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Project 73624.01
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WFY:jlb

Stockland Developments Pty Ltd
Level 25, 133 Castlereagh Street
Sydney NSW 2000

Attention: Mr Rick McArdle

Email: rick.mcardle@stockland.com.au

Dear Sirs

Preliminary Waste Classification Report
Earthen Mound at Yennora Distribution Centre
Dennistoun Avenue, Yennora

1. Introduction and Background

This letter report by Douglas Partners Pty Ltd (DP) provides the results of an *ex situ* waste classification conducted for an existing earthen mound located in the north-western portion of Yennora Distribution Centre, Dennistoun Avenue, Yennora. Drawing 1 shows the location of the mound.

It is understood that the proposed work involves the possible removal of the existing mound for off-site disposal to a suitably licensed landfill and the construction of a new warehouse partly within the footprint of the mound. The preliminary waste classification was commissioned by Stockland Development Pty Ltd to allow planning for legal off-site disposal of the mound. The work was undertaken in accordance with DP's proposal SYD130945 dated 19 September 2013.

Based on a review of historical aerial photographs dated from 25 June 2004 to 14 August 2013, Attachment 1, the mound was initially constructed in 2006 during the development of Buildings 8B and Building 9. Building 8B is located to the south-west of the existing mound and Building 9 is located in the eastern portion of the distribution centre. The locations of Buildings 8B and 9 are depicted in the 2004 and 2005 aerial images, Attachment 1.

It is presumed that the majority of the mound, or at least the base material is generated from the construction of Buildings 8B and 9 between 2005 and 2007. Bulk excavation works commenced *circa* 2005 at the two buildings and extensive earth moving activities are visible in both the 2005 and 2006 aerial images. It appears from the 2011 aerial image that subsequent development of Building 10 may have contributed spoil with construction and demolition waste to the eastern edge of the mound. Building 10 is located immediately south of Building 9, shown in 2011 and 2012 aerial photos, Attachment 1.

A review of the previous aerial photographs indicates that Buildings 8B and (possibly) 9 footprints were originally undisturbed land with dense vegetation coverage. Based on the 2006 and 2007 aerial images, it is presumed that topsoil, natural clay and shale was removed from the construction sites and formed the base of the mound in 2007. It appears, however, that since then the mound has been used as a 'dumping ground' for spoil and various construction and demolition waste. The mound is

currently overgrown with vegetation and the northern and western edges of the mound are steep, thereby restricting access to some locations on the mound.

2. Scope of Works

The scope of works undertaken by DP included the following:

- Excavation of 12 test pits across the mound where access was available (taking into account site restrictions such as dense vegetation and steep slopes) to nominal depths of 3 m below the surface of the mound. Test Pits 1, 7 and 8 were excavated from ground level and 1 m into the mound;
- Collection of a representative sample from each identified soil horizon in each test pit;
- Visual inspection of the materials during test pitting by a DP environmental scientist for any signs of concern with respect to contamination (e.g. staining, odours and asbestos cement);
- Screening of all soil samples using a calibrated photo-ionisation detector (PID);
- Despatching 12 soil samples to a NATA accredited laboratory for quantitative analysis for the following potential contaminants:
  - The priority heavy metals arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc;
  - Polycyclic aromatic hydrocarbons (PAH);
  - Total recoverable hydrocarbons (TRH) (as an estimate for Total Petroleum Hydrocarbons (TPH));
  - Benzene, toluene, ethyl benzene and xylenes (BTEX);
  - Organochlorine pesticides (OCP);
  - Organophosphate pesticides (OPP);
  - Total Phenols;
  - Polychlorinated biphenyls (PCB);
  - Asbestos.
- QA/QC sample analysed for metals, TRH, BTEX;
- Analysis of selected sample for toxicity characteristic leaching procedure (TCLP) based on reported total concentrations; and
- Preparation of this letter report.

3. Site Description

The existing mound is located in the north-western portion of the Yennora Distribution Centre site and is bounded by Building 2 to the east, Buildings 3 and 8B to the south and west and bushland to the north.

The area of the existing mound is approximately 7500 m² and the estimated height of the mound varies significantly from a minimum of 2 m in the southern portion of the mound at to a maximum of 6 m – 7 m in the northern central portion of the mound, with an average height of about 4.5 m. The estimated volume of the mound is, therefore, approximately or greater than 15000 m³. A survey of the mound is recommended to obtain an accurate measurement of the volume.

The mound is currently overgrown with weeds, with the northern and western edges of the mound observed to be steep. The steep sided areas of the mound were inaccessible during this investigation. Temporary tracks were prepared to gain access across the mound for sampling purposes.

4. Fieldwork and Analysis

Sampling was undertaken on 25 September 2013, and comprised excavation of 12 test pits (TP1 to TP12) using a 7 tonne excavator, collection of soil samples from each pit based on the subsurface soil profiles encountered, to a maximum depth of 3 m below the surface of the stockpile. The depth of sampling was limited to the maximum reach of the excavator. The approximate test pit locations are shown on the attached Drawing 2.

Given that the assessment was preliminary in nature, 12 samples were selected from the test pits for chemical analysis. The samples were selected on the basis of composition (i.e. varying the selected sample depth to represent various strata encountered). A detailed assessment will be required following deconstruction of the mound, as discussed in Section 9.

Environmental sampling was performed in accordance to standard operating procedures outlined in the *DP Field Procedures Manual*. Relevant sampling data were recorded on DP's chain-of-custody sheets.

The general sampling procedure was as follows:

- Collection of samples from bulk soil collected in the excavator bucket, excluding any soils in contact with the bucket, and documentation of field observations (such as staining and odour);
- Samples were collected using new, disposable sampling equipment (nitrile gloves), which were replaced between each sample;
- Samples were placed into laboratory prepared jars and capped immediately with Teflon lined lids;
- Sample containers were labelled with individual and unique identification, including project number and sample location; and
- Samples were placed into a cooled, insulated and sealed container for transport to the laboratory.

5. Field Observations

The material observed during excavation generally comprised sandy and/or silty clay filling with some gravel. A fragment of potential asbestos containing material (PACM; Photo 3) was observed adjacent to Test Pit 3. A trace to some construction and demolition (C&D) waste was observed in Test Pits 2

and 12. C&D waste was most prevalent in Test Pits 1, 7 and 8. A strong, distinctive decomposition odour was also noticed in these test pits. Based on the previous aerial photos, the source of C&D waste identified in Test Pits 1, 7 and 8 is most likely to be attributed to the construction of Building 10 *circa* 2011.

A trace to some furnace waste (i.e. ash and slags) was discovered in Test Pits 3-6, 9, 10 and 12. Slags are generally used to remove waste in metal smelting and are considered a by-product of the process of smelting ore. Based on DP's previous geotechnical investigations across the distribution centre, deep and potentially uncontrolled filling overlying natural clay was generally observed. Slags found in Test Pits 3-6, 9, 10 and 12 are likely to be associated the uncontrolled nature of former fill activities undertaken at the site, which may have been subsequently excavated and placed in the mound during construction of Buildings 8D, 9 and 10.

The test pit logs are attached. PID readings on all samples were less than 1 ppm, indicating a general absence of volatile contaminants in vapour form.

6. Waste Classification Criteria

The preliminary waste classification was generally conducted in accordance with NSW DECCW (now NSW EPA) *Waste Classification Guidelines* 2008, revised July 2009 (DECCW, 2009). The material was assessed against the threshold concentrations provided in Tables 1 and 2 of the above mentioned guidelines as shown in Table 1, attached to this report. Furthermore, the classification was conducted in accordance with the six step process as set out in the DECCW (2009), and discussed further in Section 8.

7. Analytical Results

The NATA accredited laboratory selected for the analysis of the soil samples was Envirolab Services Pty Ltd (ELS). The results of laboratory analysis conducted on the soil samples are summarised in Table 1, attached. The test result certificates are also attached.

The analytical results for total heavy metals recorded concentrations of arsenic, cadmium, copper, lead, mercury, nickel and zinc within the threshold criteria for General Solid Waste without TCLP (i.e. CT1).

Total chromium was detected above the screening CT1 threshold in the filling at Test Pit 8 but within the General Solid Waste threshold criteria (SCC1), which can be used in conjunction with TCLP testing. TCLP testing on representative samples confirmed the concentrations of leachable chromium were within the TCLP threshold criteria for General Solid Waste (TCLP1). On this basis, chromium is within the General Solid Waste thresholds taking into account both total and leachable concentrations.

The analytical results showed that concentrations of TRH C_6-C_9, TRH C_{10}-$C_{36,}$ benzene, toluene, ethyl-benzene, total xylene, total PAH, PCB, phenols and OCP/OPP were either below the limit of reporting and/or within the threshold criteria for General Solid Waste (i.e. CT1 or SCC1, where applicable).

Chrysotile, amosite and crocidolite asbestos were identified embedded in several fragments of fibre cement in the sample collected from Test Pit 12 at 1 m below the surface of the mound. It is estimated that the fibre cement contains up to 15% asbestos fibres and the weight of the asbestos fibres is considered to be greater than the laboratory reporting limit. An asbestos fibre cement fragment was also observed adjacent to Test Pit 3 (not tested).

