strength, light grey-brown laminite with ironstone bands							S			5,7,12/60mm refusal
	4.55	LAMINITE - low to medium strength, highly to moderately weathered, fractured, grey-brown laminite with approximately 20% fine sandstone laminations						4.55-4.85m: B (x4) 0°-5°, fe, cly co, 1-5mm 4.85m: J85°, pl, ro, cln 5.03m: B0°, fe, cly, 10mm				PL(A) = 0.26
5	5.06	LAMINITE - medium then high strength, fresh, slightly fractured and unbroken, light grey to grey laminite with approximately 20% fine sandstone laminations										PL(A) = 0.61
6									C	100	89	PL(A) = 0.66
7								6.94m: B0°, cly, 5mm 7.25-7.27m: fg				PL(A) = 1.14
8									C	100	99	PL(A) = 1.5
9								9.53m: B0, cly, 5mm				PL(A) = 1.17

RIG: DT100 **DRILLER:** SS **LOGGED:** SI **CASING:** HW to 4.0m

TYPE OF BORING: Diatube to 0.17m; Solid flight auger to 4.0m; Rotary to 4.55m; NMLC-Coring to 10.10m

WATER OBSERVATIONS: Free groundwater observed at 2.2m whilst augering

REMARKS: 30% water loss at 6.7m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lebanese Muslim Association
PROJECT: AMAN Residential Aged Care Facility
LOCATION: 20-21 Boorea Avenue, Lakemba

SURFACE LEVEL: RL 17.9 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 3
PROJECT No: 85919.00
DATE: 27 - 28/4/2017
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	10.1	Bore discontinued at 10.1m										
	11											
	12											
	13											
	14											
	15											
	16											
	17											
	18											
	19											

RIG: DT100 **DRILLER:** SS **LOGGED:** SI **CASING:** HW to 4.0m

TYPE OF BORING: Diatube to 0.17m; Solid flight auger to 4.0m; Rotary to 4.55m; NMLC-Coring to 10.10m

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SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lebanese Muslim Association
PROJECT: AMAN Residential Aged Care Facility
LOCATION: 20-21 Boorea Avenue, Lakemba

SURFACE LEVEL: RL 17.9 AHD **BORE No:** 4
EASTING: **PROJECT No:** 85919.00
NORTHING: **DATE:** 26/4/2017
DIP/AZIMUTH: 90°/-- **SHEET** 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
	0.15	CONCRETE							A			
	0.17	ROADBASE - gravel and sand filling							A			
	0.6	FILLING - grey to dark grey, clay and crushed shale gravel filling, moist							A			
	1	CLAY - stiff, grey mottled brown clay, moist							S			2,4,8 N = 12
	1.8	SILTY CLAY - very stiff, orange-brown and light grey, silty clay with ironstone gravel, moist						Note: Unless otherwise stated, rock is fractured along rough planar bedding dipping 0°- 10°	S			5,7,10 N = 17
	3 3.0	SHALE - extremely low strength, grey-brown shale										
	3.4	LAMINITE - low and very low strength, highly to moderately weathered, fractured, brown laminite with approximately 20% fine sandstone laminations						3.48m: B0°, fe, cly, 10mm 3.78-4.1m: J, sv (80°-90°), partially he, pl, ro, fe 4.12 & 4.17m: J (x2) 55°, pl, sm, ti 4.23m: B0°, fe, cly, 5mm; J70°, pl, ro, fe 4.43-4.83m: B (x5) 0°, fe, cly co, 1-3mm	C	100	82	PL(A) = 0.18 PL(A) = 0.68 PL(A) = 0.86
	4.45	LAMINITE - medium and high strength, slightly weathered and fresh, slightly fractured and unbroken, light grey and grey, laminite with approximately 30% fine sandstone laminations						5.75m: B0°, cly, 5mm				
	6								C	100	100	PL(A) = 0.83 PL(A) = 1.28 PL(A) = 1.27
	8							8.6m: J30°, pl, ro, cln				
	9							9.57m: B0°, cly co, 3mm	C	100	100	PL(A) = 0.7

RIG: Scout 2 **DRILLER:** SS **LOGGED:** SI **CASING:** HW to 3.0m

TYPE OF BORING: Solid flight auger to 3.0m; Rotary to 3.4m; NMLC-Coring to 10.18m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▽	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lebanese Muslim Association
PROJECT: AMAN Residential Aged Care Facility
LOCATION: 20-21 Boorea Avenue, Lakemba

SURFACE LEVEL: RL 17.9 AHD **BORE No:** 4
EASTING: **PROJECT No:** 85919.00
NORTHING: **DATE:** 26/4/2017
DIP/AZIMUTH: 90°/-- **SHEET** 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	10.18	LAMINITE *(continued)*							C	100	100	PL(A) = 0.93
		Bore discontinued at 10.18m										

RIG: Scout 2 **DRILLER:** SS **LOGGED:** SI **CASING:** HW to 3.0m

TYPE OF BORING: Solid flight auger to 3.0m; Rotary to 3.4m; NMLC-Coring to 10.18m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lebanese Muslim Association
PROJECT: AMAN Residential Aged Care Facility
LOCATION: 20-21 Boorea Avenue, Lakemba

SURFACE LEVEL: RL 17.9 AHD **BORE No:** 5
EASTING: **PROJECT No:** 85919.00
NORTHING: **DATE:** 27/4/2017
DIP/AZIMUTH: 90°/-- **SHEET** 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
	0.13	CONCRETE							A			
	0.25	FILLING - brown clay and roadbase gravel filling							A			
	0.7	FILLING - grey silty clay filling with some fine sand and roadbase gravel							A			
	1	CLAY - firm, brown clay, slightly silty, moist							S			5,2,3 N = 5
		1.5m: becoming stiff and light brown										
	2											
	2.4	SHALY CLAY - very stiff, mottled brown-light grey shaly clay, moist						Note: Unless otherwise stated, rock is fractured along rough planar bedding dipping 0°- 10°	S			7,10,13 N = 23
	3											
	3.25	LAMINITE - low strength, highly weathered, fractured, brown laminite with some very low strength bands							C	100	90	PL(A) = 0.21
	4							4.07m: B0°, fe 4.12m: CORE LOSS: 130mm 4.35-4.38m: Cs 4.42-4.46m: Cs 4.5-4.6m: J (x3) 80°, pl, sm, cly 4.59-5.16m: B (x10) 0°, fe, cly co				
	4.25											
	4.9	LAMINITE - medium and high strength, slightly weathered then fresh, slightly fractured and unbroken, grey laminite with approximately 25% fine sandstone laminations							C	97	91	PL(A) = 0.84
	5							5.62 & 3.73m: J (x2) 45°, he 5.92-6.05m: J70°, pl, ro, cln				PL(A) = 0.71
	6							6.4-6.43m: Sz 6.43m: J90°, pl, ro, cln				PL(A) = 0.45
	7							6.9-7.1m: J70°, pl, ro, si 7.13m: J45°, un, ro, cln				PL(A) = 1.47
	8							7.55 & 7.7m: J, sv, pl, ro, cln	C	100	98	PL(A) = 0.72
	9							9.75-9.85m: B (x3) 0°, cly co, 2-5mm				PL(A) = 0.7

