Douglas Partners
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REPORT
on
PRELIMINARY ACID SULPHATE SOIL ASSESSMENT

VEHICLE AND PEDESTRIAN SAFETY (VAPS) PROJECT
SYDNEY OPERA HOUSE
BENNELONG POINT

Prepared for
SYDNEY OPERA HOUSE TRUST

Project 71529.02
June 2010

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EXECUTIVE SUMMARY

An Acid Sulphate Soil Assessment was conducted for the VAPS project in conjunction with a contamination assessment (DP Project 71529.01). The objective of the assessment was to investigate the potential for the presence of acid sulphate soils on the subject site, and to evaluate the likely impact associated (including implications for waste classification in Project 71529.01) with ASS, if present.

The site is currently occupied The Sydney Opera House and Opera House Forecourt. It is understood that the construction of a new underground loading dock with associated new lifts, a truck turning-bay and an entry/access tunnel to facilitate a central loading dock below the Opera House is proposed. Other aspects of the VAPS project include the diversion of existing high voltage (HV) cables and the historic stormwater channel from beneath the main House building, to an outlet at the Man-O-War steps.

Field and analytical results have been compared to the ASSMAC guidelines, to assess the potential presence of acid sulphate soils (ASS) and potential acid sulphate soils (PASS) at the site.

Based on the results of the assessment it is considered that the materials encountered in the test bores did not contain actual acid sulphate soils or potential acid sulphate soils. Therefore based on the findings at this stage no acid sulphate soils management plan is deemed necessary.

It is, however, recommended that the materials be inspected following excavation by a qualified environmental consultant, particularly where refusal was encountered in the filling, in areas where deeper filling was encountered (i.e. near the Man-O-War Steps) and in between test bore locations to confirm that the underlying materials are consistent with those observed (and tested) during the current investigation. If the materials are inconsistent with those observed during the current investigation or if signs of acid sulphate soils are detected then additional assessment should be conducted to confirm the presence/absence of potential or actual acid sulphate soils.

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Project 71529.02
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REPORT ON
PRELIMINARY ACID SULPHATE SOIL ASSESSMENT
VEHICLE AND PEDESTRIAN SAFETY (VAPS) PROJECT
SYDNEY OPERA HOUSE, BENNELONG POINT

1. INTRODUCTION

This report presents the results of an Acid Sulphate Soil Assessment (ASS) conducted by Douglas Partners Pty Ltd (DP) at the Sydney Opera House forecourt in support of the Vehicle and Pedestrian Safety (VAPS) project. The work was requested by Marie Khoury of the Sydney Opera House Trust.

The site is currently occupied by The Sydney Opera House and Opera House Forecourt. It is understood that the construction of a new underground loading dock with associated new lifts, a truck turning-bay and an entry/access tunnel to facilitate a central loading dock below the Opera House is proposed. Other aspects of the VAPS project include the diversion of existing high voltage (HV) cables and the historic stormwater channel from beneath the main House building, to an outlet at the Man-O-War steps.

It is understood that the requirement for an Acid Sulphate Soil (ASS) assessment was triggered by the Sydney Regional Environmental Plan (Sydney Harbour Catchment).

The objective of the current assessment is to investigate the possible presence of acid sulphate soils underlying the site and their potential impacts, if any.

The acid sulphate soil assessment was undertaken in conjunction with a preliminary contamination assessment (DP Project 71529.01). The findings of the preliminary contamination assessment are reported separately in DP report 71529.01.

2. BACKGROUND

Coastal, low-lying alluvial soils, located generally below about RL 5.0 AHD, may contain framboidal pyrite or other sulphides. These are rounded, microbially generated microscopic mineral grains. In situations where these materials are present in soils below the water table, or in dense clay-rich soils that are periodically re-wetted, the sulphides are kept out of contact with air and hence remain in a relatively un-oxidised form. Under such circumstances the sulphides are generally in "equilibrium" with the local environment. Soils which have appreciable pyrite or other sulphides which have not yet reacted significantly with air are referred to as Potential Acid Sulphate Soils, or PASS.

If such sulphide-bearing or pyritic soils are disturbed by excavation, thereby allowing ready access of oxygen to the sulphides from air, an oxidation reaction takes place. This results in the generation of sulphuric acid, or acid sulphates. Pyritic soils, which have begun to generate acid, are referred to as Actual Acid Sulphate Soils, or AASS. The acid is transported by water, and if allowed to build up in sufficient concentrations, poses a direct environmental threat to plants and organisms that come in contact with such waters.

Additionally, increasingly acidic waters can dissolve many metal ions in soils which would otherwise remain insoluble. The dissolved metallic ions will then be available for uptake by organisms. These ions comprise aluminium and iron, plus a suite of heavy metals such as zinc, lead and cadmium, which at elevated levels can be toxic to plants, animals and humans.

The measure of acidity in waters is pH. Pure water has a pH of 7; pH values below 7 are acidic, pH values above 7 are basic, or alkaline. The pH scale is not linear: a decrease of 1 pH unit represents a 10-fold increase in the concentration of dissolved hydrogen ions, which is what produces acidity. The change in pH of a natural body of water from 5 to 4 is 10 times as undesirable as a change from 6 to 5; the change from 5 to 3 is 100 times as undesirable.

Most organisms can cope with pH in the neutral range (ideally between 5.5 to 8.5). In natural waters, pH values below 5 are undesirable; below 4, they are unacceptable being weak acids.

Acid soil and conditions may also have a corrosive impact on man made structures, particularly those formed from concrete and steel.

3. SITE DESCRIPTION

3.1 Site Identification and Topography

The Sydney Opera House is located on Bennelong Point on Sydney Harbour. Bennelong Point is bounded by Circular Quay to the west and Farm Cove to the east. The Sydney Opera House and the adjoining forecourt occupy an area of approximately 30,000 m^2. It extends from the vertical rock cutting to the south known as the Tarpeian Way to the northern tip of the Bennelong Point, a distance of approximately 250 m. The width of the site is approximately 120 m in an east-west direction.

The site is broadly level, with the Opera House forecourt and surrounding boardwalks at approximately 3 m to 5 m above the harbour seawater level, at approximately RL 3.6 m AHD. The Opera House itself comprises a complex of terraced theatres and halls linked together beneath a roof comprising sets of interlocking vaulted shells surrounded by terrace areas that function as pedestrian concourses.

An underground car-park comprising two concentric cylindrical excavations to depths of approximately 40 m is located to the south of the Opera House and the Tarpeian Way cliffline. The Sydney Harbour Tunnel is located within about 80 m of the western seawall of the Sydney Opera House and strikes in an approximately north-north-west orientation.

A site location plan and site layout are shown on Drawing 1 in Appendix A. The current investigation site is defined by the footprint of the proposed tunnel and loading bay and the proposed stormwater deviation as shown on Drawing 1.

3.2 Proposed Development

The proposed VAPS development involves the construction of a new underground loading and delivery dock below the existing driveway entrance and Monumental Steps. The purpose of the development is to restrict the use of the existing Forecourt area to taxis and VIP vehicles only, thereby enhancing pedestrian safety and improving the aesthetics of the Opera House for patrons arriving and departing. It is understood that two service corridors are to be constructed as tunnels below the main Opera House building, extending to the north from the loading dock area. These service tunnels are to provide storage areas together with access to new internal lifts.

It is understood that the main part of the loading dock will be located underneath the Monumental Steps. The base of the new loading dock will be at RL -10.97 m (AHD) {Level -36 foot} and will be approximately 14.6 m below the Ground Floor Level at RL +3.66 m (AHD) {Level +12 foot}.

The loading dock will be accessed via a new vehicle entry access tunnel located beneath the forecourt area, starting from near the current main gate house and extending in a north-easterly direction towards the Opera House. The architectural drawings indicate that the width of the tunnel will be about 11 m. The southern section of the access tunnel will be located close to the Tarpeian Way cliff line and the alignment of the Sydney Harbour Tunnel.

The dimensions of the main loading dock are about 45 m x 35 m in plan. The main loading dock area will also include a turning bay to accommodate large semi-trailer trucks, extending 20 – 25 m eastwards, towards the Man-O-War Steps. The two service corridors (eastern and western) will extend as tunnels from the base of the loading dock for a length of between 45 – 55 m beneath the main building, towards the central part of the Opera House. The eastern tunnel is shown as approximately 11 m in width in the plan provided, but is intended to be reduced to 8 m and will extend to a proposed new temporary scenery lift located below the

set storage area. This corridor may also provide a storage area for containers. The western tunnel is approximately 6 – 7 m in width and will link-up with the existing "Lift 12". A new goods lift will also be located midway along the western corridor. All three lift pits are shown to extend locally down to approximately RL -15 m (AHD), about 3 m lower than the proposed floor level of the service tunnels.