7.1 Reliability of Data

Comparison of the analytical data for the primary and intra-laboratory duplicate sample indicates that with the exception of one analyte, the calculated RPD values for the all other analytes were within the acceptable range of +/- 30% for inorganic analytes (+/-50% for organic). However, the one RPD above the acceptable range is not considered to be significant due to:

- The low actual differences in the concentrations of the replicate pairs;
- Replicates, rather than homogenised duplicates were used to avoid volatile loss; and
- Most of the recorded concentrations were at, or close to, the practical quantitation limit.

Based on the overall results, it is considered that the results indicate an acceptable consistency between the samples and their replicates and indicate that suitable field sampling methodology was adopted and laboratory precision was achieved. Therefore, the data obtained during the current waste classification is considered to be reliable.

8. Waste Classification

Waste classification of the recovered samples was conducted in accordance with the six step process as set out in the DECCW (2009) and summarised in Table 2 below.

Table 2: Six Step Classification

Step	Classification	Rationale
1. Is it special waste?	Yes	Yes. Asbestos was identified in Test Pit 12 and observed on the mound surface adjacent to Test Pit 3.
	No	No. Asbestos was not observed or analytically identified in the remaining 10 test pits.
2. Is it liquid waste?	No	The spoil comprised of soil matrix (i.e. no liquids).
3. Is the waste “pre-classified”?	No	Waste not observed to contain coal tar, batteries, lead paint or dangerous goods containers.
4. Does the waste have hazardous waste characteristics?	No	Waste not observed to/ or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances or corrosive substances.
5. Chemical Assessment	Undertaken	Soil matrix with unknown chemical characteristics.

Step	Classification	Rationale
6. Is the waste putrescible?	No	All observed components of material composed of materials pre-classified as non-putrescible (i.e. soil-based materials). Organic content is assessed to be minor.

9. Discussion and Conclusion

Based on a review of previous aerial photographs and sampling data discussed herein it is noted that much of material at the base of the mound was potentially sourced from natural materials excavated during the development of Buildings 8B and 9 between 2005 and 2007. However, it appears that since then the mound has been used as a 'dumping ground' for spoil and various construction and demolition waste over the past few years. Subsequent development of Building 10 may have contributed spoil with construction and demolition waste to the eastern edge of the mound.

Asbestos containing material (ACM) was discovered in two test locations. The materials in these two locations are pre-classified as **Special Waste (Asbestos)**, while, the remaining test locations have a provisional classification of **General Solid Waste (GSW)** subject to confirmation.

DP considers that it is not practically feasible to undertake detailed testing of the mound material *in situ* due to the depth of the waste, the large volume of material in the mound, and the inaccessibility to some areas of the mound. Given the potential for asbestos to be sporadically distributed through the mound, it is recommended that either of the following options be considered to confirm the waste classification prior to disposal:

Option 1: Classify the whole of the mound as Special Waste (Asbestos).

Option 2: Separate the mound into manageable portions (say 500 m^3) and individually sample, test and classify each portion in accordance with the waste guidelines. A minimum of three samples per portion of this size is recommended for the waste classification process. An Environmental Scientist should observe the formation of each portion so as to increase the potential of detecting ACM within the portion and to reduce the effects of mixing potentially better materials with obvious contaminated material.

Dispose of the portion in accordance with the waste classification, noting that the classification is likely to be either Special Waste (Asbestos) or GSW.

Option 3: Separate the mound into portions and waste classify as per Option 2.

If ACM is found (and no asbestos fibres are detected in the analysed soil samples) segregate the ACM from the soil matrix and, if shown to be successful, dispose of the soil in the portion as GSW (subject to chemical concentrations) and the segregated ACM as Asbestos Waste.

Options 2 and 3 would require the development of a mound deconstruction management plan which details the methodology for forming the manageable portions, supervision, sampling, testing and

classification. The plan for Option 3 would need to include a procedure for undertaking and verifying the segregation.

On completion of the removal of the mound, the Environmental Consultant is to prepare a completion report which documents all the processes undertaken and verifies that the mound has been disposed from site legally.

Note that, depending upon the composition of the material encountered, there may be an opportunity to classify part of the mound under a general waste exemption, as issued by the EPA. Should this apply, the materials would most likely fall under the *Protection of the Environment Operations (Waste) Regulation 2005 – General Exemption Under Part 6, Clause 51 and 51A, The excavated natural material exemption 2012*.

The above recommendations also apply for the partial removal of the mound, if the proposed building works do not require the whole of the mound to be moved.

10. Limitations

Douglas Partners (DP) has prepared this report for an existing earthen mound located in the north-western portion of Yennora Distribution Centre, Dennistoun Avenue, Yennora in accordance with DP's proposal SYD 130945 dated 19 September 2013. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Stockland Development Pty Ltd 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 on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

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

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

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

It should be noted that building demolition materials, such as concrete, brick and tile identified in the mound are considered as indicative of the possible presence of hazardous building materials (HBM), including asbestos.

Although the sampling plan adopted for this investigation is considered appropriate to achieve the stated project objectives, there are necessarily parts of the site that have not been sampled and analysed. This is either due to undetected variations in ground conditions or to budget constraints (as discussed above), or to parts of the site being inaccessible and not available for inspection/sampling, or to vegetation preventing visual inspection and reasonable access. It is therefore considered possible that HBM, 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 asbestos is not present.

Please contact either of the undersigned for clarification of the above as necessary.

Yours faithfully
Douglas Partners Pty Ltd

Wen-Fei Yuan
Environmental scientist

Reviewed by

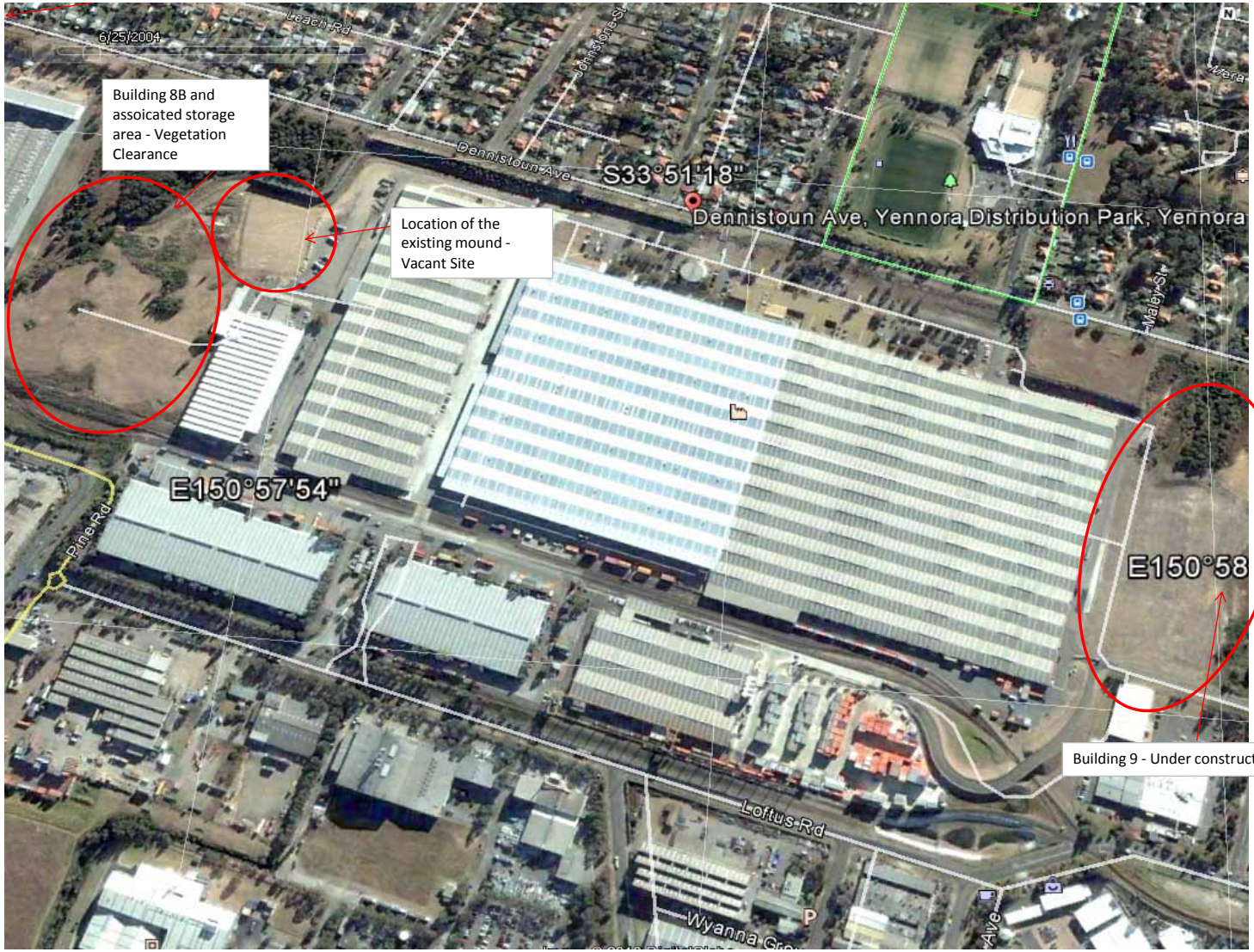
Paul Gorman
Senior Associate / Environmental Manager

Attachments:
1. Aerial Photographs
2. Site Drawings
3. Site Photographs
4. Test Pit Log Results
5. Summary of Results – Table 1
6. Laboratory Reports
7. Notes About this Report