RIG: DT100 **DRILLER:** SS **LOGGED:** SI **CASING:** HW to 2.5m
TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 3.25m; NMLC-Coring to 10.19m
WATER OBSERVATIONS:
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Lebanese Muslim Association
PROJECT: AMAN Residential Aged Care Facility
LOCATION: 20-21 Boorea Avenue, Lakemba

SURFACE LEVEL: RL 17.9 AHD **BORE No:** 5
EASTING: **PROJECT No:** 85919.00
NORTHING: **DATE:** 27/4/2017
DIP/AZIMUTH: 90°/-- **SHEET** 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	10.19	LAMINITE *(continued)*							C	100	98	PL(A) = 0.68
		Bore discontinued at 10.19m										

RIG: DT100 **DRILLER:** SS **LOGGED:** SI **CASING:** HW to 2.5m
TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 3.25m; NMLC-Coring to 10.19m
WATER OBSERVATIONS:
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Table 4: Soil Laboratory Results Summary - Waste Classification

	Scheduled chemicals (NSW Waste 2009)	Benzo(a)pyrene TEQ calc (zero)	Benzo(a)pyrene TEQ calc(half)	Benzo(a)pyrene TEQ calc(PQL)	Benzo(b,j+k)fluoranthene	Total +ve PAHs	Chloride	Moisture	Sulphate	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C10 - C40 (Sum of total)	C6-C10 less BTEX (F1)	C6-C10	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total
		PAHs in Soil					Inorganics			Metals								TPH												BTEX					
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		0.5	0.5	0.5	0.2	0.05	10	0.1	10	4	0.4	1	1	1	0.1	1	1	50	100	100	50	25	50	100	100		50	25	25	0.2	1	0.5	2	1	1
NSW EPA (2014) General Solid Waste (CT1)										100	20			100	4	40														10	600	288			1000
NSW EPA (2014) General Solid Waste (SCC1, TCLP1)	49.999									500	100			1500	50	1050						650				10000				18	1080	518			1800
NSW EPA (2014) Restricted Solid Waste (CT2)										400	80			400	16	160														40	2400	1152			4000
NSW EPA (2014) Restricted Solid Waste (SCC2, TCLP2)	49.999									2000	400			6000	200	4200						2600				40000				72	4320	2073			7200
NEPM 2013 Table 1A(1) HILs Res A Soil										100	20		6000	300	40	400	7400																		
ANZECC 1992										0.2-30	0.04-2	0.5-110	1-190	<2-200	0.001-0.	2-400	2-180													0.05-1		0.1-1			

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Matrix_Description	Scheduled chemicals (NSW Waste 2009)	Benzo(a)pyrene TEQ calc (zero)	Benzo(a)pyrene TEQ calc(half)	Benzo(a)pyrene TEQ calc(PQL)	Benzo(b,j+k)fluoranthene	Total +ve PAHs	Chloride	Moisture	Sulphate	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C10 - C40 (Sum of total)	C6-C10 less BTEX (F1)	C6-C10	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total
BH2	BH2	0.5	1/05/2017		<1.3	2.6	2.6	2.6	2.9	20	-	30	-	10	<0.4	18	51	52	<0.1	7	63	<50	620	170	<50	<25	<50	300	440	765	790	<25	<25	<0.2	<1	<0.5	<2	<1	<1
BH2	BH2	2	1/05/2017		<1.3	<0.5	<0.5	<0.5	<0.2	<0.05	42	15	<10	<4	<0.4	8	10	8	<0.1	4	7	<50	<100	<100	<50	<25	<50	<100	<100	<250	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1
BH3	BH3	0.5	27/04/2017		<1.3	<0.5	<0.5	<0.5	<0.2	<0.05	-	23	-	7	<0.4	12	18	25	<0.1	6	35	<50	<100	<100	<50	<25	<50	<100	<100	<250	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1
BH3	BH3	1-1.45	27/04/2017		<1.3	<0.5	<0.5	<0.5	<0.2	<0.05	-	20	-	8	<0.4	9	6	21	<0.1	2	17	<50	<100	<100	<50	<25	<50	<100	<100	<250	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1
BH4	BH4	0.5	26/04/2017		<1.3	<0.5	<0.5	<0.5	<0.2	<0.05	-	12	-	20	<0.4	30	1	19	<0.1	2	6	<50	<100	<100	<50	<25	<50	<100	<100	<250	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1
BH4	BH4	1-1.45	26/04/2017		<1.3	<0.5	<0.5	<0.5	<0.2	<0.05	10	21	<10	13	<0.4	24	8	17	<0.1	2	8	<50	<100	<100	<50	<25	<50	<100	<100	<250	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1
BH5	BH5	0.5	26/04/2017		<1.3	<0.5	<0.5	<0.5	<0.2	<0.05	-	22	-	15	<0.4	31	10	14	<0.1	4	14	<50	<100	<100	<50	<25	<50	<100	<100	<250	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1
BH5	BH5	1-1.45	26/04/2017		<1.3	<0.5	<0.5	<0.5	<0.2	<0.05	-	18	-	17	<0.4	31	8	16	<0.1	3	12	<50	<100	<100	<50	<25	<50	<100	<100	<250	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1