The proposed works will also include the diversion of the historic Bennelong Drain beneath the Opera House Forecourt, between the Monumental Steps and the Tarpeian Way to a new outflow point near the Man-O-War Steps.

3.3 Site Geology

Reference to the 1:100,000 Geological Map Sheet for Sydney indicates that the site is underlain by filling and/or a soil layer overlain by Triassic-Aged Hawkesbury Sandstone. The Hawkesbury Sandstone typically comprises medium to coarse-grained quartz sandstone with very minor shale and laminite lenses. Field observations generally confirm the published geological mapping.

4. SCOPE OF WORK

The investigation focuses only on the ASS/PASS issues. It comprised:-

- A desktop review including a review of site plans and drawings for the proposed development, as well as a review of the ASS Risk Map and Sydney Regional Environmental Plan (Sydney Harbour Catchment);
- A site visit to visually assess the likelihood of ASS conditions at the depth of proposed excavation;
- Collection of soil samples from six (6) test bores drilled for the purpose of preliminary contamination assessment (DP Project 71529.01) at 0.5 m, then at 0.5 m intervals till test bore completion;

- Screening of all samples against field pH and oxidised pH to provide an indication of the samples most likely to be ASS;
- On the basis of screening pH tests, four samples were selected for despatch to a NATA registered analytical laboratory for Suspension Peroxide Oxidation Combined Acidity and Sulphate (SPOCAS) testing as per Method 21 of the *NSW Acid Sulphate Soil Management Advisory Committee Manual (1998)* [ASSMAC]; and
- Preparation of an Acid Sulphate Soil Assessment Report summarising field work and the results of the SPOCAS analysis.

5. ACID SULPHATE SOIL PLANNING MAP REVIEW

The Department of Land and Water Conservation Acid Sulphate Soil Risk Map (1:25,000) for Prospect and Parramatta River (9130N3) indicates that the site is locates in an area classed as X2 – disturbed terrain. The Map described disturbed terrain as land that may include "*filled areas which occur during reclamation of low lying swamps for urban development. Other disturbed terrain includes areas which have been mined or dredged or have undergone heavy ground disturbance through general urban development or construction of dams or levees*". The map indicates that "*soil investigations are required to assess these areas for potential acid sulphate soils*".

The desktop review also included a review of the Sydney Regional Environment Plan (Sydney Harbour Catchment), 2005. The plan applies to land in the Foreshores and Waterways Area that are within Zone W1, W2, W3, W4, W5, W6, W7, W8 or 8(a). The plan indicates that the site is not within any of the above listed zones.

6. ASSESSMENT CRITERIA

The action criteria for acid sulphate soils are sourced from the Acid Sulphate Soils Management Advisory Committee (ASSMAC) *Acid Sulphate Soils Assessment Guidelines* (1998). With respect to the soils observed at the site, the results were compared against the

action criteria for greater than 1000 tonnes disturbed. The action criteria for 'sands to loamy sands' ('Coarse Texture') have been adopted for sands and gravels and the action criteria for sandy loams to light clays ("medium texture") used for sandy clay materials. The Action Criteria are listed in Table 1.

Table 1 - ASSMAC Action Criteria

Screening Criteria		**Screening Levels**	
		Coarse Texture	**Medium Texture**
Laboratory Results pH	pH_f	<4	<4
	pH_{fox}	<3.5	<3.5
	Change	>1	>1
Action Criteria		**Threshold[1]**	**Threshold[2]**
Acid Trail (mol H^+/tonne	TPA	18	18
	TSA	18	18
Sulphur trail (%)	Spos	0.03	0.03

Notes:

1. ASSMAC Action Criteria for disturbance of greater 1000 tonnes of material for coarse texture materials
2. ASSMAC Action Criteria for disturbance of greater 1000 tonnes of material for medium texture materials

TPA Total Potential Acidity

TSA Total Sulphidic Acidity (TPA -TAA)

S_{POS} Peroxide oxidisable sulphur

pH_f non-oxidised pH - this measures existing acidity.

pH_{fox} oxidised pH - this measures potential acidity.

Change (pH_{fox} - pH_f) - the larger the difference from (pH_{fox}) to (pH_f) , the more likely of the soil being Potential ASS.

7. FIELD WORK

7.1 Field Work Methodology

All sample locations were cleared for services and pipes using Dial-before-you-dig information and an electro-magnetic sweep by an accredited service locater. A ground penetrating radar survey was completed at each location to attempt to identify deeper services and services not typically detectable by electromagnetic sweeps (such as clay and concrete pipes).

In addition to the electromagnetic and GPR sweeps, an additional concrete thickness radar survey was conducted at Test Bore 206 in an attempt to identify the locations of the underground beam pairs in conjunction with a review of the GBG Report entitled Investigation using Ground Penetrating Radar of the Subsurface Construction of the Concourse East, Sydney Opera House, Sydney, NSW dated 4 March 2010. The GBG report was relied upon for the locations of the beam pairs in view of the inconclusive results of the GPR and concrete radar surveys.

The limestone pavement in the forecourt (where Test Bores 201 to 204 were located) was removed by Opera House Staff to expose the underlying cement/concrete. The cement and concrete was then pre-cored using a 150 mm diameter diatube corer with a wetvac to reduce drilling fluids. Test Bore 205 was located on a bitumen pavement and was pre-cored with a 150 mm diatube corer.

Test Bores 201 to 205 were drilled using a truck mounted Scout Rig. The rig was moved into position after the pavement was removed and underlying concrete/bitumen cored. Once in position barricades were put in place to prevent vehicle and pedestrian access to the works area.

At Test Bore 206 a pilot hole was cored through the asphalt and concrete using a 50 mm diameter diatube corer. Following the completion of the pilot hole demonstrating that the hole was not located over a beam pair a 150 mm core was cored over the top of the pilot hole. Once the concrete core was removed a bobcat mounted drilling rig was moved into

position and barricades put in place to prevent vehicle and pedestrian access to the works area.

The field investigation comprised the drilling of six test bores (BH201 to BH206) to depths of between 13.5 m and 17.1 m. The borehole locations were set out relative to existing surface features (e.g. walls, staircases and gutters). The locations of test bores are shown in Drawing 1 within Appendix A.

Each bore was drilled using solid, spiral flight augers. Test bores were extended to borehole refusal (on sandstone or in filling) to depths of between 0.9 m and 2.9 m.

All Environmental sampling was performed according to standard operating procedures outlined in the DP *Field Procedures Manual*. All sampling data will be recorded on DP chain of custody sheets. The general soil sampling procedure comprised:-

- Collection of soil samples from auger returns at 0.5m then at 0.5 m intervals and at test bore completion;
- decontamination of all sampling equipment using a 3% solution of phosphate free detergent (Decon 90) and distilled water prior to collecting each sample;
- transfer of samples into sealable plastic bags. All air was removed from the bags before they were sealed;
- labelling of sample bags with individual and unique identification, including project number, sample location and sample depth; and
- placement of the sample bags into a cooled, insulated and sealed container for transport to DP offices where upon they were placed in a freezer to prevent oxidation and sent to the laboratory in a cooled insulated container (following acid sulphate soil screening).

NATA accredited laboratories were employed to conduct the sample analysis. The laboratories are required to carry out routine in-house QC procedures.

The approximate ground surface level for the boreholes was determined by interpolation between survey makers shown on the drawing prepared by Hard & Forester Consulting Surveyors, 2005 entitled: Sydney Opera House Survey Control Plan, Ground Floor +12

External, in particular, Sydney Opera House Bench Mark P6-01 (SOHBM – P6-01). SOHBM P6-01 was located at the base of the foyer stairs adjacent to the eastern boardwalk, a distance of between 7 m and 17 m from the borehole locations. The Reduced Level (RL) shown on SOHBM – P6-01 is understood to be relative to AHD.

7.2 Acid Sulphate Soils Screening Methodology

The following methodology was adopted for pH and peroxide pH screening test:-

pH measurement

- Placement of 5 g material in small glass container;
- Addition of 25 mL water, mix; and
- Measurement of pH using a calibrated TPS WP80D Dual pH-mV and Temperature probe.

Peroxide pH measurement

- Placement of 5 g of soil in a small glass container;
- Addition of a few drops of pH adjusted 30% peroxide;
- Observation of sample for effervescence, colour change or odour;
- Additional of 25 mL water, mix; and
- Measurement of pH using a TPS WP80D Dual pH-mV and Temperature probe.