Attachment 1

Aerial Photographs

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Location of former construction works**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	Feb. 2004
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	A



Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Location of former construction works**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	Jun. 2004
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	A

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Location of former construction works**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2005
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	A

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Location of former construction works**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2006
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	A

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Location of former construction works**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2007
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	A

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Location of former construction works**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2011
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	A

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Location of former construction works**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2009
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	A

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Location of former construction works**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2013
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	A

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Construction Progress of Existing Mound**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2004
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	0

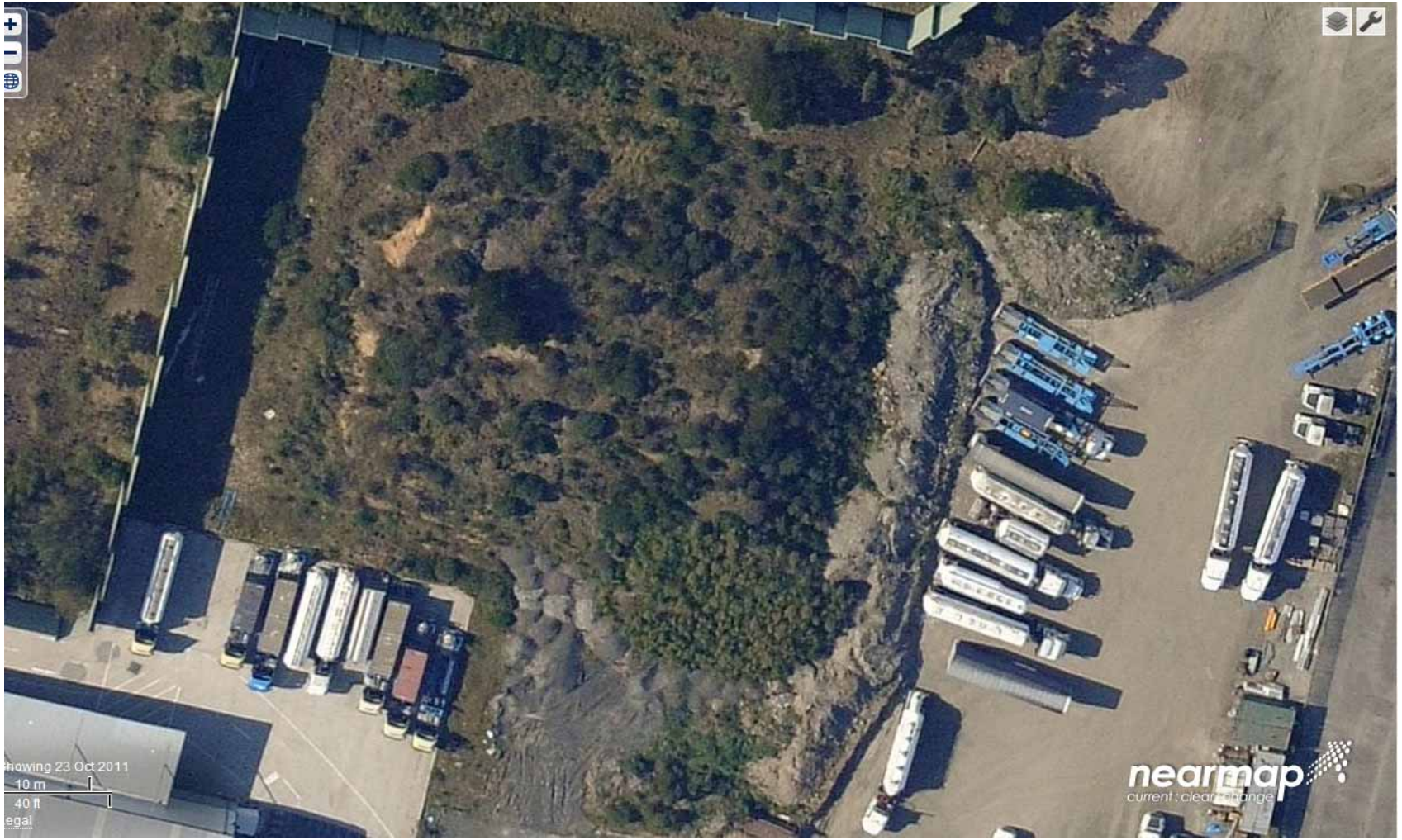
Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Construction Progress of Existing Mound**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2005
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Construction Progress of Existing Mound**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2006
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE:	**Construction Progress of Existing Mound**	PROJECT No: 73624.01
	OFFICE: Sydney	DRAWN BY: WFY		**Waste Classification Assessment**	Year 2007
	SCALE: NTS	DATE: 24.09.13		**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION: 0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Construction Progress of Existing Mound**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2009
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE:	**Construction Progress of Existing Mound**	PROJECT No: 73624.01
	OFFICE: Sydney	DRAWN BY: WFY		**Waste Classification Assessment**	Year 2010
	SCALE: NTS	DATE: 24.09.13		**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION: 0



Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Construction Progress of Existing Mound**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2011
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Construction Progress of Existing Mound**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2012
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Construction Progress of Existing Mound**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY	**Waste Classification Assessment**	Year	2013
	SCALE: NTS	DATE: 24.09.13	**Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	REVISION:	0

Attachment 2

Site Drawings

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Locality Map** **Waste Classification Assessment** **Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY		DRAWING No:	1
	SCALE: NTS	DATE: 24.09.13		REVISION:	0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Developments Pty Ltd		TITLE: **Location of Test Pits** **Preliminary Waste Classification Assessment** **Yennora Distribution Centre, Cnr Dennistoun Ave & Byron Rd, Yennora**	PROJECT No:	73624.01
	OFFICE: Sydney	DRAWN BY: WFY		Drawing	2
	SCALE: NTS	DATE: 09.10.13		REVISION:	0

Attachment 3

Site Photographs

Panoramic view of the existing earthen mound located in the north-western portion of Yennora Distribution Centre site

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Development P/L	**Site Photographs**	PROJECT No: 73624.01
	OFFICE: Sydney	**Preliminary Waste Classification**	Photo no. 1
	DATE: 11 Oct 2013	**Yennora Distribution Centre**	REVISION: 0

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: Stockland Development P/L	**Site Photographs**	PROJECT No: 73624.01
	OFFICE: Sydney	**Preliminary Waste Classification**	Photo no. 2
	DATE: 11 Oct 2013	**Yennora Distribution Centre**	REVISION: 0

Test Pit 12 - Asbestos identified in soil sample

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT:	Stockland Development P/L	**Site Photographs**	PROJECT No:	73624.01
	OFFICE:	Sydney	**Preliminary Waste Classification**	Photo no.	3
	DATE:	11 Oct 2013	**Yennora Distribution Centre**	REVISION:	0

Attachment 4

Test Pit Log Results

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.

Soil Descriptions

Douglas Partners

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, 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.

Symbols & Abbreviations

Douglas Partners

Introduction

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

Drilling or Excavation Methods

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

Water

▷	Water seep
▽	Water level

Sampling and Testing

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

Description of Defects in Rock

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

Defect Type

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

Orientation

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

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

Coating or Infilling Term

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

Coating Descriptor

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

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

Symbols & Abbreviations

Graphic Symbols for Soil and Rock

General


Asphalt


Road base


Concrete


Filling

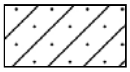
Soils


Topsoil

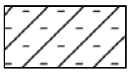

Peat


Clay

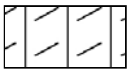

Silty clay

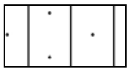

Sandy clay

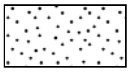

Gravelly clay

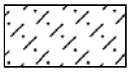

Shaly clay

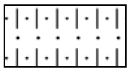

Silt


Clayey silt


Sandy silt

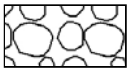

Sand

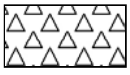

Clayey sand


Silty sand


Gravel


Sandy gravel


Cobbles, boulders

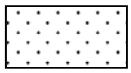

Talus

Sedimentary Rocks

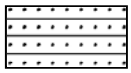

Boulder conglomerate

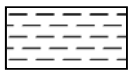

Conglomerate


Conglomeratic sandstone

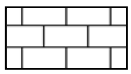

Sandstone


Siltstone


Laminite

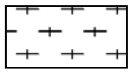

Mudstone, claystone, shale

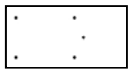

Coal


Limestone

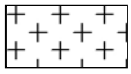
Metamorphic Rocks

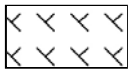

Slate, phyllite, schist

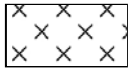

Gneiss

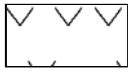

Quartzite

Igneous Rocks


Granite


Dolerite, basalt, andesite


Dacite, epidote


Tuff, breccia


Porphyry

TEST PIT LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Warehouse Development
LOCATION: Yennora Distribution Centre

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 1
PROJECT No: 73624.01
DATE: 25/9/2013
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
		FILLING - orange-brown gravelly sandy silty clay filling with some rubble (brick, tile and asphalt) and rootlets							
	1 1.0	Pit discontinued at 1.0m		E	1.0		PID<1		
	2								
	3								
	4								

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

RIG: 7T excavator

LOGGED: WFY/VK

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater observed whilst excavating

REMARKS: Test excavated 1m into mound

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Warehouse Development
LOCATION: Yennora Distribution Centre