Statistical Summary

Statistical Summary	Scheduled chemicals (NSW Waste 2009)	Benzo(a)pyrene TEQ calc (zero)	Benzo(a)pyrene TEQ calc(half)	Benzo(a)pyrene TEQ calc(PQL)	Benzo(b,j+k)fluoranthene	Total +ve PAHs	Chloride	Moisture	Sulphate	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C10 - C40 (Sum of total)	C6-C10 less BTEX (F1)	C6-C10	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total
Number of Results	8	8	8	8	8	8	2	8	2	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Number of Detects	0	1	1	1	1	1	2	8	0	7	0	8	8	8	0	8	8	0	1	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Minimum Concentration	<1.3	<0.5	<0.5	<0.5	<0.2	<0.05	10	12	<10	<4	<0.4	8	1	8	<0.1	2	6	<50	<100	<100	<50	<25	<50	<100	<100	<250	<50	<25	<25	<0.2	<1	<0.5	<2	<1	<1
Minimum Detect	ND	2.6	2.6	2.6	2.9	20	10	12	ND	7	ND	8	1	8	ND	2	6	ND	620	170	ND	ND	ND	300	440	765	790	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<1.3	2.6	2.6	2.6	2.9	20	42	30	<10	20	<0.4	31	51	52	<0.1	7	63	<50	620	170	<50	<25	<50	300	440	765	790	<25	<25	<0.2	<1	<0.5	<2	<1	<1
Maximum Detect	ND	2.6	2.6	2.6	2.9	20	42	30	ND	20	ND	31	51	52	ND	7	63	ND	620	170	ND	ND	ND	300	440	765	790	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	0.65	0.54	0.54	0.54	0.45	2.5		20		12	0.2	20	14	22	0.05	3.8	20	25	121	65	25	13	25	81	99	205	121	13	13	0.1	0.5	0.25	1	0.5	0.5
Median Concentration	0.65	0.25	0.25	0.25	0.1	0.025	26	20.5	5	11.5	0.2	21	9	18	0.05	3.5	13	25	50	50	25	12.5	25	50	50	125	25	12.5	12.5	0.1	0.5	0.25	1	0.5	0.5
Standard Deviation	0	0.83	0.83	0.83	0.99	7.1		5.4		5.9	0	9.9	16	13	0	1.9	20	0	202	42	0	0	0	88	138	226	270	0	0	0	0	0	0	0	0
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	0	0	0

Table 4: Soil Laboratory Results Summary - Waste Classification

						Halogenated Benzenes	PAH/Phenols																Polychlorinated Biphenyls							
						Hexachlorobenzene	PAH (total, NSW Waste 2009)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	TCLP BaP	Carcinogenic PAHs (as BaP TEQ)	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Phenolics Total	Pyrene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL						0.1		0.1	0.1	0.1	0.1	0.05	0.1			0.1	0.1	0.1	0.1	0.1	0.1	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NSW EPA (2014) General Solid Waste (CT1)												0.8																			
NSW EPA (2014) General Solid Waste (SCC1, TCLP1)							200					10		0.04																	49.999
NSW EPA (2014) Restricted Solid Waste (CT2)												3.2																			
NSW EPA (2014) Restricted Solid Waste (SCC2, TCLP2)							800					23																			49.999
NEPM 2013 Table 1A(1) HILs Res A Soil						10									3																1
ANZECC 1992							0.95-5					0.8																			
Field_ID	**LocCode**	**Sample_Depth_Range**	**Sampled_Date-Time**	**Matrix_Description**																											
BH2	BH2	0.5	1/05/2017			<0.1	17.15	0.1	0.2	0.4	1.6	1.8	1	<0.001	2.276	1.6	0.2	3.9	0.1	0.9	<0.1	1.9	<5	3.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH2	BH2	2	1/05/2017			<0.1	<1.35	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1		<0.172	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH3	BH3	0.5	27/04/2017			<0.1	<1.35	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1		<0.172	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH3	BH3	1-1.45	27/04/2017			<0.1	<1.35	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1		<0.172	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH4	BH4	0.5	26/04/2017			<0.1	<1.35	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1		<0.172	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH4	BH4	1-1.45	26/04/2017			<0.1	<1.35	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1		<0.172	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH5	BH5	0.5	26/04/2017			<0.1	<1.35	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1		<0.172	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH5	BH5	1-1.45	26/04/2017			<0.1	<1.35	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1		<0.172	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Statistical Summary																															
Number of Results						8	8	8	8	8	8	8	8		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Number of Detects						0	1	1	1	1	1	1	1		1	1	1	1	1	1	0	1	0	1	0	0	0	0	0	0	0	0
Minimum Concentration						<0.1	<1.35	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1		<0.172	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Minimum Detect						ND	17.15	0.1	0.2	0.4	1.6	1.8	1		2.276	1.6	0.2	3.9	0.1	0.9	ND	1.9	ND	3.4	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration						<0.1	17.15	0.1	0.2	0.4	1.6	1.8	1		2.276	1.6	0.2	3.9	0.1	0.9	<0.1	1.9	<5	3.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Maximum Detect						ND	17.15	0.1	0.2	0.4	1.6	1.8	1		2.276	1.6	0.2	3.9	0.1	0.9	ND	1.9	ND	3.4	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration						0.05	2.7	0.056	0.069	0.094	0.24	0.25	0.17		0.36	0.24	0.069	0.53	0.056	0.16	0.05	0.28	2.5	0.47	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Median Concentration						0.05	0.675	0.05	0.05	0.05	0.05	0.025	0.05		0.086	0.05	0.05	0.05	0.05	0.05	0.05	0.05	2.5	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Standard Deviation						0	5.8	0.018	0.053	0.12	0.55	0.63	0.34		0.77	0.55	0.053	1.4	0.018	0.3	0	0.65	0	1.2	0	0	0	0	0	0	0	0
Number of Guideline Exceedances						0	8	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)						0	8	0	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4: Soil Laboratory Results Summary - Waste Classification

	Organochlorine Pesticides																					Organophosphorous Pesticides											Pesticides		Asbestos
	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Ronnel	Pesticides (total, NSW Waste 2009)	Parathion	Asbestos fibres
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-
EQL	0.1	0.1	0.1		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	
NSW EPA (2014) General Solid Waste (CT1)																								4											
NSW EPA (2014) General Solid Waste (SCC1, TCLP1)																								7.5									250		
NSW EPA (2014) Restricted Solid Waste (CT2)																								16											
NSW EPA (2014) Restricted Solid Waste (SCC2, TCLP2)																								30									1000		
NEPM 2013 Table 1A(1) HILs Res A Soil				6							240					10			6		300			160										
ANZECC 1992																																			