Sampling equipment was rinsed and washed with distilled water between sampling locations.

Based on the results of the acid sulphate soil screening selected samples were chosen for SPOCAS analysis.

8. RESULTS

8.1 Field Observations

During field investigations for the current assessment, the subsoil profile observed in the test bores generally comprised filling consisting of gravelly sand with some concrete and cobble (ballast) inclusions underlain by sandstone. The depth of filling varied across the site from 0.8 m to 2.7 m (although in Bores 201, 203 and 206 refusal was encounter in the filling before reaching sandstone), generally increasing in depth on the eastern side of the site. Bores 201, 202 and 206 were terminated at relatively shallow depths of 1.8 m, 1.3 m and 1.3 m below ground level respectively (probably on concrete rubble or ballast). Groundwater was not encountered in the bores with the exception of Test Bore 205 where water was intercepted at a depth of 2.2 m. It is also noted that Test Bore 205 (near the Man-O-War steps) had the deepest filling encountered during the investigation (2.7 m) which included some clayey layers.

The materials encountered in the test bores did not include any of the typical indicators of actual or potential acid sulphate soils such as peaty materials, organic layers or organic odours. Furthermore, as groundwater was not encountered in the majority of bores (and was therefore likely present in the underlying sandstone, the probability of un-oxidised acid sulphate soils was unlikely.

Sampling locations are shown in Drawing 1, Appendix A, and the details of the subsurface conditions encountered are shown on Test Bore Reports in Appendix B.

8.2 Screening Test Results for ASS

The results of field pH and peroxide pH are presented in Table 2.

Table 2 - Results of ASS Field Testing

Sample ID	Sample Description+	Screening Results					
		pH^			Observations		
		pH_f	pH_{fox}	Change	Reaction Strength	Colour Change	Odour
201/0.5	Sand Filling	9.1	8.2	-0.9	1	No	No
201/1.0	Sand Filling	10.1	9.4	-0.7	1	No	No
201/1.5	Gravelly sand filling	10.5	10.1	-0.4	1	No	No
202/0.5	Gravelly sand filling	10.4	10.4	0	1	No	No
202/0.9	Sandstone	9.5	10.3	0.8	1F	No	No
203/0.5	Gravelly sand filling	9.6	8.6	-1	1F	No	No
203/1.0	Gravelly sand filling	9.7	8.8	-0.9	1	No	No
204/0.5	Crushed sandstone filling	9.6	9.2	-0.4	3FH	No	No
204/1.0	Crushed sandstone filling	9.3	8.4	-0.9	3FH	No	No
205/0.5	Gravelly sand filling	9.6	8.8	-0.8	2F	No	No
205/1.0	Crushed sandstone filling	9.1	9.2	0.1	2F	No	No
205/1.5	Sandy clay filling	8.8	8.4	-0.4	1	No	No
205/2.0	Sandy clay filling (wet)	8.4	8.5	0.1	1	No	No
205/2.5	Sandy clay filling (wet)	7.9	7.6	-0.3	1	No	No
205/2.9	Sandstone	8.5	8.4	-0.1	1	No	No
206/0.5	Crushed sandstone filling	8.5	7.7	-0.8	1	No	No
206/1.0	Gravelly sand filling	8.1	7.5	-0.6	2F	No	No
206/1.2	Gravelly sand filling	8.0	7.5	-0.5	2F	No	No
medium texture (sandy loams to light clays)		<4*	<3.5**	≤-1**	-		
Coarse texture (sands to loamy sands		<4*	<3.5**	≤-1**	-		

Notes:
TAA Total Actual Acidity
TPA Total Potential Acidity
TSA Total Sulphidic Acidity (TPA-TAA)
S_{KCl} KCl extractable sulphur
S_P peroxide oxidation sulphur
S_{POS} Peroxide oxidisable sulphur
+ provides brief description only, full material description given in Test Bore Reports, Appendix B
* for Actual Acid Sulphate Soil
** Indicative value only, for Potential Acid Sulphate Soil
# ASSMAC Action Criteria for disturbance of 1 – 1000 tonnes of medium textured material ie sandy loams to light clay
ASSMAC Action Criteria for disturbance of 1 – 1000 tonnes of fine textured material ie medium to heavy clays and silty clay
^ pH_f non-oxidised pH
pH_{fox} oxidised pH
Change $pH_{fox} – pH_f$
Reaction Strength:
1. Denotes no or slight effervescence
2. Denotes moderate effervescence
3. Denotes vigorous effervescence
4. Denotes "volcanic" i.e. very vigorous effervescence
F. after reaction number indicates a bubbling/frothing reaction (organics)
H. Denotes heat generated by reaction

8.3 SPOCAS Results for ASS

On the basis of the pH testing, selected samples were submitted for SPOCAS (Suspension Peroxide Oxidation Combined Acidity and Sulphate) testing to Envirolab Services. The results of analysis are summarised in Table 3 and compared with action criteria specified in ASSMAC *Acid Sulphate Soils Assessment Guidelines* (1998). Full laboratory reports are presented in Appendix C.

Table 3 - Results of Laboratory Analysis for SPOCAS

Sample Location and Depth	Material Type	S_{POS} (% w/w)	pH_{KCl}	pH_{ox}	TAA (moles H^+/ tonne)	TPA (moles H^+/ tonne)	TSA (moles H^+/ tonne)
201/1.0*	Sand filling	<0.005	10.0	7.3	<5	<5	<5
204/1.0*	Crushed sandstone filling	<0.005	8.8	6.4	<5	<5	<5
205/2.5**	Sandy clay filling (wet)	0.021	7.7	4.3	<5	<5	<5
206/1.0*	gravelly sand filling	<0.005	9.2	7.2	<5	<5	<5
Action Criteria							
Coarse Texture	-	0.03	4	3	18	18	18
Medium Texture	-	0.03	4	3	18	18	18

Notes:
TAA Total Actual Acidity
TPA Total Potential Acidity
TSA Total Sulphidic Acidity (TPA-TAA)
* Action Criteria based on 'Course Texture' greater then 1000 tonnes disturbed
** Action Criteria based on 'Medium Texture' greater then 1000 tonnes disturbed
Bold and Shading Exceeds Action Criteria

9. DISCUSSION AND CONCLUSIONS

An Acid Sulphate Soil Assessment was conducted for the VAPS project in conjunction with a contamination assessment (DP Project 71529.01). The objective of the assessment was to investigate the potential for the presence of acid sulphate soils on the subject site, and to evaluate the likely impact associated (including implications for waste classification in Project 71529.01) with ASS, if present.

Field and analytical results have been compared to the ASSMAC guidelines, to assess the potential presence of acid sulphate soils (ASS) and potential acid sulphate soils (PASS) at the site. As the proposed development if involves bulk excavation for a tunnel, loading bay and stormwater diversion it is assumed that greater then 1000 tonnes of soil will be disturbed and the appropriate action criteria have been adopted.

On the basis of the results the findings are:-

- Observation in the test bores did not indicate any typical indicators of potential or actual acid sulphate soils, such as organic odours or organic materials including peat. Furthermore, groundwater was not observed in the majority of bores above the sandstone bedrock suggesting that the overlying filling material has been placed in an aerated horizon and thus the potential for the presence of unoxidised sulphate would be further reduced. SPOCAS analysis was, nonetheless conducted to confirm the field observations.
- The pH_{kcl} and pH_{ox} (both screening and laboratory results) were typically in the neutral to slightly alkaline range and did not indicate the presence of acidic soils or potential (or actual) acid sulphate soils. Furthermore they were above (where a pH below the criteria would indicate potential for acid sulphate soils) the respective action criteria of pH screening viz. pH 4 and 3 respectively.
- The acid trail parameters, viz. Total Actual Acidity (TAA), Total Peroxide Acidity (TPA) and Total Sulphidic Acidity (TSA) were not detected in all samples analysed for SPOCAS. The detected concentrations were thus within the action criteria.

- The levels of Peroxide Oxidisable Sulphur (S_{pos}) were below the laboratory detection limits in all samples with the exception of sample 205/2.5 (0.021% w/w). However, the S_{pos} level in 205/2.5 was within the Action Criteria for medium textured soils (greater than 1000 tonnes disturbed) of 0.03% w/w) in the samples analysed, all concentrations were well within the action criteria.

Based on the results of the assessment it is considered that the materials encountered in the test bores did not contain actual acid sulphate soils or potential acid sulphate soils. Therefore based on the findings at this stage no acid sulphate soils management plan is deemed necessary.