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 2
PROJECT No: 73624.01
DATE: 25/9/2013
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0	FILLLING - orange-grey ,gravelly sandy clay with some rootlets and rubble (concrete, brick, medium to coarse gravel, timber and asphalt)							5 10 15 20
	1								1
	2								2
	3			D/E	3.0		PID<1		3
	3.0	Pit discontinued at 3.0m							
	4								4

RIG: 7T excavator

LOGGED: WFY/VK

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater observed whilst excavating

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Warehouse Development
LOCATION: Yennora Distribution Centre

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 3
PROJECT No: 73624.01
DATE: 25/9/2013
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - brown orange-brown silty clay with some shale fragments		D/E	0.5		PID<1		
	1.0	FILLING - brown/ orange-brown silty clay with some shale fragments, ash and slag		D/E	1.0		PID<1		
	3.0	Pit discontinued at 3.0m							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20; 1, 2, 3, 4

RIG: 7T excavator

LOGGED: WFY/VK

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater observed whilst excavating

REMARKS: *BD1/ 250913

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

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

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Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Warehouse Development
LOCATION: Yennora Distribution Centre

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 4
PROJECT No: 73624.01
DATE: 25/9/2013
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	1	FILLING - orange brown mottled yellow-brown clay filling with some concrete and trace of slag and rootlets		D/E	1.0		PID<1		
	2 2.0	FILLING - grey and orange-brown mottled yellow brown clay filling		D/E	2.5		PID<1		
	3 3.0	Pit discontinued at 3.0m							
	4								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: 7T excavator

LOGGED: WFY/VK

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater observed whilst excavating

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Warehouse Development
LOCATION: Yennora Distribution Centre

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 5
PROJECT No: 73624.01
DATE: 25/9/2013
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - orange brown mottled yellow-brown clay filling		D/E	0.5		PID<1		
	1.0	FILLING - brown shaly clay filling with a trace of slag		D/E	2.5		PID<1		
	3.0	Pit discontinued at 3.0m							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: 7T excavator

LOGGED: WFY/VK

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater observed whilst excavating

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Warehouse Development
LOCATION: Yennora Distribution Centre

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 6
PROJECT No: 73624.01
DATE: 25/9/2013
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - orange brown silty clay filling with some rootlets and shale fragments							
	1.5	FILLING - dark grey and orange silty clay filling with some rootlets and a trace of slag		D/E	1.5		PID<1		
	3.0	Pit discontinued at 3.0m		D/E	3.0		PID<1		

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20; 1, 2, 3, 4

RIG: 7T excavator

LOGGED: WFY/VK

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater observed whilst excavating

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Warehouse Development
LOCATION: Yennora Distribution Centre

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 7
PROJECT No: 73624.01
DATE: 25/9/2013
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - light grey gravelly clay filling with rubble (bitumen, tyre, tile and limestone)							
	1.0	Pit discontinued at 1.0m		D/E	1.0		PID=13		

RIG: 7T excavator

LOGGED: WFY/VK

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater observed whilst excavating

REMARKS: Test excavated 1m into mound

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Warehouse Development
LOCATION: Yennora Distribution Centre

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 8
PROJECT No: 73624.01
DATE: 25/9/2013
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	0.0	FILLING - dark grey, gravelly silty sand filling with some timber, concrete boulder, sandstone fragments and asphalt		D/E	1.0		PID<1		
	1.3	Pit discontinued at 1.3m							

RIG: 7T excavator

LOGGED: WFY/VK

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater observed whilst excavating

REMARKS: Test excavated 1.3m into mound

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Warehouse Development
LOCATION: Yennora Distribution Centre

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 9
PROJECT No: 73624.01
DATE: 25/9/2013
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - orange brown clay filling with some slag and shale fragments		D/E	1.5		PID<1		
	2.0	FILLING - dark brown silty clay filling with some rootlets		D/E	2.2		PID<1		
	2.25	CLAY - grey mottled orange brown silty (possible filling) clay with ironstone gravel		D/E	2.5		PID<1		
	3.0	Pit discontinued at 3.0m							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: 7T excavator
LOGGED: WFY/VK
SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater observed whilst excavating

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Warehouse Development
LOCATION: Yennora Distribution Centre

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 10
PROJECT No: 73624.01
DATE: 25/9/2013
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - dark brown silty clay filling with some medium gravel and slag		D/E	0.5		PID<1		
	1.6	CLAY - orange brown mottled grey (possible filling) clay with ironstone gravel		D/E	1.7		PID<1		
	3.0	Pit discontinued at 3.0m							

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20; 1, 2, 3, 4

RIG: 7T excavator

LOGGED: WFY/VK

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater observed whilst excavating

REMARKS: Several stockpiles of road based material observed around TP10

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Warehouse Development
LOCATION: Yennora Distribution Centre

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 11
PROJECT No: 73624.01
DATE: 25/9/2013
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
		FILLING - grey orange brown silty sandy clay filling with some medium gravel							
	0.5	FILLING - orange silty clay filling with a trace of medium gravel		D/E	0.5		PID<1		
	2.5	FILLING - brown orange silty clay with a trace of medium gravel		*D/E	2.5		PID<1		
	3.0	Pit discontinued at 3.0m		D	3.0				

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20; 1, 2, 3, 4

RIG: 7T excavator

LOGGED: WFY/VK

SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater observed whilst excavating

REMARKS: *BD2/250913

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

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

Douglas Partners
Geotechnics / Environment / Groundwater

TEST PIT LOG

CLIENT: Stockland Development Pty Ltd
PROJECT: Proposed Warehouse Development
LOCATION: Yennora Distribution Centre

SURFACE LEVEL: --
EASTING:
NORTHING:

PIT No: 12
PROJECT No: 73624.01
DATE: 25/9/2013
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per mm)
	1	FILLING - brown silty sand filling with some medium gravel and a trace of rubble (slag and concrete) and rootlets		D/E	1.0		PID<1		
	2 2.0	FILLING - grey orange silty clay filling with a trace of medium gravel and rubble (brick and concrete)		D/E	2.5		PID<1		
	3 3.0	Pit discontinued at 3.0m							
	4								

Dynamic Penetrometer Test (blows per mm): 5, 10, 15, 20

RIG: 7T excavator
LOGGED: WFY/VK
SURVEY DATUM: MGA94

WATER OBSERVATIONS: No free groundwater observed whilst excavating

REMARKS:

☐ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

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

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Attachment 5

Table 1 - Summary of Results

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Table 1: Results of Laboratory Testing (All results in mg/kg unless otherwise stated)

Sample ID	Sample Depth	Type	Heavy Metals								Polycyclic Aromatic Hydrocarbons (PAH)		Total Recoverable Hydrocarbons (TRH)		Monocyclic Aromatic Hydrocarbons (BTEX)				Total Phenol	PCB	OPP	OCP[6]	Asbestos
			Arsenic	Cadmium	Chromium[5]		Copper	Lead	Mercury	Nickel	Zinc	Benzo(a)pyrene	Total PAH	C6-C9	C10-C36	Benzene	Toluene	Ethyl-benzene	Total Xylene				
			total (mg/kg)	total (mg/kg)	total (mg/kg)	TCLP (mg/L)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	total (mg/kg)	
TP1	1	Fill	<4	<0.4	16	-	30	25	<0.1	28	47	<0.05	<PQL	<25	<250	<0.2	<0.5	<1	<3	<5	<PQL	<PQL	<PQL	NAD
TP2	3	Fill	10	<0.4	21	-	32	21	<0.1	24	69	0.07	0.3	<25	<250	<0.2	<0.5	<1	<3	<5	<PQL	<PQL	<PQL	NAD
TP3	1	Fill	10	<0.4	16	-	23	22	<0.1	14	47	<0.05	<PQL	<25	<250	<0.2	<0.5	<1	<3	<5	<PQL	<PQL	<PQL	NAD
TP4	1.5	Fill	7	<0.4	15	-	18	20	<0.1	8	30	<0.05	<PQL	<25	<250	<0.2	<0.5	<1	<3	<5	<PQL	<PQL	<PQL	NAD
TP5	2.5	Fill	6	<0.4	13	-	11	20	<0.1	5	28	<0.05	<PQL	<25	<250	<0.2	<0.5	<1	<3	<5	<PQL	<PQL	<PQL	NAD
TP6	3	Fill	5	<0.4	10	-	20	17	<0.1	8	34	<0.05	<PQL	<25	<250	<0.2	<0.5	<1	<3	<5	<PQL	<PQL	<PQL	NAD
TP7	1	Fill	<4	<0.4	32	-	43	17	<0.1	29	49	0.27	2.7	<25	<250	<0.2	<0.5	<1	<3	<5	<PQL	<PQL	<PQL	NAD
TP8	1	Fill	7	<0.4	220	<0.01	25	22	<0.1	11	42	<0.05	<PQL	<25	<250	<0.2	<0.5	<1	<3	<5	<PQL	<PQL	<PQL	NAD
TP9	2.3	Fill	<4	<0.4	4	-	12	9	<0.1	5	24	<0.05	<PQL	<25	<250	<0.2	<0.5	<1	<3	<5	<PQL	<PQL	<PQL	NAD
TP10	1.5	Fill	6	<0.4	6	-	32	19	<0.1	29	91	<0.05	<PQL	<25	280	<0.2	<0.5	<1	<3	<5	<PQL	<PQL	<PQL	NAD
TP11	2.5	Fill	7	<0.4	15	-	27	18	<0.1	17	38	<0.05	<PQL	<25	<250	<0.2	<0.5	<1	<3	<5	<PQL	<PQL	0.1	NAD
TP12	1	Fill	11	<0.4	22	-	29	25	<0.1	16	49	0.21	2.1	<25	<250	<0.2	<0.5	<1	<3	<5	<PQL	<PQL	<PQL	Asbestos Detected
BD2/250913[1]	-	-	5	<0.4	11	-	18	16	<0.1	13	34	-	-	<25	<250	<0.2	<0.5	<1	<3	-	-	-	-	-
BD1/250913[1A]	-	-	11	<0.4	14	-	23	19	<0.05	13	43	-	-	<20	<50	<0.1	<0.1	<0.1	<0.3	-	-	-	-	-
RPD[1]	-	-	33	0	31	-	40	12	0	27	11	-	-	0	0	0	0	0	0	-	-	-	-	-
RPD[1A]	-	-	10	0	13	-	0	15	0	7	9	-	-	0	0	0	0	0	0	-	-	-	-	-
Maximum values of Specific Contaminant Concentration for classification without TCLP[3]																								
General Solid Waste (CT1)			100	20	100		-	100	4	40	-	0.8	-	-	-	10	288	600	1000	288	-	-[7]	-[7]	NAD
Maximum values for Specific Contaminant Concentration and Leachable concentration (with TCLP)[4]																								
General Solid Waste (SCC1 & TCLP1)			500	100	1900		-	1500	-	1050	-	-	200	650	10000	-	-	-	-	-	<50	-[7]	<50	-