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Matrix_Description																																	
BH2	BH2	0.5	1/05/2017		<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.6	<0.1	0
BH2	BH2	2	1/05/2017		<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.6	<0.1	0
BH3	BH3	0.5	27/04/2017		<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.6	<0.1	0
BH3	BH3	1-1.45	27/04/2017		<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.6	<0.1	0
BH4	BH4	0.5	26/04/2017		<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.6	<0.1	0
BH4	BH4	1-1.45	26/04/2017		<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.6	<0.1	0
BH5	BH5	0.5	26/04/2017		<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.6	<0.1	0
BH5	BH5	1-1.45	26/04/2017		<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.6	<0.1	0

Statistical Summary

Number of Results	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Minimum Concentration	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.6	<0.1	0
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.6	<0.1	0
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	0.05	0.05	0.05	0.1	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	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	0.3	0.05	0
Median Concentration	0.05	0.05	0.05	0.1	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	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	0.3	0.05	0
Standard Deviation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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CERTIFICATE OF ANALYSIS **166060**

Client:

Douglas Partners Pty Ltd
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Peter Hartcliff

Sample log in details:

Your Reference:	**85919.00, Lakemba 20-21 Boorea Ave**		
No. of samples:	8 Soils		
Date samples received / completed instructions received	01/05/17	/	01/05/17

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:	8/05/17	/	8/05/17
Date of Preliminary Report:	Not Issued		

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Results Approved By:

David Springer
General Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	166060-1	166060-2	166060-3	166060-4	166060-5
Your Reference	---------- -	BH4	BH4	BH5	BH5	BH2
Depth	----------	0.5	1-1.45	0.5	1-1.45	0.5
Date Sampled		26/04/2017	26/04/2017	26/04/2017	26/04/2017	1/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	03/05/2017	03/05/2017	03/05/2017	03/05/2017	03/05/2017
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	%	96	95	96	95	91

vTRH(C6-C10)/BTEXN in Soil				
Our Reference:	UNITS	166060-6	166060-7	166060-8
Your Reference	---------- -	BH2	BH3	BH3
Depth	----------	2.0	0.5	1-1.45
Date Sampled		1/05/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	03/05/2017	03/05/2017	03/05/2017
TRH C_6 - C_9	mg/kg	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	97	91	93

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	166060-1	166060-2	166060-3	166060-4	166060-5
Your Reference	---------- -	BH4	BH4	BH5	BH5	BH2
Depth	----------	0.5	1-1.45	0.5	1-1.45	0.5
Date Sampled		26/04/2017	26/04/2017	26/04/2017	26/04/2017	1/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
$TRHC_{10}$ - C_{14}	mg/kg	<50	<50	<50	<50	<50
$TRHC_{15}$ - C_{28}	mg/kg	<100	<100	<100	<100	300
$TRHC_{29}$ - C_{36}	mg/kg	<100	<100	<100	<100	440
$TRH>C_{10}$-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	620
$TRH>C_{34}$-C_{40}	mg/kg	<100	<100	<100	<100	170
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	790
Surrogate o-Terphenyl	%	98	102	100	101	119

svTRH (C10-C40) in Soil				
Our Reference:	UNITS	166060-6	166060-7	166060-8
Your Reference	---------- -	BH2	BH3	BH3
Depth	----------	2.0	0.5	1-1.45
Date Sampled		1/05/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017
$TRHC_{10}$ - C_{14}	mg/kg	<50	<50	<50
$TRHC_{15}$ - C_{28}	mg/kg	<100	<100	<100
$TRHC_{29}$ - C_{36}	mg/kg	<100	<100	<100
$TRH>C_{10}$-C_{16}	mg/kg	<50	<50	<50
$TRH>C_{10}$ - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50
$TRH>C_{16}$-C_{34}	mg/kg	<100	<100	<100
$TRH>C_{34}$-C_{40}	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50
Surrogate o-Terphenyl	%	98	98	102

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- - ---------- 	166060-1 BH4 0.5 26/04/2017 Soil	166060-2 BH4 1-1.45 26/04/2017 Soil	166060-3 BH5 0.5 26/04/2017 Soil	166060-4 BH5 1-1.45 26/04/2017 Soil	166060-5 BH2 0.5 1/05/2017 Soil
Date extracted	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	03/05/2017	03/05/2017	03/05/2017	03/05/2017	03/05/2017
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.9
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.4
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	3.9
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	3.4
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.6
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.6
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	2.9
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	1.8
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.9
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	1.0
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	2.6
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	2.6
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	2.6
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	20
Surrogate p-Terphenyl-d14	%	80	82	98	85	87

PAHs in Soil Our Reference: Your Reference	UNITS ---------- -	166060-6 BH2	166060-7 BH3	166060-8 BH3
Depth	----------	2.0	0.5	1-1.45
Date Sampled		1/05/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	03/05/2017	03/05/2017	03/05/2017
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05
Surrogate p-Terphenyl-d14	%	86	86	85

Organochlorine Pesticides in soil						
Our Reference:	UNITS	166060-1	166060-2	166060-3	166060-4	166060-5
Your Reference	----------	BH4	BH4	BH5	BH5	BH2
Depth	----------	0.5	1-1.45	0.5	1-1.45	0.5
Date Sampled		26/04/2017	26/04/2017	26/04/2017	26/04/2017	1/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
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
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	103	106	103	104	102

Organochlorine Pesticides in soil				
Our Reference:	UNITS	166060-6	166060-7	166060-8
Your Reference	---------- -	BH2	BH3	BH3
Depth	----------	2.0	0.5	1-1.45
Date Sampled		1/05/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017
HCB	mg/kg	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	100	104

Organophosphorus Pesticides						
Our Reference:	UNITS	166060-1	166060-2	166060-3	166060-4	166060-5
Your Reference	---------- -	BH4	BH4	BH5	BH5	BH2
Depth	----------	0.5	1-1.45	0.5	1-1.45	0.5
Date Sampled		26/04/2017	26/04/2017	26/04/2017	26/04/2017	1/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	103	106	103	104	102