It is, however, recommended that the materials be inspected following excavation by a qualified environmental consultant, particularly where refusal was encountered in the filling (Bores 201, 203 and 206), in areas where deeper filling was encountered (i.e. near the Man-O-War Steps) and in between test bore locations to confirm that the underlying materials are consistent with those observed (and tested) during the current investigation. If the materials are inconsistent with those observed during the current investigation or if signs of acid sulphate soils are detected then additional assessment should be conducted to confirm the presence/absence of potential or actual acid sulphate soils.

10. LIMITATIONS OF THIS REPORT

The scope of the site assessment activities and consulting services undertaken by DP were limited to those detailed in the proposal dated 29 April 2010 and accepted by The Sydney Opera House Trust.

DP's assessment is necessarily based upon the result of a limited site investigation and the restricted programme of surface and subsurface sampling, screening and laboratory testing which was set out in the proposal. DP cannot provide unqualified warranties with regards to site contamination nor does DP assume any liability for site conditions not observed or accessible during the time of the investigations.

Despite all reasonable care and diligence, the ground conditions encountered and concentrations of contaminants measured may not be representative of conditions between the locations sampled and investigated. In addition, site characteristics may change over time due to activities such as spillages of contaminating substances. These changes may occur subsequent to DP's investigations and assessment.

This report, its associated documentation and the information herein have been prepared solely for the use of The Sydney Opera House Trust. Any reliance assumed by third parties on this report shall be at such parties' own risk.

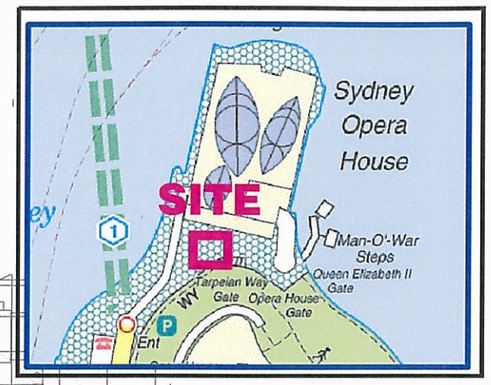
DOUGLAS PARTNERS PTY LTD

Reviewed by:

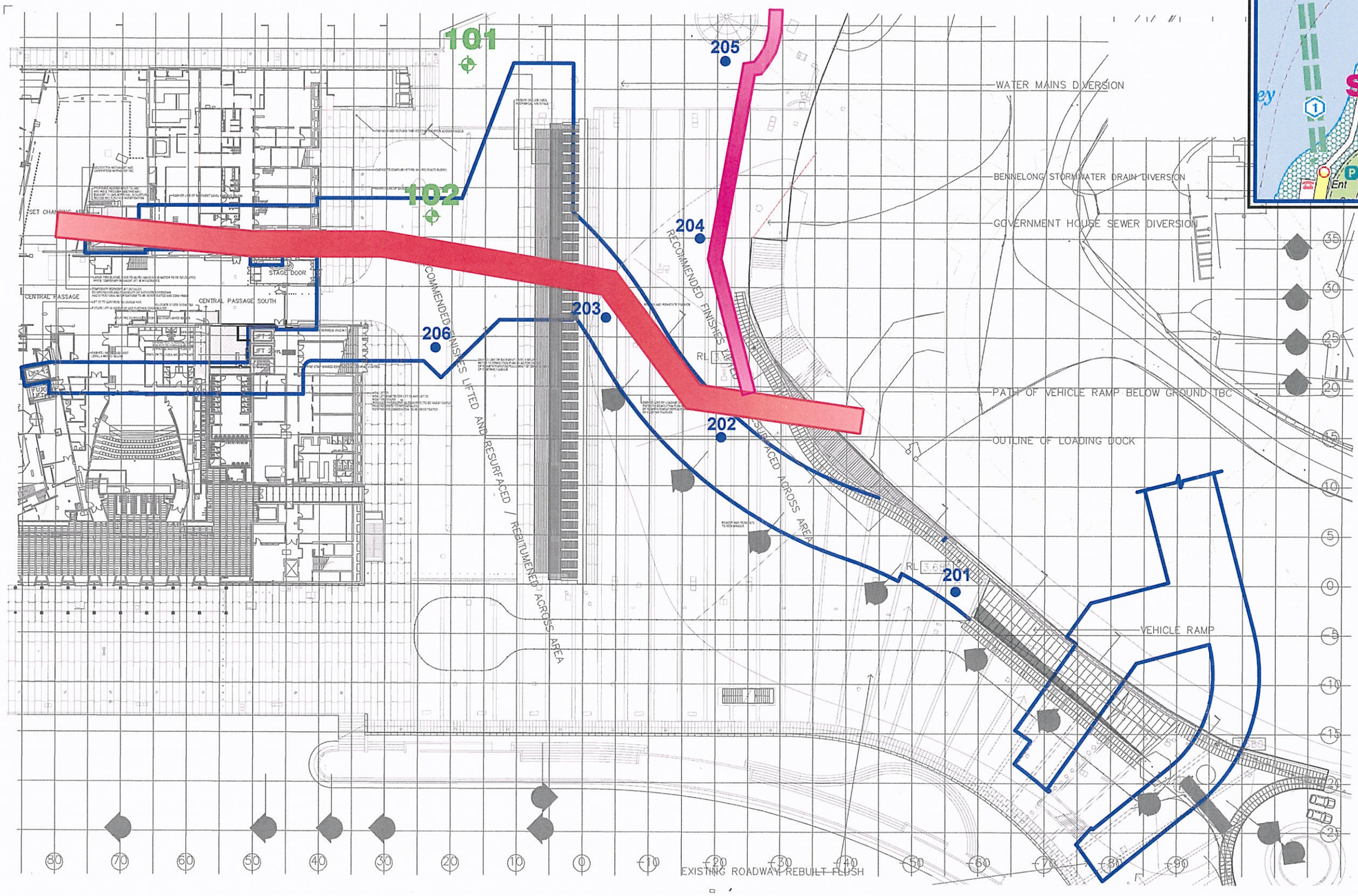
Kurt Plambeck
Environmental Scientist

Ronnie Tong
Principal

APPENDIX A
Drawing



LOCALITY PLAN



SCALE
0 10 20 30 40 50m
1:800

LEGEND

- PREVIOUS DP TEST BORE
- CURRENT DP TEST BORE
- NEW TUNNEL & LOADING DOCK
- PROPOSED STORMWATER DIVERSION
- EXISTING BENNELONG DRAIN

Douglas Partners
Geotechnics · Environment · Groundwater

CLIENT: Sydney Opera House Trust		
DRAWN BY: PSCH	SCALE: As shown	OFFICE: Sydney
APPROVED BY:		DATE: 3.6.2010

TITLE: **Location of Test Bores,Vehicle & Pedestrian Safety (VAPS) Project, Acid Suplhate Soils Assessment Sydney Opera House, BENNELONG POINT**

PROJECT No:	71529.02
DRAWING No:	1
REVISION:	A

P:\71529.02 SYDNEY NORTH EAST, VAPS Project, SOH, ASS assessment PG\Drawings\71529.02-1.dwg, 6/3/2010 12:50:17 PM

APPENDIX B

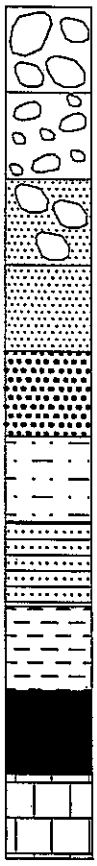
Test Bore Report Sheets and Notes Relating to This Report

GRAPHIC SYMBOLS FOR SOIL & ROCK

SOIL

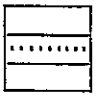
BITUMINOUS CONCRETE
CONCRETE
TOPSOIL
FILLING
PEAT
CLAY
SILTY CLAY
SILT
SANDY CLAY
GRAVELLY CLAY
SHALY CLAY
CLAYEY SILT
SANDY SILT
SAND
CLAYEY SAND
SILTY SAND
GRAVEL
SANDY GRAVEL
COBBLES/BOULDER
TALUS

SEDIMENTARY ROCK



BOULDER CONGLOMERATE
CONGLOMERATE
CONGLOMERATIC SANDSTONE
SANDSTONE FINE GRAINED
SANDSTONE COARSE GRAINED
SILTSTONE
LAMINITE
MUDSTONE, CLAYSTONE, SHALE
COAL
LIMESTONE