Notes

1	Intra-laboratory Replicate sample of sample TP11/2.5
1A	Inter-laboratory Replicate sample of sample TP3/1
2	Toxicity Characteristic Leaching Procedure (TCLP)
3	NSW DECC (2008) Waste Classification Guidelines Part 1: Classifying Waste, Table 1: Contaminant Threshold Values (CT1 & CT2) for classifying waste by chemical assessment without the leaching (TCLP) test
4	NSW DECC (2008) Waste Classification Guidelines Part 1: Classifying Waste, Table 2: Leachable concentration (TCLP) and specific contaminant concentration (SCC) values for classifying waste by chemical assessment
5	All Chromium are assumed to exist in the stable Cr(III) oxidation state, as Cr(VI) will be too reactive and unstable under the normal environment
6	Those included in the Scheduled Chemicals list
7	Some thresholds apply, not detailed herein as all results <PQL
-	Not Tested/Not Applicable/Not Defined
NAD	No Asbestos Detected at Reporting Limit of 0.1g/kg; Respirable Fibres Not Detected
RPD	Relative percentage difference
BOLD	exceedance of General Solid Waste (CT1)

Attachment 6

Laboratory Reports

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

CERTIFICATE OF ANALYSIS 98198

Client:
Douglas Partners Pty Ltd
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Wen-Fei Yuan

Sample log in details:

Your Reference:	**73624.01, Waste Classification Assessment**
No. of samples:	13 soils, 1 material
Date samples received / completed instructions received	27/09/13 / 27/09/13

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:	4/10/13 / 4/10/13
Date of Preliminary Report:	Not issued

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Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	98198-1	98198-2	98198-3	98198-4	98198-5
Your Reference	----------	TP1	TP2	TP3	TP4	TP5
Depth	----------	1	3	1	1.5	2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	01/10/2013	01/10/2013	01/10/2013	01/10/2013	01/10/2013
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	98	99	97	100	102

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	98198-6	98198-7	98198-8	98198-9	98198-10
Your Reference	----------	TP6	TP7	TP8	TP9	TP10
Depth	----------	3	1	1	2.3	1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	01/10/2013	01/10/2013	01/10/2013	01/10/2013	01/10/2013
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	99	99	98	95	99

vTRH(C6-C10)/BTEXN in Soil				
Our Reference:	UNITS	98198-11	98198-12	98198-13
Your Reference	----------	TP11	TP12	BD2/250913
Depth	----------	2.5	1.0	-
Type of sample		Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	01/10/2013	01/10/2013	01/10/2013
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25
vTPHC$_6$ - 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
naphthalene	mg/kg	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	99	98	98

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	98198-1	98198-2	98198-3	98198-4	98198-5
Your Reference	----------	TP1	TP2	TP3	TP4	TP5
Depth	----------	1	3	1	1.5	2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	01/10/2013	01/10/2013	01/10/2013	01/10/2013	01/10/2013
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	101	106	99	102	101

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	98198-6	98198-7	98198-8	98198-9	98198-10
Your Reference	----------	TP6	TP7	TP8	TP9	TP10
Depth	----------	3	1	1	2.3	1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	01/10/2013	01/10/2013	01/10/2013	01/10/2013	01/10/2013
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	130	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	190	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	99	101	96	97	98

svTRH (C10-C40) in Soil				
Our Reference:	UNITS	98198-11	98198-12	98198-13
Your Reference	----------	TP11	TP12	BD2/250913
Depth	----------	2.5	1.0	-
Type of sample		Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	01/10/2013	01/10/2013	01/10/2013
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
Surrogate o-Terphenyl	%	91	95	98

PAHs in Soil						
Our Reference:	UNITS	98198-1	98198-2	98198-3	98198-4	98198-5
Your Reference	----------	TP1	TP2	TP3	TP4	TP5
Depth	----------	1	3	1	1.5	2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.07	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	NIL (+)VE	0.30	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	93	109	105	108	96

PAHs in Soil						
Our Reference:	UNITS	98198-6	98198-7	98198-8	98198-9	98198-10
Your Reference	----------	TP6	TP7	TP8	TP9	TP10
Depth	----------	3	1	1	2.3	1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.5	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.5	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	0.4	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.27	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	NIL (+)VE	2.7	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	101	113	97	115	110

PAHs in Soil			
Our Reference:	UNITS	98198-11	98198-12
Your Reference	----------	TP11	TP12
Depth	----------	2.5	1.0
Type of sample		Soil	Soil
Date extracted	-	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.4
Pyrene	mg/kg	<0.1	0.4
Benzo(a)anthracene	mg/kg	<0.1	0.2
Chrysene	mg/kg	<0.1	0.2
Benzo(b+k)fluoranthene	mg/kg	<0.2	0.3
Benzo(a)pyrene	mg/kg	<0.05	0.21
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5
Total +ve PAH's	mg/kg	NIL (+)VE	2.1
Surrogate p-Terphenyl-d14	%	112	96

Organochlorine Pesticides in soil						
Our Reference:	UNITS	98198-1	98198-2	98198-3	98198-4	98198-5
Your Reference	----------	TP1	TP2	TP3	TP4	TP5
Depth	----------	1	3	1	1.5	2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
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
Surrogate TCMX	%	116	117	115	112	117

Organochlorine Pesticides in soil						
Our Reference:	UNITS	98198-6	98198-7	98198-8	98198-9	98198-10
Your Reference	----------	TP6	TP7	TP8	TP9	TP10
Depth	----------	3	1	1	2.3	1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
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
Surrogate TCMX	%	113	116	109	111	116

Organochlorine Pesticides in soil			
Our Reference:	UNITS	98198-11	98198-12
Your Reference	----------	TP11	TP12
Depth	----------	2.5	1.0
Type of sample		Soil	Soil
Date extracted	-	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013
HCB	mg/kg	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Surrogate TCMX	%	106	108

Organophosphorus Pesticides						
Our Reference:	UNITS	98198-1	98198-2	98198-3	98198-4	98198-5
Your Reference	----------	TP1	TP2	TP3	TP4	TP5
Depth	----------	1	3	1	1.5	2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Diazinon	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
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	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
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	116	117	115	112	117

Organophosphorus Pesticides						
Our Reference:	UNITS	98198-6	98198-7	98198-8	98198-9	98198-10
Your Reference	----------	TP6	TP7	TP8	TP9	TP10
Depth	----------	3	1	1	2.3	1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Diazinon	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
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	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
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	113	116	109	111	116

Organophosphorus Pesticides			
Our Reference:	UNITS	98198-11	98198-12
Your Reference	----------	TP11	TP12
Depth	----------	2.5	1.0
Type of sample		Soil	Soil
Date extracted	-	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013
Diazinon	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Surrogate TCMX	%	106	108

PCBs in Soil						
Our Reference:	UNITS	98198-1	98198-2	98198-3	98198-4	98198-5
Your Reference	----------	TP1	TP2	TP3	TP4	TP5
Depth	----------	1	3	1	1.5	2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	116	117	115	112	117

PCBs in Soil						
Our Reference:	UNITS	98198-6	98198-7	98198-8	98198-9	98198-10
Your Reference	----------	TP6	TP7	TP8	TP9	TP10
Depth	----------	3	1	1	2.3	1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	113	116	109	111	116

PCBs in Soil			
Our Reference:	UNITS	98198-11	98198-12
Your Reference	----------	TP11	TP12
Depth	----------	2.5	1.0
Type of sample		Soil	Soil
Date extracted	-	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013
Arochlor 1016	mg/kg	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1
Surrogate TCLMX	%	106	108