Organophosphorus Pesticides				
Our Reference:	UNITS	166060-6	166060-7	166060-8
Your Reference	---------- -	BH2	BH3	BH3
Depth	----------	2.0	0.5	1-1.45
Date Sampled		1/05/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	100	104

PCBs in Soil						
Our Reference:	UNITS	166060-1	166060-2	166060-3	166060-4	166060-5
Your Reference	----------	BH4	BH4	BH5	BH5	BH2
	-					
Depth	----------	0.5	1-1.45	0.5	1-1.45	0.5
Date Sampled		26/04/2017	26/04/2017	26/04/2017	26/04/2017	1/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	103	106	103	104	102

PCBs in Soil				
Our Reference:	UNITS	166060-6	166060-7	166060-8
Your Reference	----------	BH2	BH3	BH3
	-			
Depth	----------	2.0	0.5	1-1.45
Date Sampled		1/05/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCLMX	%	101	100	104

Acid Extractable metals in soil						
Our Reference:	UNITS	166060-1	166060-2	166060-3	166060-4	166060-5
Your Reference	----------	BH4	BH4	BH5	BH5	BH2
	-					
Depth	----------	0.5	1-1.45	0.5	1-1.45	0.5
Date Sampled		26/04/2017	26/04/2017	26/04/2017	26/04/2017	1/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
Arsenic	mg/kg	20	13	15	17	10
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	30	24	31	31	18
Copper	mg/kg	1	8	10	8	51
Lead	mg/kg	19	17	14	16	52
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	2	4	3	7
Zinc	mg/kg	6	8	14	12	63

Acid Extractable metals in soil				
Our Reference:	UNITS	166060-6	166060-7	166060-8
Your Reference	----------	BH2	BH3	BH3
	-			
Depth	----------	2.0	0.5	1-1.45
Date Sampled		1/05/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017
Arsenic	mg/kg	<4	7	8
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	8	12	9
Copper	mg/kg	10	18	6
Lead	mg/kg	8	25	21
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	4	6	2
Zinc	mg/kg	7	35	17

Misc Soil - Inorg						
Our Reference:	UNITS	166060-1	166060-2	166060-3	166060-4	166060-5
Your Reference	----------	BH4	BH4	BH5	BH5	BH2
	-					
Depth	----------	0.5	1-1.45	0.5	1-1.45	0.5
Date Sampled		26/04/2017	26/04/2017	26/04/2017	26/04/2017	1/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017	02/05/2017	02/05/2017
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg				
Our Reference:	UNITS	166060-6	166060-7	166060-8
Your Reference	----------	BH2	BH3	BH3
	-			
Depth	----------	2.0	0.5	1-1.45
Date Sampled		1/05/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	02/05/2017	02/05/2017	02/05/2017
Date analysed	-	02/05/2017	02/05/2017	02/05/2017
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5

Moisture						
Our Reference:	UNITS	166060-1	166060-2	166060-3	166060-4	166060-5
Your Reference	---------- -	BH4	BH4	BH5	BH5	BH2
Depth	----------	0.5	1-1.45	0.5	1-1.45	0.5
Date Sampled		26/04/2017	26/04/2017	26/04/2017	26/04/2017	1/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	2/05/2017	2/05/2017	2/05/2017	2/05/2017	2/05/2017
Date analysed	-	3/05/2017	3/05/2017	3/05/2017	3/05/2017	3/05/2017
Moisture	%	12	21	22	18	30

Moisture				
Our Reference:	UNITS	166060-6	166060-7	166060-8
Your Reference	---------- -	BH2	BH3	BH3
Depth	----------	2.0	0.5	1-1.45
Date Sampled		1/05/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	2/05/2017	2/05/2017	2/05/2017
Date analysed	-	3/05/2017	3/05/2017	3/05/2017
Moisture	%	15	23	20

Asbestos ID - soils						
Our Reference:	UNITS	166060-1	166060-2	166060-3	166060-4	166060-5
Your Reference	---------- -	BH4	BH4	BH5	BH5	BH2
Depth	----------	0.5	1-1.45	0.5	1-1.45	0.5
Date Sampled		26/04/2017	26/04/2017	26/04/2017	26/04/2017	1/05/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	4/05/2017	4/05/2017	4/05/2017	4/05/2017	4/05/2017
Sample mass tested	g	Approx. 35g	Approx. 35g	Approx. 30g	Approx. 35g	Approx. 25g
Sample Description	-	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks	Orange clayey soil	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils				
Our Reference:	UNITS	166060-6	166060-7	166060-8
Your Reference	---------- -	BH2	BH3	BH3
Depth	----------	2.0	0.5	1-1.45
Date Sampled		1/05/2017	27/04/2017	27/04/2017
Type of sample		Soil	Soil	Soil
Date analysed	-	4/05/2017	4/05/2017	4/05/2017
Sample mass tested	g	Approx. 35g	Approx. 35g	Approx. 35g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected

Soil Aggressivity Our Reference: Your Reference	UNITS ---------- -	166060-2 BH4	166060-6 BH2
Depth	----------	1-1.45	2.0
Date Sampled		26/04/2017	1/05/2017
Type of sample		Soil	Soil
pH 1:5 soil:water	pH Units	7.0	8.9
Electrical Conductivity 1:5 soil:water	µS/cm	45	130
Resistivity by calculation	ohmm	220	77
Chloride, Cl 1:5 soil:water	mg/kg	10	42
Sulphate, SO4 1:5 soil:water	mg/kg	<10	<10