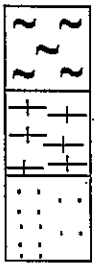
SEAMS



SEAM >10mm

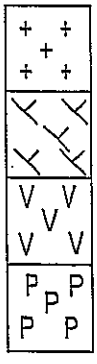
SEAM <10mm

METAMORPHIC ROCK



SLATE, PHYLLITE, SCHIST
GNEISS
QUARTZITE

IGNEOUS ROCK



GRANITE
DOLERITE, BASALT
TUFF
PORPHYRY

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BOREHOLE LOG

CLIENT: Sydney Opera House Trust
PROJECT: Vehicle & Pedestrial Safety (VAPS) Project
LOCATION: Bennelong Point

SURFACE LEVEL: 3.6 AHD
EASTING: 334801
NORTHING: 6252104
DIP/AZIMUTH: 90°/--

BORE No: 201
PROJECT No: 71529.01
DATE: 17 May 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.07	PAVERS							
		CONCRETE							
	0.3	FILLING - yellow brown, medium grained sand filling, dry		A	0.4				
				ASS	0.5				
				A	0.8				
				ASS	1.0				
	1.27	FILLING - brown, gravelly sand filling with concrete rubble and blue metal, dry		A	1.3				
				ASS	1.5				
	1.6	FILLING - gravel and cobble filling (ballast) - no sample recovery							
	1.9	Bore discontinued at 1.9m							

RIG: Scout **DRILLER:** K Ennis **LOGGED:** KP **CASING:** Uncased

TYPE OF BORING: Diatube to 0.3m; Solid flight auger to 1.9m. Auger snapped, 1.5m left in ground

WATER OBSERVATIONS: No free groundwater observed

REMARKS: ASS = Acid sulphate soil sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo Ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Sydney Opera House Trust
PROJECT: Vehicle & Pedestrial Safety (VAPS) Project
LOCATION: Bennelong Point

SURFACE LEVEL: 3.6 AHD
EASTING: 334834
NORTHING: 6252133
DIP/AZIMUTH: 90°/--

BORE No: 202
PROJECT No: 71529.01
DATE: 17 May 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.08	PAVERS							
		CONCRETE							
	0.35	FILLING - brown, gravelly sand filling with roadbase gravel inclusions, dry		A*	0.4				
				ASS	0.5				
	0.6	FILLING - brown, gravelly sand filling with cobbles (ballast), dry		A	0.6				
	0.8	SANDSTONE - grey, fine to medium grained sandstone, dry		A	0.8				
	0.9	Bore discontinued at 0.9m - refusal on sandstone			0.9				

RIG: Scout **DRILLER:** K Ennis **LOGGED:** KP **CASING:** Uncased

TYPE OF BORING: Diatube to 0.35m; Solid flight auger to 0.9m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: ASS = Acid sulphate soil sample. *Denotes field duplicate sample BD3/150510 collected

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Sydney Opera House Trust
PROJECT: Vehicle & Pedestrial Safety (VAPS) Project
LOCATION: Bennelong Point

SURFACE LEVEL: 3.7 AHD
EASTING: 334864
NORTHING: 6252156
DIP/AZIMUTH: 90°/--

BORE No: 203
PROJECT No: 71529.01
DATE: 17 May 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.07	LIMESTONE PAVERS							
		CEMENT							
	0.3	CONCRETE							
	0.4	FILLING - dark brown, gravelly sand filling with blue metal, crushed sandstone and sandstone fragments, dry		A	0.4				
				ASS	0.5				
				A	0.81				
	1			ASS	1.0				1
	1.2	FILLING - grey, sand filling with concrete, dry		A	1.2				
	1.3	Bore discontinued at 1.3m - refusal on concrete in filling			1.3				
	2								2
	3								3
	4								4

RIG: Scout **DRILLER:** K Ennis **LOGGED:** KP **CASING:** Uncased

TYPE OF BORING: Diatube to 0.4m; Solid flight auger to 1.3m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: ASS = Acid sulphate soil sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Sydney Opera House Trust
PROJECT: Vehicle & Pedestrial Safety (VAPS) Project
LOCATION: Bennelong Point

SURFACE LEVEL: 3.7 AHD
EASTING: 334872
NORTHING: 6252134
DIP/AZIMUTH: 90°/--

BORE No: 204
PROJECT No: 71529.01
DATE: 17 May 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.08	PAVERS							
		CONCRETE							
	0.3	ROADBASE - blue metal and gravel roadbase							
	0.4	FILLING - orange brown, crushed sandstone filling with some roadbase inclusions, dry		A	0.4				
				ASS	0.5				
				A*	0.8				
				ASS	1.0				
	1.1	SANDSTONE - orange sandstone, dry							
	1.2	Bore discontinued at 1.2m - refusal on sandstone		A	1.2				

RIG: Scout **DRILLER:** K Ennis **LOGGED:** KP **CASING:** Uncased

TYPE OF BORING: Diatube to 0.3m; Solid flight auger to 1.2m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: ASS = Acid sulphate soil sample. *Denotes field duplicate sample BD2/150510 collected

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U$_x$	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Sydney Opera House Trust
PROJECT: Vehicle & Pedestrial Safety (VAPS) Project
LOCATION: Bennelong Point

SURFACE LEVEL: 3.5 AHD
EASTING: 334909
NORTHING: 6252125
DIP/AZIMUTH: 90°/--

BORE No: 205
PROJECT No: 71529.01
DATE: 17 May 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		BITUMINOUS CONCRETE							
	0.2	FILLING - brown, gravelly sand filling with roadbase gravel		A*	0.3				
	0.5	FILLING - brown, crushed sandstone filling, damp		ASS	0.5				
				A	0.8				
	1.1	FILLING - orange brown, sandy clay filling (crushed sandstone), damp		ASS	1.0				
				A	1.3				
	1.7	FILLING - brown, medium grained sand filling, moist			1.5				
	1.9	FILLING - yellow brown, medium grained sand filling		A	1.8				
	2.0	FILLING - orange and grey, sandy clay filling, wet		ASS	2.0				
				A	2.3				
	2.7	SANDSTONE - yellow orange, sandstone		ASS	2.5				
	2.9	Bore discontinued at 2.9m - refusal on sandstone			2.7				
					2.9				

RIG: Scout **DRILLER:** K Ennis **LOGGED:** KP **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 2.9m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: ASS = Acid sulphate soil sample. *Denotes field duplicate sample BD4/150510 collected

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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BOREHOLE LOG

CLIENT: Sydney Opera House Trust
PROJECT: Vehicle & Pedestrial Safety (VAPS) Project
LOCATION: Bennelong Point

SURFACE LEVEL: 3.6 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 206
PROJECT No: 71529.01
DATE: 24 May 10
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.07	BITUMINOUS CONCRETE							
		CONCRETE							
	0.23	CONCRETE							
	0.4	FILLING - light grey, crushed sandstone filling		A ASS	0.4 0.5				
	0.8	FILLING - brown, gravelly sand filling with concrete rubble and cobbles (ballast)		A* ASS A ASS	0.8 1.0 1.1 1.2				
	1.3	Bore discontinued at 1.3m - refusal on possible concrete or ballast filling (ballast)							

RIG: Bobcat **DRILLER:** S Salib **LOGGED:** KP **CASING:** Uncased

TYPE OF BORING: Diatube to 0.4m; Solid flight auger to 1.3m

WATER OBSERVATIONS: No free groundwater observed

REMARKS: ASS = Acid sulphate soil sample
*Denotes field duplicate samples BD1/150510 and BD2/240510 collected

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	PID	Photo ionisation detector
B	Bulk sample	S	Standard penetration test
U_x	Tube sample (x mm dia.)	PL	Point load strength Is(50) MPa
W	Water sample	V	Shear Vane (kPa)
C	Core drilling	▷	Water seep ▼ Water level

CHECKED	
Initials:	
Date:	

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APPENDIX C
Laboratory Reports and Chain of Custody Documentation

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 41144

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Kurt Plambeck

Sample log in details:

Your Reference:	**71529.01, Opera House VAPS Project**
No. of samples:	21 Soils
Date samples received:	18/05/10
Date completed instructions received:	18/05/10

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:	27/05/10
Date of Preliminary Report:	Not Issued
Issue Date:	26/05/10

NATA accreditation number 2901. This document shall not be reproduced except in full.
This document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025.
Tests not covered by NATA are denoted with *.