Total Phenolics in Soil						
Our Reference:	UNITS	98198-1	98198-2	98198-3	98198-4	98198-5
Your Reference	----------	TP1	TP2	TP3	TP4	TP5
Depth	----------	1	3	1	1.5	2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	01/10/2013	01/10/2013	01/10/2013	01/10/2013	01/10/2013
Date analysed	-	01/10/2013	01/10/2013	01/10/2013	01/10/2013	01/10/2013
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Total Phenolics in Soil						
Our Reference:	UNITS	98198-6	98198-7	98198-8	98198-9	98198-10
Your Reference	----------	TP6	TP7	TP8	TP9	TP10
Depth	----------	3	1	1	2.3	1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	01/10/2013	01/10/2013	01/10/2013	01/10/2013	01/10/2013
Date analysed	-	01/10/2013	01/10/2013	01/10/2013	01/10/2013	01/10/2013
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Total Phenolics in Soil			
Our Reference:	UNITS	98198-11	98198-12
Your Reference	----------	TP11	TP12
Depth	----------	2.5	1.0
Type of sample		Soil	Soil
Date extracted	-	01/10/2013	01/10/2013
Date analysed	-	01/10/2013	01/10/2013
Total Phenolics (as Phenol)	mg/kg	<5	<5

Acid Extractable metals in soil						
Our Reference:	UNITS	98198-1	98198-2	98198-3	98198-4	98198-5
Your Reference	----------	TP1	TP2	TP3	TP4	TP5
Depth	----------	1	3	1	1.5	2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Arsenic	mg/kg	<4	10	10	7	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	16	21	16	15	13
Copper	mg/kg	30	32	23	18	11
Lead	mg/kg	25	21	22	20	20
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	28	24	14	8	5
Zinc	mg/kg	47	69	47	30	28

Acid Extractable metals in soil						
Our Reference:	UNITS	98198-6	98198-7	98198-8	98198-9	98198-10
Your Reference	----------	TP6	TP7	TP8	TP9	TP10
Depth	----------	3	1	1	2.3	1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Arsenic	mg/kg	5	<4	7	<4	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	10	32	220	4	6
Copper	mg/kg	20	43	25	12	32
Lead	mg/kg	17	17	22	9	19
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	8	29	11	5	29
Zinc	mg/kg	34	49	42	24	91

Acid Extractable metals in soil					
Our Reference:	UNITS	98198-11	98198-12	98198-13	98198-15
Your Reference	----------	TP11	TP12	BD2/250913	TP1 - TRIPLICATE
Depth	----------	2.5	1.0	-	1
Type of sample		Soil	Soil	Soil	Soil
Date digested	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Arsenic	mg/kg	7	11	5	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	22	11	16
Copper	mg/kg	27	29	18	33
Lead	mg/kg	18	25	16	19
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	17	16	13	30
Zinc	mg/kg	38	49	34	62

Moisture						
Our Reference:	UNITS	98198-1	98198-2	98198-3	98198-4	98198-5
Your Reference	----------	TP1	TP2	TP3	TP4	TP5
Depth	----------	1	3	1	1.5	2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	1/10/2013	1/10/2013	1/10/2013	1/10/2013	1/10/2013
Moisture	%	14	15	14	15	9.3

Moisture						
Our Reference:	UNITS	98198-6	98198-7	98198-8	98198-9	98198-10
Your Reference	----------	TP6	TP7	TP8	TP9	TP10
Depth	----------	3	1	1	2.3	1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/09/2013	30/09/2013	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	1/10/2013	1/10/2013	1/10/2013	1/10/2013	1/10/2013
Moisture	%	14	6.9	14	12	14

Moisture				
Our Reference:	UNITS	98198-11	98198-12	98198-13
Your Reference	----------	TP11	TP12	BD2/250913
Depth	----------	2.5	1.0	-
Type of sample		Soil	Soil	Soil
Date prepared	-	30/09/2013	30/09/2013	30/09/2013
Date analysed	-	1/10/2013	1/10/2013	1/10/2013
Moisture	%	14	15	12

Asbestos ID - soils						
Our Reference:	UNITS	98198-1	98198-2	98198-3	98198-4	98198-5
Your Reference	----------	TP1	TP2	TP3	TP4	TP5
Depth	----------	1	3	1	1.5	2.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	4/10/2013	4/10/2013	4/10/2013	4/10/2013	4/10/2013
Sample mass tested	g	Approx 50g	Approx 50g	Approx 50g	Approx 50g	Approx 50g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Asbestos ID - soils						
Our Reference:	UNITS	98198-6	98198-7	98198-8	98198-9	98198-10
Your Reference	----------	TP6	TP7	TP8	TP9	TP10
Depth	----------	3	1	1	2.3	1.5
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	4/10/2013	4/10/2013	4/10/2013	4/10/2013	4/10/2013
Sample mass tested	g	Approx 50g	Approx 50g	Approx 50g	Approx 50g	Approx 50g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected	No respirable fibres detected

Asbestos ID - soils			
Our Reference:	UNITS	98198-11	98198-12
Your Reference	----------	TP11	TP12
Depth	----------	2.5	1.0
Type of sample		Soil	Soil
Date analysed	-	4/10/2013	4/10/2013
Sample mass tested	g	Approx 50g	55.52g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	Chrysotile asbestos detected Amosite asbestos detected Crocidolite asbestos detected

Asbestos ID - soils			
Our Reference:	UNITS	98198-11	98198-12
Your Reference	----------	TP11	TP12
Depth	----------	2.5	1.0
Type of sample		Soil	Soil
Trace Analysis	-	No respirable fibres detected	No respirable fibres detected

Asbestos ID - materials		
Our Reference:	UNITS	98198-14
Your Reference	----------	TP12 Material
Depth	----------	-
Type of sample		Soil
Date analysed	-	4/10/2013
Mass / Dimension of Sample	-	145x94x2mm
Sample Description	-	Grey semi-flexible vinyl tile & adhesive
Asbestos ID in materials	-	No asbestos detected Synthetic mineral fibre detected

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-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.
Org-012 subset	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-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
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.
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 22nd ED 5530 D.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg 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.

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	-			30/09/2013	98198-1	30/09/2013 || 30/09/2013	LCS-5	30/09/2013
Date analysed	-			01/10/2013	98198-1	01/10/2013 || 01/10/2013	LCS-5	01/10/2013
TRHC$_6$ - C$_9$	mg/kg	25	Org-016	<25	98198-1	<25 || <25	LCS-5	134%
TRHC$_6$ - C$_{10}$	mg/kg	25	Org-016	<25	98198-1	<25 || <25	LCS-5	134%
Benzene	mg/kg	0.2	Org-016	<0.2	98198-1	<0.2 || <0.2	LCS-5	128%
Toluene	mg/kg	0.5	Org-016	<0.5	98198-1	<0.5 || <0.5	LCS-5	137%
Ethylbenzene	mg/kg	1	Org-016	<1	98198-1	<1 || <1	LCS-5	133%
m+p-xylene	mg/kg	2	Org-016	<2	98198-1	<2 || <2	LCS-5	136%
o-Xylene	mg/kg	1	Org-016	<1	98198-1	<1 || <1	LCS-5	133%
naphthalene	mg/kg	1	Org-014	<1	98198-1	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	105	98198-1	98 || 96 || RPD: 2	LCS-5	102%

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	-			30/09/2013	98198-1	30/09/2013 || 30/09/2013	LCS-5	30/09/2013
Date analysed	-			01/10/2013	98198-1	01/10/2013 || 01/10/2013	LCS-5	01/10/2013
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	98198-1	<50 || <50	LCS-5	129%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	98198-1	<100 || <100	LCS-5	116%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	98198-1	<100 || <100	LCS-5	93%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	98198-1	<50 || <50	LCS-5	129%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	98198-1	<100 || <100	LCS-5	116%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	98198-1	<100 || <100	LCS-5	93%
Surrogate o-Terphenyl	%		Org-003	96	98198-1	101 || 103 || RPD: 2	LCS-5	102%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			30/09/2013	98198-1	30/09/2013 || 30/09/2013	LCS-5	30/09/2013
Date analysed	-			30/09/2013	98198-1	30/09/2013 || 30/09/2013	LCS-5	30/09/2013
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	LCS-5	116%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	LCS-5	109%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	LCS-5	98%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	LCS-5	87%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	LCS-5	110%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	LCS-5	92%
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	98198-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	98198-1	<0.05 || <0.05	LCS-5	101%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	108	98198-1	93 || 101 || RPD: 8	LCS-5	93%

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	-			30/09/2013	98198-1	30/09/2013 || 30/09/2013	LCS-5	30/09/2013
Date analysed	-			30/09/2013	98198-1	30/09/2013 || 30/09/2013	LCS-5	30/09/2013
HCB	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	LCS-5	100%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	LCS-5	98%
Heptachlor	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	LCS-5	103%
delta-BHC	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	LCS-5	102%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	LCS-5	96%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	LCS-5	111%
Dieldrin	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	LCS-5	101%
Endrin	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	LCS-5	90%
pp-DDD	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	LCS-5	115%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	LCS-5	124%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	115	98198-1	116 || 120 || RPD: 3	LCS-5	110%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			30/09/2013	98198-1	30/09/2013 || 30/09/2013	LCS-5	30/09/2013
Date analysed	-			30/09/2013	98198-1	30/09/2013 || 30/09/2013	LCS-5	30/09/2013
Diazinon	mg/kg	0.1	Org-008	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	98198-1	<0.1 || <0.1	LCS-5	94%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	98198-1	<0.1 || <0.1	LCS-5	132%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	98198-1	<0.1 || <0.1	LCS-5	111%
Surrogate TCMX	%		Org-008	115	98198-1	116 || 120 || RPD: 3	LCS-5	112%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			30/09/2013	98198-1	30/09/2013 || 30/09/2013	LCS-5	30/09/2013
Date analysed	-			30/09/2013	98198-1	30/09/2013 || 30/09/2013	LCS-5	30/09/2013
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	98198-1	<0.1 || <0.1	LCS-5	107%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	98198-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	115	98198-1	116 || 120 || RPD: 3	LCS-5	107%