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).
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Inorg-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-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA 22nd ED 2510 and Rayment & Lyons. Resistivity is calculated from Conductivity.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Alternatively determined by colourimetry/turbidity using Discrete Analyer.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-4	02/05/2017
Date analysed	-			03/05/2017	166060-1	03/05/2017 || 03/05/2017	LCS-4	03/05/2017
TRHC$_6$ - C$_9$	mg/kg	25	Org-016	<25	166060-1	<25 || <25	LCS-4	84%
TRHC$_6$ - C$_{10}$	mg/kg	25	Org-016	<25	166060-1	<25 || <25	LCS-4	84%
Benzene	mg/kg	0.2	Org-016	<0.2	166060-1	<0.2 || <0.2	LCS-4	91%
Toluene	mg/kg	0.5	Org-016	<0.5	166060-1	<0.5 || <0.5	LCS-4	78%
Ethylbenzene	mg/kg	1	Org-016	<1	166060-1	<1 || <1	LCS-4	81%
m+p-xylene	mg/kg	2	Org-016	<2	166060-1	<2 || <2	LCS-4	85%
o-Xylene	mg/kg	1	Org-016	<1	166060-1	<1 || <1	LCS-4	81%
naphthalene	mg/kg	1	Org-014	<1	166060-1	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	101	166060-1	96 || 95 || RPD: 1	LCS-4	103%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-4	02/05/2017
Date analysed	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-4	02/05/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	166060-1	<50 || <50	LCS-4	83%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	166060-1	<100 || <100	LCS-4	89%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	166060-1	<100 || <100	LCS-4	80%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	166060-1	<50 || <50	LCS-4	83%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	166060-1	<100 || <100	LCS-4	89%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	166060-1	<100 || <100	LCS-4	80%
Surrogate o-Terphenyl	%		Org-003	114	166060-1	98 || 103 || RPD: 5	LCS-4	111%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-4	02/05/2017
Date analysed	-			03/05/2017	166060-1	03/05/2017 || 03/05/2017	LCS-4	03/05/2017
Naphthalene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	LCS-4	106%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	LCS-4	104%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	LCS-4	101%
Anthracene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	LCS-4	102%
Pyrene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	LCS-4	101%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	LCS-4	93%
Benzo(b,j +k)fluoranthene	mg/kg	0.2	Org-012	<0.2	166060-1	<0.2 || <0.2	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	166060-1	<0.05 || <0.05	LCS-4	95%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	89	166060-1	80 || 82 || RPD: 2	LCS-4	71%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-4	02/05/2017
Date analysed	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-4	02/05/2017
HCB	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	LCS-4	100%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	LCS-4	98%
Heptachlor	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	LCS-4	102%
delta-BHC	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	LCS-4	89%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	LCS-4	103%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	LCS-4	119%
Dieldrin	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	LCS-4	109%
Endrin	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	LCS-4	98%
pp-DDD	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	LCS-4	113%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	LCS-4	81%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	108	166060-1	103 || 102 || RPD: 1	LCS-4	76%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-4	02/05/2017
Date analysed	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-4	02/05/2017
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	166060-1	<0.1 || <0.1	LCS-4	101%
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Diazinon	mg/kg	0.1	Org-008	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	166060-1	<0.1 || <0.1	LCS-4	78%
Dimethoate	mg/kg	0.1	Org-008	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	166060-1	<0.1 || <0.1	LCS-4	88%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	166060-1	<0.1 || <0.1	LCS-4	103%
Malathion	mg/kg	0.1	Org-008	<0.1	166060-1	<0.1 || <0.1	LCS-4	75%
Parathion	mg/kg	0.1	Org-008	<0.1	166060-1	<0.1 || <0.1	LCS-4	101%
Ronnel	mg/kg	0.1	Org-008	<0.1	166060-1	<0.1 || <0.1	LCS-4	91%
Surrogate TCMX	%		Org-008	108	166060-1	103 || 102 || RPD: 1	LCS-4	104%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-4	02/05/2017
Date analysed	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-4	02/05/2017
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	166060-1	<0.1 || <0.1	LCS-4	116%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	166060-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	108	166060-1	103 || 102 || RPD: 1	LCS-4	104%

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	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-4	02/05/2017
Date analysed	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-4	02/05/2017
Arsenic	mg/kg	4	Metals-020	<4	166060-1	20 || 22 || RPD: 10	LCS-4	112%
Cadmium	mg/kg	0.4	Metals-020	<0.4	166060-1	<0.4 || <0.4	LCS-4	101%
Chromium	mg/kg	1	Metals-020	<1	166060-1	30 || 28 || RPD: 7	LCS-4	107%
Copper	mg/kg	1	Metals-020	<1	166060-1	1 || 2 || RPD: 67	LCS-4	110%
Lead	mg/kg	1	Metals-020	<1	166060-1	19 || 18 || RPD: 5	LCS-4	103%
Mercury	mg/kg	0.1	Metals-021	<0.1	166060-1	<0.1 || <0.1	LCS-4	102%
Nickel	mg/kg	1	Metals-020	<1	166060-1	2 || 2 || RPD: 0	LCS-4	98%
Zinc	mg/kg	1	Metals-020	<1	166060-1	6 || 5 || RPD: 18	LCS-4	102%

QUALITY CONTROL Misc Soil - Inorg	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-1	02/05/2017
Date analysed	-			02/05/2017	166060-1	02/05/2017 || 02/05/2017	LCS-1	02/05/2017
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	166060-1	<5 || <5	LCS-1	100%