Results Approved By:

Rhian Morgan
Metals Supervisor

Jacinta Hurst
Laboratory Manager

M. Mansfield
Matt Mansfield
Approved Signatory

Envirolab Reference: 41144
Revision No: R 00

ACCREDITED FOR TECHNICAL COMPETENCE

VOCs in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	41144-1 201/0.4-0.5 17/05/2010 Soil	41144-5 202/0.6-0.8 17/05/2010 Soil	41144-8 203/0.8-1 17/05/2010 Soil	41144-9 204/0.4-0.5 17/05/2010 Soil	41144-13 205/2.3-2.5 17/05/2010 Soil
Date extracted	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
Date analysed	-	21/05/2010	21/05/2010	21/05/2010	21/05/2010	21/05/2010
Dichlorodifluoromethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Trichlorofluoromethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-dichloroethene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-dichloroethene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
bromochloromethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
chloroform	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
2,2-dichloropropane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-trichloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-dichloropropene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Cyclohexane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
carbon tetrachloride	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
dibromomethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichloropropane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
trichloroethene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
bromodichloromethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-dichloropropene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-dichloropropene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-trichloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
dibromochloromethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromoethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
tetrachloroethene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1,2-tetrachloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
chlorobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
bromoform	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
styrene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-tetrachloroethane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0

VOCs in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS --- --- ---	41144-1 201/0.4-0.5 17/05/2010 Soil	41144-5 202/0.6-0.8 17/05/2010 Soil	41144-8 203/0.8-1 17/05/2010 Soil	41144-9 204/0.4-0.5 17/05/2010 Soil	41144-13 205/2.3-2.5 17/05/2010 Soil
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichloropropane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
isopropylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
bromobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
n-propyl benzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
2-chlorotoluene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
4-chlorotoluene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,3,5-trimethyl benzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
tert-butyl benzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trimethyl benzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,3-dichlorobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
sec-butyl benzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-dichlorobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
4-isopropyl toluene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dichlorobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
n-butyl benzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-dibromo-3-chloropropane	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-trichlorobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
hexachlorobutadiene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,3-trichlorobenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate Dibromofluorometha	%	85	87	84	84	80
Surrogate aaa-Trifluorotoluene	%	131	140	129	126	125
Surrogate Toluene-d8	%	109	112	108	107	105
Surrogate 4-Bromofluorobenzene	%	101	99	101	101	101

vTPH & BTEX in Soil						
Our Reference:	UNITS	41144-1	41144-2	41144-3	41144-4	41144-5
Your Reference	----------	201/0.4-0.5	201/0.8-1	201/1.3-1.5	202/0.4-0.5	202/0.6-0.8
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
Date analysed	-	21/05/2010	21/05/2010	21/05/2010	21/05/2010	21/05/2010
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	131	99	107	109	140

vTPH & BTEX in Soil						
Our Reference:	UNITS	41144-6	41144-7	41144-8	41144-9	41144-10
Your Reference	----------	202/0.8-0.9	203/0.4-0.5	203/0.8-1	204/0.4-0.5	204/0.8-1
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
Date analysed	-	21/05/2010	21/05/2010	21/05/2010	21/05/2010	21/05/2010
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	104	108	129	126	104

vTPH & BTEX in Soil						
Our Reference:	UNITS	41144-11	41144-12	41144-13	41144-15	41144-16
Your Reference	----------	205/0.3-0.5	205/1.3-1.5	205/2.3-2.5	BD4/170510	Trip Spike
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
Date analysed	-	21/05/2010	21/05/2010	21/05/2010	21/05/2010	21/05/2010
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	[NA]
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	94%
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	97%
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	95%
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	96%
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	95%
Surrogate aaa-Trifluorotoluene	%	110	110	125	109	92

vTPH & BTEX in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	41144-17 Trip Blank 17/05/2010 Soil	41144-18 204/1.2-1.3 17/05/2010 Soil
Date extracted	-	20/05/2010	20/05/2010
Date analysed	-	21/05/2010	21/05/2010
vTPH C_6 - C_9	mg/kg	<25	<25
Benzene	mg/kg	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	114	105

NA

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	41144-1	41144-2	41144-3	41144-4	41144-5
Your Reference	----------	201/0.4-0.5	201/0.8-1	201/1.3-1.5	202/0.4-0.5	202/0.6-0.8
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
Date analysed	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	100	95	92	98	95

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	41144-6	41144-7	41144-8	41144-9	41144-10
Your Reference	----------	202/0.8-0.9	203/0.4-0.5	203/0.8-1	204/0.4-0.5	204/0.8-1
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
Date analysed	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	57	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	210	210	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	200	240	<100	<100
Surrogate o-Terphenyl	%	95	105	111	97	92

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	41144-11	41144-12	41144-13	41144-15	41144-18
Your Reference	----------	205/0.3-0.5	205/1.3-1.5	205/2.3-2.5	BD4/170510	204/1.2-1.3
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
Date analysed	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	870	<100	<100	890	<100
TPH C_{29} - C_{36}	mg/kg	550	<100	<100	550	<100
Surrogate o-Terphenyl	%	#	97	90	#	88

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	41144-1 201/0.4-0.5 17/05/2010 Soil	41144-2 201/0.8-1 17/05/2010 Soil	41144-3 201/1.3-1.5 17/05/2010 Soil	41144-4 202/0.4-0.5 17/05/2010 Soil	41144-5 202/0.6-0.8 17/05/2010 Soil
Date extracted	-	20/5/10	20/5/10	20/5/10	20/5/10	20/5/10
Date analysed	-	21/5/10	21/5/10	21/5/10	21/5/10	21/5/10
Naphthalene	mg/kg	0.3	<0.1	0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.7	<0.1	0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.3	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	2.3	0.2	1.0	0.2	0.4
Anthracene	mg/kg	0.5	<0.1	0.3	<0.1	0.1
Fluoranthene	mg/kg	3.6	0.2	2.1	0.7	0.9
Pyrene	mg/kg	4.8	0.2	2.2	0.9	1.0
Benzo(a)anthracene	mg/kg	2.1	0.1	1.0	0.5	0.6
Chrysene	mg/kg	2.2	0.1	1.1	0.6	0.6
Benzo(b+k)fluoranthene	mg/kg	3.3	<0.2	1.7	1.1	1.1
Benzo(a)pyrene	mg/kg	2.7	0.1	1.3	0.8	0.8
Indeno(1,2,3-c,d)pyrene	mg/kg	1.4	<0.1	0.8	0.5	0.5
Dibenzo(a,h)anthracene	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	1.2	<0.1	0.7	0.5	0.5
Surrogate p-Terphenyl-d_{14}	%	112	104	104	106	105

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	41144-6 202/0.8-0.9 17/05/2010 Soil	41144-7 203/0.4-0.5 17/05/2010 Soil	41144-8 203/0.8-1 17/05/2010 Soil	41144-9 204/0.4-0.5 17/05/2010 Soil	41144-10 204/0.8-1 17/05/2010 Soil
Date extracted	-	20/5/10	20/5/10	20/5/10	20/5/10	20/5/10
Date analysed	-	21/5/10	21/5/10	21/5/10	22/5/10	22/5/10
Naphthalene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	0.4	0.2	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	1.8	1.4	0.9	<0.1
Anthracene	mg/kg	<0.1	1.8	0.3	0.2	<0.1
Fluoranthene	mg/kg	<0.1	1.9	2.6	1.6	0.2
Pyrene	mg/kg	<0.1	1.8	2.7	1.7	0.2
Benzo(a)anthracene	mg/kg	<0.1	0.7	1.3	0.7	0.1
Chrysene	mg/kg	<0.1	0.7	1.4	0.8	0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	0.3	2.3	1.1	0.2
Benzo(a)pyrene	mg/kg	<0.05	0.7	1.6	0.9	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.4	1.1	0.4	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	0.4	1.0	0.4	0.1
Surrogate p-Terphenyl-d_{14}	%	107	99	102	112	113

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	41144-11 205/0.3-0.5 17/05/2010 Soil	41144-12 205/1.3-1.5 17/05/2010 Soil	41144-13 205/2.3-2.5 17/05/2010 Soil	41144-15 BD4/170510 17/05/2010 Soil	41144-18 204/1.2-1.3 17/05/2010 Soil
Date extracted	-	20/5/10	20/5/10	20/5/10	20/5/10	20/5/10
Date analysed	-	22/5/10	22/5/10	22/5/10	22/5/10	22/5/10
Naphthalene	mg/kg	0.7	<0.1	<0.1	0.9	<0.1
Acenaphthylene	mg/kg	2.2	<0.1	<0.1	2.0	<0.1
Acenaphthene	mg/kg	1.5	<0.1	<0.1	2.2	<0.1
Fluorene	mg/kg	2.4	<0.1	<0.1	2.3	<0.1
Phenanthrene	mg/kg	24	0.7	<0.1	35	<0.1
Anthracene	mg/kg	6.4	0.2	<0.1	9.2	<0.1
Fluoranthene	mg/kg	31	0.9	0.1	40	0.2
Pyrene	mg/kg	28	0.9	0.1	35	0.2
Benzo(a)anthracene	mg/kg	13	0.4	<0.1	16	0.1
Chrysene	mg/kg	13	0.4	<0.1	16	<0.1
Benzo(b+k)fluoranthene	mg/kg	21	0.7	<0.2	25	<0.2
Benzo(a)pyrene	mg/kg	16	0.5	0.07	18	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	8.9	0.3	<0.1	10	0.1
Dibenzo(a,h)anthracene	mg/kg	1.4	<0.1	<0.1	1.6	<0.1
Benzo(g,h,i)perylene	mg/kg	8.2	0.2	<0.1	9.2	0.1
Surrogate p-Terphenyl-d_{14}	%	110	112	115	106	112