QUALITY CONTROL Total Phenolics in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/10/2013	98198-1	01/10/2013 || 01/10/2013	LCS-1	01/10/2013
Date analysed	-			01/10/2013	98198-1	01/10/2013 || 01/10/2013	LCS-1	01/10/2013
Total Phenolics (as Phenol)	mg/kg	5	Inorg-030	<5	98198-1	<5 || <5	LCS-1	92%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date digested	-			30/09/2013	98198-1	30/09/2013 || 30/09/2013	LCS-3	30/09/2013
Date analysed	-			30/09/2013	98198-1	30/09/2013 || 30/09/2013	LCS-3	30/09/2013
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	98198-1	<4 || <4	LCS-3	92%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	98198-1	<0.4 || <0.4	LCS-3	93%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	98198-1	16 || 41 || RPD: 88	LCS-3	97%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	98198-1	30 || 31 || RPD: 3	LCS-3	96%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	98198-1	25 || 19 || RPD: 27	LCS-3	93%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	98198-1	<0.1 || <0.1	LCS-3	88%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	98198-1	28 || 47 || RPD: 51	LCS-3	96%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	98198-1	47 || 59 || RPD: 23	LCS-3	94%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			[NT]
Date analysed	-			[NT]
Moisture	%	0.1	Inorg-008	[NT]

QUALITY CONTROL Asbestos ID - soils	UNITS	PQL	METHOD	Blank
Date analysed	-			[NT]

QUALITY CONTROL Asbestos ID - materials	UNITS	PQL	METHOD	Blank
Date analysed	-			[NT]

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	98198-11	30/09/2013 || 30/09/2013	98198-2	30/09/2013
Date analysed	-	98198-11	01/10/2013 || 01/10/2013	98198-2	01/10/2013
TRH C_6 - C_9	mg/kg	98198-11	<25 || <25	98198-2	120%
TRH C_6 - C_{10}	mg/kg	98198-11	<25 || <25	98198-2	120%
Benzene	mg/kg	98198-11	<0.2 || <0.2	98198-2	116%
Toluene	mg/kg	98198-11	<0.5 || <0.5	98198-2	124%
Ethylbenzene	mg/kg	98198-11	<1 || <1	98198-2	118%
m+p-xylene	mg/kg	98198-11	<2 || <2	98198-2	122%
o-Xylene	mg/kg	98198-11	<1 || <1	98198-2	117%
naphthalene	mg/kg	98198-11	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	98198-11	99 || 98 || RPD: 1	98198-2	94%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	98198-11	30/09/2013 || 30/09/2013	98198-2	30/09/2013
Date analysed	-	98198-11	01/10/2013 || 01/10/2013	98198-2	01/10/2013
TRHC$_{10}$ - C$_{14}$	mg/kg	98198-11	<50 || <50	98198-2	132%
TRHC$_{15}$ - C$_{28}$	mg/kg	98198-11	<100 || <100	98198-2	137%
TRHC$_{29}$ - C$_{36}$	mg/kg	98198-11	<100 || <100	98198-2	88%
TRH>C$_{10}$-C$_{16}$	mg/kg	98198-11	<50 || <50	98198-2	132%
TRH>C$_{16}$-C$_{34}$	mg/kg	98198-11	<100 || <100	98198-2	137%
TRH>C$_{34}$-C$_{40}$	mg/kg	98198-11	<100 || <100	98198-2	88%
Surrogate o-Terphenyl	%	98198-11	91 || 99 || RPD: 8	98198-2	104%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	98198-11	30/09/2013 || 30/09/2013	98198-2	30/09/2013
Date analysed	-	98198-11	30/09/2013 || 30/09/2013	98198-2	30/09/2013
Naphthalene	mg/kg	98198-11	<0.1 || <0.1	98198-2	111%
Acenaphthylene	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	98198-11	<0.1 || <0.1	98198-2	118%
Phenanthrene	mg/kg	98198-11	<0.1 || <0.1	98198-2	96%
Anthracene	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	98198-11	<0.1 || <0.1	98198-2	86%
Pyrene	mg/kg	98198-11	<0.1 || <0.1	98198-2	102%
Benzo(a)anthracene	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	98198-11	<0.1 || <0.1	98198-2	83%
Benzo(b+k)fluoranthene	mg/kg	98198-11	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	98198-11	<0.05 || <0.05	98198-2	75%
Indeno(1,2,3-c,d)pyrene	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	98198-11	112 || 114 || RPD: 2	98198-2	94%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	98198-11	30/09/2013 || 30/09/2013	98198-2	30/09/2013
Date analysed	-	98198-11	30/09/2013 || 30/09/2013	98198-2	30/09/2013
HCB	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	98198-11	<0.1 || <0.1	98198-2	100%
gamma-BHC	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	98198-11	<0.1 || <0.1	98198-2	100%
Heptachlor	mg/kg	98198-11	<0.1 || <0.1	98198-2	105%
delta-BHC	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	98198-11	<0.1 || <0.1	98198-2	104%
Heptachlor Epoxide	mg/kg	98198-11	<0.1 || <0.1	98198-2	98%
gamma-Chlordane	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	98198-11	<0.1 || <0.1	98198-2	112%
Dieldrin	mg/kg	98198-11	0.1 || <0.1	98198-2	103%
Endrin	mg/kg	98198-11	<0.1 || <0.1	98198-2	89%
pp-DDD	mg/kg	98198-11	<0.1 || <0.1	98198-2	114%
Endosulfan II	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	98198-11	<0.1 || <0.1	98198-2	115%
Methoxychlor	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	98198-11	106 || 113 || RPD: 6	98198-2	110%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	98198-11	30/09/2013 || 30/09/2013	98198-2	30/09/2013
Date analysed	-	98198-11	30/09/2013 || 30/09/2013	98198-2	30/09/2013
Diazinon	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Dimethoate	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Ronnel	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	98198-11	<0.1 || <0.1	98198-2	93%
Fenitrothion	mg/kg	98198-11	<0.1 || <0.1	98198-2	126%
Bromophos-ethyl	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Ethion	mg/kg	98198-11	<0.1 || <0.1	98198-2	107%
Surrogate TCMX	%	98198-11	106 || 113 || RPD: 6	98198-2	115%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	98198-11	30/09/2013 || 30/09/2013	98198-2	30/09/2013
Date analysed	-	98198-11	30/09/2013 || 30/09/2013	98198-2	30/09/2013
Arochlor 1016	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	98198-11	<0.1 || <0.1	98198-2	105%
Arochlor 1260	mg/kg	98198-11	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	98198-11	106 || 113 || RPD: 6	98198-2	109%
QUALITY CONTROL Total Phenolics in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	98198-11	01/10/2013 || 01/10/2013	98198-2	01/10/2013
Date analysed	-	98198-11	01/10/2013 || 01/10/2013	98198-2	01/10/2013
Total Phenolics (as Phenol)	mg/kg	98198-11	<5 || <5	98198-2	75%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	98198-11	30/09/2013 || 30/09/2013	98198-2	30/09/2013
Date analysed	-	98198-11	30/09/2013 || 30/09/2013	98198-2	30/09/2013
Arsenic	mg/kg	98198-11	7 || 7 || RPD: 0	98198-2	101%
Cadmium	mg/kg	98198-11	<0.4 || <0.4	98198-2	95%
Chromium	mg/kg	98198-11	15 || 14 || RPD: 7	98198-2	105%
Copper	mg/kg	98198-11	27 || 24 || RPD: 12	98198-2	123%
Lead	mg/kg	98198-11	18 || 18 || RPD: 0	98198-2	99%
Mercury	mg/kg	98198-11	<0.1 || <0.1	98198-2	93%
Nickel	mg/kg	98198-11	17 || 21 || RPD: 21	98198-2	103%
Zinc	mg/kg	98198-11	38 || 45 || RPD: 17	98198-2	91%

Report Comments:

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteriae has been exceeded for 98198-1 for Cr, Ni. Therefore a triplicate result has been issued as laboratory sample number 98198-15.

Asbestos: Excessive sample volume was provided for asbestos analysis. A portion of the supplied sample was sub-sampled according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.

Sample 98198-12; Chrysotile, Amosite & Crocidolite asbestos identified embedded in several fragments of fibre cement (total weight 3.9615g). It is estimated that the fibre cement contains up to 15% asbestos fibres by weight. This calculates to 0.5942g of asbestos fibres, which in 55.52g of soil is 10.70g/kg (i.e. > reporting limit for the method of 0.1g/kg).

Asbestos ID was analysed by Approved Identifier:	Alex Tam
Asbestos ID was authorised by Approved Signatory:	Matt Mansfield

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: 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 and 10-140% for SVOC 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.