QUALITY CONTROL Soil Aggressivity	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-4	104%
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	[NT]	[NT]	LCS-4	100%
Resistivity by calculation	ohm m	0.1	Inorg-002	<0.10	[NT]	[NT]	[NR]	[NR]
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	[NT]	[NT]	LCS-4	90%
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	[NT]	[NT]	LCS-4	103%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	166060-2	02/05/2017
Date analysed	-	[NT]	[NT]	166060-2	03/05/2017
TRH C_6 - C_9	mg/kg	[NT]	[NT]	166060-2	108%
TRH C_6 - C_{10}	mg/kg	[NT]	[NT]	166060-2	108%
Benzene	mg/kg	[NT]	[NT]	166060-2	115%
Toluene	mg/kg	[NT]	[NT]	166060-2	100%
Ethylbenzene	mg/kg	[NT]	[NT]	166060-2	102%
m+p-xylene	mg/kg	[NT]	[NT]	166060-2	112%
o-Xylene	mg/kg	[NT]	[NT]	166060-2	100%
naphthalene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	166060-2	100%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	166060-2	02/05/2017
Date analysed	-	[NT]	[NT]	166060-2	02/05/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	[NT]	[NT]	166060-2	117%
TRHC$_{15}$ - C$_{28}$	mg/kg	[NT]	[NT]	166060-2	117%
TRHC$_{29}$ - C$_{36}$	mg/kg	[NT]	[NT]	166060-2	86%
TRH>C$_{10}$-C$_{16}$	mg/kg	[NT]	[NT]	166060-2	117%
TRH>C$_{16}$-C$_{34}$	mg/kg	[NT]	[NT]	166060-2	117%
TRH>C$_{34}$-C$_{40}$	mg/kg	[NT]	[NT]	166060-2	86%
Surrogate o-Terphenyl	%	[NT]	[NT]	166060-2	102%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	166060-2	02/05/2017
Date analysed	-	[NT]	[NT]	166060-2	03/05/2017
Naphthalene	mg/kg	[NT]	[NT]	166060-2	109%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	166060-2	108%
Phenanthrene	mg/kg	[NT]	[NT]	166060-2	94%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	166060-2	99%
Pyrene	mg/kg	[NT]	[NT]	166060-2	103%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	166060-2	90%
Benzo(b,j+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	166060-2	92%
Indeno(1,2,3-c,d)pyrene	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	[NT]	[NT]	166060-2	111%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	166060-2	02/05/2017
Date analysed	-	[NT]	[NT]	166060-2	02/05/2017
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	166060-2	108%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	166060-2	104%
Heptachlor	mg/kg	[NT]	[NT]	166060-2	102%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	166060-2	96%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	166060-2	109%
gamma-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	[NT]	[NT]	166060-2	118%
Dieldrin	mg/kg	[NT]	[NT]	166060-2	116%
Endrin	mg/kg	[NT]	[NT]	166060-2	94%
pp-DDD	mg/kg	[NT]	[NT]	166060-2	122%
Endosulfan II	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	[NT]	[NT]	166060-2	76%
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%	[NT]	[NT]	166060-2	127%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	166060-2	02/05/2017
Date analysed	-	[NT]	[NT]	166060-2	02/05/2017
Azinphos-methyl (Guthion)	mg/kg	[NT]	[NT]	[NR]	[NR]
Bromophos-ethyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	[NT]	[NT]	166060-2	95%
Chlorpyriphos-methyl	mg/kg	[NT]	[NT]	[NR]	[NR]
Diazinon	mg/kg	[NT]	[NT]	[NR]	[NR]
Dichlorvos	mg/kg	[NT]	[NT]	166060-2	67%
Dimethoate	mg/kg	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	[NT]	[NT]	166060-2	78%
Fenitrothion	mg/kg	[NT]	[NT]	166060-2	108%
Malathion	mg/kg	[NT]	[NT]	166060-2	71%
Parathion	mg/kg	[NT]	[NT]	166060-2	81%
Ronnel	mg/kg	[NT]	[NT]	166060-2	80%
Surrogate TCMX	%	[NT]	[NT]	166060-2	100%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	166060-2	02/05/2017
Date analysed	-	[NT]	[NT]	166060-2	02/05/2017
Aroclor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1221	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1232	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1242	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1248	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1254	mg/kg	[NT]	[NT]	166060-2	109%
Aroclor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	166060-2	100%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	166060-2	02/05/2017
Date analysed	-	[NT]	[NT]	166060-2	02/05/2017
Arsenic	mg/kg	[NT]	[NT]	166060-2	86%
Cadmium	mg/kg	[NT]	[NT]	166060-2	87%
Chromium	mg/kg	[NT]	[NT]	166060-2	92%
Copper	mg/kg	[NT]	[NT]	166060-2	99%
Lead	mg/kg	[NT]	[NT]	166060-2	80%
Mercury	mg/kg	[NT]	[NT]	166060-2	112%
Nickel	mg/kg	[NT]	[NT]	166060-2	85%
Zinc	mg/kg	[NT]	[NT]	166060-2	85%

QUALITY CONTROL Misc Soil - Inorg	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	166060-2	02/05/2017
Date analysed	-	[NT]	[NT]	166060-2	02/05/2017
Total Phenolics (as Phenol)	mg/kg	[NT]	[NT]	166060-2	100%

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 166060-1 to 8 were sub-sampled from jars provided by the client.

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

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

Douglas Partners
Geotechnics - Environment - Groundwater

CHAIN OF CUSTODY

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

Project Name: Lakemba: 20 – 21 Boorea Avenue
Project No: 85919.00 Sampler: Sam
Project Mgr: GSY Mob. Phone: 0423 564 775
Email: peter.hartcliff@douglaspartners.com.au
Date Required: Lab Quote No.

Job No: 166060
Date Received: 1/5/17
Time Received: 1520
Received by:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Attn: Tania Notaras
Phone: 02 9910 6200 Fax: 02 9910 6201
Email: tnotaras@envirolabservices.com.au

Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W – water	Container type	Analytes														Notes
						As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	BTEX/ TPH	OC/OPs/ PCBs	PAH	Phenols	Asbestos	Other Aggressivity	
BH4	0.5	1	26.4	S	Jar	x	x	x	x	x	x	x	x	x	x	x	x	x		Combo 8a
BH4	1 – 1.45	2	26.4	S	Jar	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Combo 8a
BH5	0.2	N.R	26.4	S	Jar	x	x	x	x	x	x	x	x	x	x	x	x	x		Combo 8a
BH5	0.5	3	26.4	S	Jar	x	x	x	x	x	x	x	x	x	x	x	x	x		Combo 8a
BH5	1 – 1.45	4	26.4	S	Jar	x	x	x	x	x	x	x	x	x	x	x	x	x		Combo 8a
BH2	~~0.2~~ 0.5	5	1.5	S	Jar	x	x	x	x	x	x	x	x	x	x	x	x	x		Combo 8a
BH2	2	6	1.5	S	Jar	x	x	x	x	x	x	x	x	x	x	x	x	x	x	Combo 8a
BH3	~~0.2~~ 0.5	7	27.4	S	Jar	x	x	x	x	x	x	x	x	x	x	x	x	x		Combo 8a
BH3	1 - 1.45	8	27.4	S	Jar	x	x	x	x	x	x	x	x	x	x	x	x	x		Combo 8a

Lab Report No.
Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114
Phone: (02) 9809 0666
Fax: (02) 9809 4095

Relinquished by:	Signed:	Date & Time:	Received By:	Date & Time:
			Kevin Ung	1/5/17 1520
Relinquished by:	Signed:	Date & Time:	Received By:	Date & Time:

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 166060-A

Client:

Douglas Partners Pty Ltd
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Peter Hartcliff

Sample log in details:

Your Reference:	**85919.00, Lakemba 20-21 Boorea Ave**
No. of samples:	Additional Testing on 1 Soil
Date samples received / completed instructions received	01/05/17 / 22/05/17

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:	23/05/17 / 23/05/17
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

PAHs in TCLP (USEPA 1311)		
Our Reference:	UNITS	166060-A-5
Your Reference	---------- -	BH2
Depth	----------	0.5
Date Sampled		1/05/2017
Type of sample		Soil
pH of soil for fluid# determ.	pH units	8.0
pH of soil TCLP (after HCl)	pH units	2.0
Extraction fluid used	-	1
pH of final Leachate	pH units	4.9
Date extracted	-	23/05/2017
Date analysed	-	23/05/2017
Naphthalene in TCLP	mg/L	<0.001
Acenaphthylene in TCLP	mg/L	<0.001
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	<0.001
Anthracene in TCLP	mg/L	<0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	112

Method ID	Methodology Summary
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.
Org-012	Leachates are extracted with Dichloromethane and analysed by GC-MS.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.

QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			23/05/2017	[NT]	[NT]	LCS-W1	23/05/2017
Date analysed	-			23/05/2017	[NT]	[NT]	LCS-W1	23/05/2017
Naphthalene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	71%
Acenaphthylene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Acenaphthene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Fluorene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	88%
Phenanthrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	82%
Anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Fluoranthene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	90%
Pyrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	88%
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Chrysene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	83%
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012	<0.002	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	LCS-W1	123%
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	117	[NT]	[NT]	LCS-W1	93%

Report Comments:

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

INS: Insufficient sample for this test
NR: Test not required
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PQL: Practical Quantitation Limit
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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.

Aileen Hie

From: Peter Hartcliff <Peter.Hartcliff@douglaspartners.com.au>
Sent: Monday, 22 May 2017 12:28 PM
To: Nancy Zhang
Cc: Geoff Young; Customer Service
Subject: RE: Results for Registration 166060 85919.00, Lakemba 20-21 Boorea Ave

Envirolab Ref: 166060A
Due. 23/5/17
1day T/A

Thanks Nancy,

Could we please get a 'fast' turnaround time on this one.

Cheers

Peter Hartcliff | Associate / Engineering Geologist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P 02 8878 0616 | F 02 9809 4095 | M 0423 564 775 | E Peter.Hartcliff@douglaspartners.com.au

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From: Nancy Zhang [mailto:NZhang@envirolab.com.au]
Sent: Monday, 22 May 2017 12:21 PM
To: Peter Hartcliff
Cc: Geoff Young; Customer Service
Subject: RE: Results for Registration 166060 85919.00, Lakemba 20-21 Boorea Ave

Hi Peter,

No problem, is standard TAT ok for the results?

Regards,

Nancy Zhang | Assistant Lab Manager | Envirolab Services Pty Ltd

Great Science, Great Service.

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200 F 612 9910 6201
E nzhang@envirolab.com.au | W www.envirolab.com.au

From: Peter Hartcliff [mailto:Peter.Hartcliff@douglaspartners.com.au]
Sent: Monday, 22 May 2017 12:17 PM
To: Nancy Zhang <NZhang@envirolab.com.au>
Cc: Geoff Young <Geoff.Young@douglaspartners.com.au>
Subject: RE: Results for Registration 166060 85919.00, Lakemba 20-21 Boorea Ave

Hi Nancy,

Could I please request a TCLP be conducted on BH2 (0.5m).

Thanks

Peter Hartcliff | Associate / Engineering Geologist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 PO Box 472 West Ryde NSW 1685
P 02 8876 0616 | F 02 9809 4095 | M 0423 564 775 | E Peter.Hartcliff@douglaspartners.com.au

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From: Nancy Zhang [mailto:NZhang@envirolab.com.au]
Sent: Monday, 8 May 2017 2:23 PM
To: Peter Hartcliff
Subject: Results for Registration 166060 85919.00, Lakemba 20-21 Boorea Ave

Please refer to attached for:
a copy of the Certificate of Analysis
a copy of the COC
an excel file containing the results

Please note that a hard copy will not be posted.

Enquiries should be made directly to:
customerservice@envirolab.com.au

Regards

Envirolab Services
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
www.envirolabservices.com.au

Regards,

Nancy Zhang | Assistant Lab Manager Envirolab Services Pty Ltd

Great Chemistry,Great Service

12 Ashley Street Chatswood NSW 2067

T 612 9910 6200 F 612 9910 6201
mailto:nzhang@envirolab.com.au ! http://www.envirolab.com.au

Aileen Hie

From: Geoff Young <Geoff.Young@douglaspartners.com.au>
Sent: Tuesday, 23 May 2017 8:09 AM
To: Peter Hartcliff; Aileen Hie; Nancy Zhang
Cc: Customer Service
Subject: RE: Results for Registration 166060 85919.00, Lakemba 20-21 Boorea Ave

Aileen,

It is benzo(a)pyrene.

Regards,
Geoff Young

Geoff Young Principal / Geotechnical Engineer
Douglas Partners Pty Ltd ABN 75 053 980 117 www.douglaspartners.com.au
99 Hermitage Road West Ryde NSW 2114 PO Box 472 West Ryde NSW 1685
P: 02 8878 0662 | F: 02 9809 4095 | M: 0414 716 500 | E: Geoff.Young@douglaspartners.com.au

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From: Peter Hartcliff
Sent: Monday, 22 May 2017 10:04 PM
To: Aileen Hie; Nancy Zhang
Cc: Geoff Young; Customer Service
Subject: RE: Results for Registration 166060 85919.00, Lakemba 20-21 Boorea Ave

Hi Aileen,
From memory, think the result we want to check is Benzo but Geoff will confirm in my absence tomorrow (I am on nightshift this week)
Thanks
Pete

Sent from my Windows Phone

From: Aileen Hie
Sent: 22/05/2017 5:42 PM
To: Peter Hartcliff; Nancy Zhang
Cc: Geoff Young, Customer Service
Subject: RE: Results for Registration 166060 85919.00, Lakemba 20-21 Boorea Ave

Hi Peter

What did you need tested on the TCLP leachate?