NA

Organochlorine Pesticides in soil						
Our Reference:	UNITS	41144-1	41144-3	41144-4	41144-5	41144-7
Your Reference	----------	201/0.4-0.5	201/1.3-1.5	202/0.4-0.5	202/0.6-0.8	203/0.4-0.5
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
Date analysed	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
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 TCLMX	%	99	98	99	101	100

Organochlorine Pesticides in soil						
Our Reference:	UNITS	41144-8	41144-9	41144-10	41144-11	41144-13
Your Reference	----------	203/0.8-1	204/0.4-0.5	204/0.8-1	205/0.3-0.5	205/2.3-2.5
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
Date analysed	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
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 TCLMX	%	103	100	103	99	98

PCBs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	41144-1 201/0.4-0.5 17/05/2010 Soil	41144-3 201/1.3-1.5 17/05/2010 Soil	41144-4 202/0.4-0.5 17/05/2010 Soil	41144-5 202/0.6-0.8 17/05/2010 Soil	41144-7 203/0.4-0.5 17/05/2010 Soil
Date extracted	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
Date analysed	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
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	%	99	98	99	101	100

PCBs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	41144-8 203/0.8-1 17/05/2010 Soil	41144-9 204/0.4-0.5 17/05/2010 Soil	41144-10 204/0.8-1 17/05/2010 Soil	41144-11 205/0.3-0.5 17/05/2010 Soil	41144-13 205/2.3-2.5 17/05/2010 Soil
Date extracted	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
Date analysed	-	20/05/2010	20/05/2010	20/05/2010	20/05/2010	20/05/2010
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	%	103	100	103	99	98

Total Phenolics in Soil						
Our Reference:	UNITS	41144-1	41144-3	41144-4	41144-5	41144-7
Your Reference	----------	201/0.4-0.5	201/1.3-1.5	202/0.4-0.5	202/0.6-0.8	203/0.4-0.5
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/5/2010	20/5/2010	20/5/2010	20/5/2010	20/5/2010
Date analysed	-	20/5/2010	20/5/2010	20/5/2010	20/5/2010	20/5/2010
Total Phenolics (as Phenol)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0

Total Phenolics in Soil						
Our Reference:	UNITS	41144-8	41144-9	41144-10	41144-11	41144-13
Your Reference	----------	203/0.8-1	204/0.4-0.5	204/0.8-1	205/0.3-0.5	205/2.3-2.5
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/5/2010	20/5/2010	20/5/2010	20/5/2010	20/5/2010
Date analysed	-	20/5/2010	20/5/2010	20/5/2010	20/5/2010	20/5/2010
Total Phenolics (as Phenol)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0

Acid Extractable metals in soil						
Our Reference:	UNITS	41144-1	41144-2	41144-3	41144-4	41144-5
Your Reference	----------	201/0.4-0.5	201/0.8-1	201/1.3-1.5	202/0.4-0.5	202/0.6-0.8
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	20/05/10	20/05/10	20/05/10	20/05/10	20/05/10
Date analysed	-	21/05/10	21/05/10	21/05/10	21/05/10	21/05/10
Arsenic	mg/kg	5	<4	<4	<4	<4
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	5	3	13	11	14
Copper	mg/kg	11	7	19	70	52
Lead	mg/kg	7	3	6	12	11
Mercury	mg/kg	<0.1	0.1	<0.1	0.1	0.1
Nickel	mg/kg	14	8	22	77	61
Zinc	mg/kg	12	7	17	48	41

Acid Extractable metals in soil						
Our Reference:	UNITS	41144-6	41144-7	41144-8	41144-9	41144-10
Your Reference	----------	202/0.8-0.9	203/0.4-0.5	203/0.8-1	204/0.4-0.5	204/0.8-1
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	20/05/10	20/05/10	20/05/10	20/05/10	20/05/10
Date analysed	-	21/05/10	21/05/10	21/05/10	21/05/10	21/05/10
Arsenic	mg/kg	<4	4	<4	<4	<4
Cadmium	mg/kg	<0.5	1.7	1.8	<0.5	<0.5
Chromium	mg/kg	8	10	15	16	13
Copper	mg/kg	<1	66	43	10	6
Lead	mg/kg	6	38	660	17	12
Mercury	mg/kg	<0.1	0.2	0.2	<0.1	<0.1
Nickel	mg/kg	<1	33	16	15	6
Zinc	mg/kg	26	66	62	32	17

Acid Extractable metals in soil						
Our Reference:	UNITS	41144-11	41144-12	41144-13	41144-15	41144-18
Your Reference	----------	205/0.3-0.5	205/1.3-1.5	205/2.3-2.5	BD4/170510	204/1.2-1.3
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	20/05/10	20/05/10	20/05/10	20/05/10	20/05/10
Date analysed	-	21/05/10	21/05/10	21/05/10	21/05/10	21/05/10
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	11	10	1	10	19
Copper	mg/kg	37	<1	<1	60	3
Lead	mg/kg	45	8	2	43	11
Mercury	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Nickel	mg/kg	14	<1	<1	31	5
Zinc	mg/kg	58	5	1	67	28

sPOCAS Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	41144-19 204/1.0 17/05/2010 Soil	41144-20 205/2.5 17/05/2010 Soil	41144-21 201/1.0 17/05/2010 Soil
Date prepared	-	20/5/10	20/5/10	20/5/10
Date analysed	-	20/5/10	20/5/10	20/5/10
pH $_{KCl}$	pH units	8.8	7.7	10.0
TAA pH 6.5	moles H^+/t	<5	<5	<5
s-TAA pH 6.5	%w/w S	<0.01	<0.01	<0.01
pH $_{Ox}$	pH units	6.4	4.3	7.3
TPA pH 6.5	moles H^+/t	<5.0	<5.0	<5.0
s-TPA pH 6.5	%w/w S	<0.01	<0.01	<0.01
TSA pH 6.5	moles H^+/t	<5.0	<5.0	<5.0
s-TSA pH 6.5	%w/w S	<0.01	<0.01	<0.01
ANCE	% $CaCO_3$	<0.05	<0.05	0.63
a-ANCE	moles H^+/t	<5	<5	125
s-ANCE	%w/w S	<0.05	<0.05	0.20
S_{KCl}	%w/w S	0.006	<0.005	<0.005
S_P	%w/w	0.007	0.025	0.005
S_{POS}	%w/w	<0.005	0.021	<0.005
a-S_{POS}	moles H^+/t	<5.0	13	<5.0
Ca_{KCl}	%w/w	0.058	0.051	0.11
Ca_P	%w/w	0.055	0.058	0.42
Ca_A	%w/w	<0.005	0.007	0.32
Mg_{KCl}	%w/w	0.014	0.008	<0.005
Mg_P	%w/w	0.020	0.009	0.016
Mg_A	%w/w	0.006	<0.005	0.013
SRAS	%w/w	<0.005	<0.005	<0.005
S_{HCl}	%w/w S	0.006	<0.005	0.005
S_{NAS}	%w/w S	<0.005	<0.005	<0.005
a-S_{NAS}	moles H^+/t	<5	<5	<5
s-S_{NAS}	%w/w S	<0.01	<0.01	<0.01
a-Net Acidity	moles H^+/t	<10	13	<10
Liming rate	kg $CaCO_3$/t	<0.75	0.99	<0.75
a-Net Acidity without ANCE	moles H^+/t	NA	NA	<10
Liming rate without ANCE	kg $CaCO_3$/t	NA	NA	<0.75

Moisture						
Our Reference:	UNITS	41144-1	41144-2	41144-3	41144-4	41144-5
Your Reference	----------	201/0.4-0.5	201/0.8-1	201/1.3-1.5	202/0.4-0.5	202/0.6-0.8
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	20/5/10	20/5/10	20/5/10	20/5/10	20/5/10
Date analysed	-	20/5/10	20/5/10	20/5/10	20/5/10	20/5/10
Moisture	%	15	19	16	6.8	8.1