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET (2)

Project Name: Waste Classification Assessment
Project No: 73624.01
DP Contact Person: Wen-Fei Yuan
Prior Storage: esky / fridge / shelved (circle)
Do samples contain HBM? YES/NO
(If YES, then handle, transport and store in accordance with FPM HAZID)

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Ph Phone: 02 9910 6200 Fax: 02 9910 6201
Attn: Tania Notaras

Sample ID	Sample Type S-soil W-water	Lab ID	Analytes: Combo 8A	HM	TRH/ BTEX													Notes
TP1/1m	S	1	✓															
TP2/3m		2																
TP3/1m		3																
TP4/1.5m		4																
TP5/2.5m		5																
TP6/3m		6																
TP7/1m		7																
TP8/1m		8																
TP9/2.3		9																
TP10/1.5		10																
TP11/2.5	↓	11	↓															
PQL (S)	mg/kg																	
PQL (W)	mg/L																	

ENVIROLAB

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

Job No: 98198
Date Received: 27/9/13
Time Received: 1500
Received by: JYH
Temp: Cool/Ambient 8.3
Cooling: Ice/Icepack
Security: Intact/Broken/None

PQL = practical quantitation limit, *As per Laboratory Method Detection Limit

Date relinquished: 27.09.2013
Total number of samples in container:
Results required by: WFY

SAMPLES RECEIVED
Please sign and date to acknowledge receipt of samples and return by e-mail

Signature:
Date: 27/9/13 Lab Ref: 98198

Send results to:
Douglas Partners Pty Ltd
Postal Address:
PO Box 472 West Ryde NSW 1685

E-mail: wenfei.yuan@douglaspartners.com.au

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET (2)

Project Name: Waste Classification Assessment
Project No: 73624.01
DP Contact Person: Wen-Fei Yuan
Prior Storage: esky / (fridge) / shelved (circle)
Do samples contain HBM? (YES)/NO
(If YES, then handle, transport and store in accordance with FPM HAZID)

To: Envirolab Services
12 Ashley Street, Chatswood NSW 2068
Ph Phone: 02 9910 6200 Fax: 02 9910 6201
Attn: Tania Notaras

Sample ID	Sample Type S-soil W-water	Lab ID	Analytes: Combo 8A	HM	TRH/ BTEX	Asbestos												Notes
TP12/1.0	S	12	✓															
BD2/250913	S	13		✓	✓													
TP12	Material	14				✓												
PQL (S)	mg/kg																	
PQL (W)	mg/L																	

PQL = practical quantitation limit, *As per Laboratory Method Detection Limit

Date relinquished: 27.09.2013
Total number of samples in container:
Results required by: WFY..... jan.

SAMPLES RECEIVED
Please sign and date to acknowledge receipt of samples and return by e-mail

Signature: ...
Date: 27/9/13 Lab Ref: 98198

Send results to:
Douglas Partners Pty Ltd
Postal Address:
PO Box 472 West Ryde NSW 1685

E-mail: wenfei.yuan@douglaspartners.com.au

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Douglas Partners (Syd)
96 Hermitage Road
West Ryde
NSW 2114

Attention: **Wen Fei Yuan**

Report **394523-S**
Client Reference WASTE CLASSIFICATION ASSESSMENT 73624.01
Received Date Sep 30, 2013

Client Sample ID			**BD1/250913**
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**S13-Se22396**
Date Sampled			**Sep 25, 2013**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	121
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
Heavy Metals			
Arsenic	2	mg/kg	11
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	14
Copper	5	mg/kg	23
Lead	5	mg/kg	19
Mercury	0.05	mg/kg	< 0.05
Nickel	5	mg/kg	13
Zinc	5	mg/kg	43
% Moisture	0.1	%	14

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Oct 03, 2013	14 Day
- Method: E004 Petroleum Hydrocarbons (TPH)			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Oct 03, 2013	14 Day
- Method: LM-LTM-ORG2010			
BTEX	Sydney	Oct 03, 2013	14 Day
- Method: E029/E016 BTEX			
Metals M8	Sydney	Oct 03, 2013	28 Day
- Method: E022 Acid Extractable metals in Soils & E026 Mercury			
% Moisture	Sydney	Oct 03, 2013	28 Day
- Method: E005 Moisture Content			

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ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com.au web : www.eurofins.com.au

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F6, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Douglas Partners (Syd)	**Order No.:**		**Received:**	Sep 30, 2013 2:00 PM
Address:	96 Hermitage Road West Ryde NSW 2114	**Report #:** **Phone:** **Fax:**	394523 02 9809 0666	**Due:** **Priority:** **Contact Name:**	Oct 8, 2013 5 Day Wen Fei Yuan
Client Job No.:	WASTE CLASSIFICATION ASSESSMENT 73624.01				

Eurofins | mgt Client Manager: Jean Heng

Sample Detail					% Moisture	Metals M8	BTEX	Total Recoverable Hydrocarbons
Laboratory where analysis is conducted								
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217					X	X	X	X
Brisbane Laboratory - NATA Site # 20794								
External Laboratory								
Sample ID	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
BD1/250913	Sep 25, 2013		Soil	S13-Se22396	X	X	X	X

Eurofins | mgt Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
4. Results are uncorrected for matrix spikes or surrogate recoveries.
5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Acknowledgment.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

****NOTE:** pH duplicates are reported as a range NOT as RPD

UNITS

mg/kg: milligrams per Kilogram

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Units

TERMS

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery
CRM	Certified Reference Material - reported as percent recovery
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environment Protection Authority
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries : Recoveries must lie between 50-150% - Phenols 20-130%.

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Arochlor 1260 in Matrix Spikes and LCS's.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions E004 Petroleum Hydrocarbons (TPH)							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX E029/E016 BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions LM-LTM-ORG2010							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH C6-C10 less BTEX (F1)	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Metals M8 E022 Acid Extractable metals in Soils & E026 Mercury							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.05			0.05	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions E004 Petroleum Hydrocarbons (TPH)							
TRH C6-C9	%	102			70-130	Pass	
TRH C10-C14	%	75			70-130	Pass	
LCS - % Recovery							
BTEX E029/E016 BTEX							
Benzene	%	111			70-130	Pass	
Toluene	%	111			70-130	Pass	
Ethylbenzene	%	115			70-130	Pass	
m&p-Xylenes	%	113			70-130	Pass	
o-Xylene	%	113			70-130	Pass	
Xylenes - Total	%	113			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions LM-LTM-ORG2010							
Naphthalene	%	116			70-130	Pass	
TRH C6-C10	%	101			70-130	Pass	
TRH >C10-C16	%	83			70-130	Pass	
LCS - % Recovery							
Metals M8 E022 Acid Extractable metals in Soils & E026 Mercury							

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Arsenic			%	101			70-130	Pass	
Cadmium			%	77			70-130	Pass	
Chromium			%	92			70-130	Pass	
Copper			%	93			70-130	Pass	
Lead			%	83			70-130	Pass	
Mercury			%	96			70-130	Pass	
Nickel			%	96			70-130	Pass	
Zinc			%	95			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S13-Se22507	NCP	%	81			70-130	Pass	
TRH C10-C14	S13-Oc01830	NCP	%	80			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S13-Se22507	NCP	%	90			70-130	Pass	
Toluene	S13-Se22507	NCP	%	90			70-130	Pass	
Ethylbenzene	S13-Se22507	NCP	%	92			70-130	Pass	
m&p-Xylenes	S13-Se22507	NCP	%	91			70-130	Pass	
o-Xylene	S13-Se22507	NCP	%	89			70-130	Pass	
Xylenes - Total	S13-Se22507	NCP	%	90			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S13-Se22507	NCP	%	84			70-130	Pass	
TRH C6-C10	S13-Se22507	NCP	%	78			70-130	Pass	
TRH >C10-C16	S13-Oc01830	NCP	%	88			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	S13-Oc03452	NCP	%	91			70-130	Pass	
Cadmium	S13-Oc03452	NCP	%	79			70-130	Pass	
Chromium	S13-Oc03452	NCP	%	89			70-130	Pass	
Copper	S13-Oc03452	NCP	%	98			70-130	Pass	
Lead	S13-Oc03452	NCP	%	89			70-130	Pass	
Mercury	S13-Oc03702	NCP	%	95			70-130	Pass	
Nickel	S13-Oc03452	NCP	%	90			70-130	Pass	
Zinc	S13-Oc03452	NCP	%	93			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S13-Se22507	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S13-Oc01830	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S13-Oc01830	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S13-Oc01830	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S13-Se22507	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S13-Se22507	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S13-Se22507	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S13-Se22507	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S13-Se22507	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S13-Se22507	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S13-Se22507	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S13-Se22507	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C6-C10 less BTEX (F1)	S13-Se22507	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S13-Oc01830	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S13-Oc01830	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S13-Oc01830	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	S13-Oc03452	NCP	mg/kg	< 2	5.3	150	30%	Fail	Q15
Cadmium	S13-Oc03452	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S13-Oc03452	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S13-Oc03452	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S13-Oc03452	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S13-Oc03702	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S13-Oc03452	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S13-Oc03452	NCP	mg/kg	14	15	7.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q15	The RPD reported passes Eurofins | mgt's Acceptance Criteria as stipulated in SOP 05. Refer to Glossary Page of this report for further details

Authorised By

Jean Heng	Client Services
James Norford	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Organic (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)

Dr. Bob Symons
Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Attachment 7

Notes About this Report

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.