Moisture						
Our Reference:	UNITS	41144-6	41144-7	41144-8	41144-9	41144-10
Your Reference	----------	202/0.8-0.9	203/0.4-0.5	203/0.8-1	204/0.4-0.5	204/0.8-1
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	20/5/10	20/5/10	20/5/10	20/5/10	20/5/10
Date analysed	-	20/5/10	20/5/10	20/5/10	20/5/10	20/5/10
Moisture	%	17	7.6	10	20	11

Moisture						
Our Reference:	UNITS	41144-11	41144-12	41144-13	41144-15	41144-17
Your Reference	----------	205/0.3-0.5	205/1.3-1.5	205/2.3-2.5	BD4/170510	Trip Blank
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	20/5/10	20/5/10	20/5/10	20/5/10	20/5/10
Date analysed	-	20/5/10	20/5/10	20/5/10	20/5/10	20/5/10
Moisture	%	5.7	12	20	9.4	0.10

Moisture		
Our Reference:	UNITS	41144-18
Your Reference	----------	204/1.2-1.3
Date Sampled	----------	17/05/2010
Type of sample		Soil
Date prepared	-	20/5/10
Date analysed	-	20/5/10
Moisture	%	7.7

Asbestos ID - soils						
Our Reference:	UNITS	41144-1	41144-3	41144-4	41144-5	41144-7
Your Reference	----------	201/0.4-0.5	201/1.3-1.5	202/0.4-0.5	202/0.6-0.8	203/0.4-0.5
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	21/5/10	21/5/10	21/5/10	21/5/10	21/5/10
Sample Description	-	Approx 30g Sandy Soil	Approx 40g Sandy Soil & Rocks	Approx 40g Sandy Soil & Rocks	Approx 40g Sandy Soil & Rocks	Approx 40g Sandy Soil & Rocks
Asbestos ID in soil	-	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Asbestos ID - soils						
Our Reference:	UNITS	41144-8	41144-9	41144-10	41144-11	41144-12
Your Reference	----------	203/0.8-1	204/0.4-0.5	204/0.8-1	205/0.3-0.5	205/1.3-1.5
Date Sampled	----------	17/05/2010	17/05/2010	17/05/2010	17/05/2010	17/05/2010
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	21/5/10	21/5/10	21/5/10	21/5/10	21/5/10
Sample Description	-	Approx 40g Sandy Soil & Rocks	Approx 40g Sandy Soil & Rocks	Approx 40g Sandy Soil & Rocks	Approx 40g Sandy Soil & Rocks	Approx 40g Sandy Soil & Rocks
Asbestos ID in soil	-	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Method ID	Methodology Summary
GC.14	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
GC.16	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.
GC.3	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC-5	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC-6	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
LAB.30	Total Phenolics - determined colorimetrically following disitillation.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.
LAB.64	sPOCAS determined using titrimetric and ICP-AES techniques. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.
LAB.8	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
AS4964-2004	Asbestos ID - Qualitative identification of asbestos type fibres in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques.

QUALITY CONTROL VOCs in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			20/05/2010	41144-1	20/05/2010 || 20/05/2010	LCS-4	20/05/2010
Date analysed	-			21/05/2010	41144-1	21/05/2010 || 21/05/2010	LCS-4	21/05/2010
Dichlorodifluoromethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
Chloromethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
Vinyl Chloride	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
Bromomethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
Chloroethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
Trichlorofluoromethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,1-Dichloroethene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
trans-1,2-dichloroethene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,1-dichloroethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	LCS-4	90%
cis-1,2-dichloroethene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
bromochloromethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
chloroform	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	LCS-4	83%
2,2-dichloropropane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,2-dichloroethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	LCS-4	82%
1,1,1-trichloroethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	LCS-4	79%
1,1-dichloropropene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
Cyclohexane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
carbon tetrachloride	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
Benzene	mg/kg	0.5	GC.14	<0.5	41144-1	<0.5 || <0.5	[NR]	[NR]
dibromomethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,2-dichloropropane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
trichloroethene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	LCS-4	83%
bromodichloromethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	LCS-4	84%
trans-1,3-dichloropropene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
cis-1,3-dichloropropene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,1,2-trichloroethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
Toluene	mg/kg	0.5	GC.14	<0.5	41144-1	<0.5 || <0.5	[NR]	[NR]
1,3-dichloropropane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
dibromochloromethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	LCS-4	81%
1,2-dibromoethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
tetrachloroethene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	LCS-4	85%
1,1,1,2-tetrachloroethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
chlorobenzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
Ethylbenzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
bromoform	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
m+p-xylene	mg/kg	2	GC.14	<2.0	41144-1	<2.0 || <2.0	[NR]	[NR]
styrene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,1,2,2-tetrachloroethane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]

QUALITY CONTROL VOCs in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
o-Xylene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,2,3-trichloropropane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
isopropylbenzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
bromobenzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
n-propyl benzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
2-chlorotoluene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
4-chlorotoluene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,3,5-trimethyl benzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
tert-butyl benzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,2,4-trimethyl benzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,3-dichlorobenzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
sec-butyl benzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,4-dichlorobenzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
4-isopropyl toluene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,2-dichlorobenzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
n-butyl benzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,2-dibromo-3-chloropropane	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,2,4-trichlorobenzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
hexachlorobutadiene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
1,2,3-trichlorobenzene	mg/kg	1	GC.14	<1.0	41144-1	<1.0 || <1.0	[NR]	[NR]
Surrogate Dibromofluorometha	%		GC.14	95	41144-1	85 || 82 || RPD: 4	LCS-4	92%
Surrogate aaa-Trifluorotoluene	%		GC.14	118	41144-1	131 || 120 || RPD: 9	LCS-4	106%
Surrogate Toluene-d8	%		GC.14	100	41144-1	109 || 111 || RPD: 2	LCS-4	99%
Surrogate 4-Bromofluorobenzene	%		GC.14	99	41144-1	101 || 101 || RPD: 0	LCS-4	102%

QUALITY CONTROL vTPH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			20/05/2010	41144-11	20/05/2010 || 20/05/2010	LCS-1	20/05/2010
Date analysed	-			21/05/2010	41144-11	21/05/2010 || 21/05/2010	LCS-1	21/05/2010
vTPH C_6 - C_9	mg/kg	25	GC.16	<25	41144-11	<25 || <25	LCS-1	96%
Benzene	mg/kg	0.5	GC.16	<0.5	41144-11	<0.5 || <0.5	LCS-1	98%
Toluene	mg/kg	0.5	GC.16	<0.5	41144-11	<0.5 || <0.5	LCS-1	93%
Ethylbenzene	mg/kg	1	GC.16	<1.0	41144-11	<1.0 || <1.0	LCS-1	95%
m+p-xylene	mg/kg	2	GC.16	<2.0	41144-11	<2.0 || <2.0	LCS-1	96%
o-Xylene	mg/kg	1	GC.16	<1.0	41144-11	<1.0 || <1.0	LCS-1	100%
Surrogate aaa-Trifluorotoluene	%		GC.16	100	41144-11	110 || 110 || RPD: 0	LCS-1	107%

QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			20/05/2010	41144-1	20/05/2010 || 20/05/2010	LCS-1	20/05/2010
Date analysed	-			20/05/2010	41144-1	20/05/2010 || 20/05/2010	LCS-1	20/05/2010
TPH C_{10} - C_{14}	mg/kg	50	GC.3	<50	41144-1	<50 || <50	LCS-1	88%
TPH C_{15} - C_{28}	mg/kg	100	GC.3	<100	41144-1	<100 || <100	LCS-1	103%
TPH C_{29} - C_{36}	mg/kg	100	GC.3	<100	41144-1	<100 || <100	LCS-1	102%
Surrogate o-Terphenyl	%		GC.3	92	41144-1	100 || 101 || RPD: 1	LCS-1	87%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			20/5/10	41144-1	20/5/10 || 20/5/10	LCS-1	20/5/10
Date analysed	-			21/5/10	41144-1	21/5/10 || 21/5/10	LCS-1	21/5/10
Naphthalene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	0.3 || 0.4 || RPD: 29	LCS-1	94%
Acenaphthylene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	0.7 || 1.8 || RPD: 88	[NR]	[NR]
Acenaphthene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	0.3 || 0.4 || RPD: 29	LCS-1	95%
Phenanthrene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	2.3 || 2.5 || RPD: 8	LCS-1	97%
Anthracene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	0.5 || 0.8 || RPD: 46	[NR]	[NR]
Fluoranthene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	3.6 || 7.0 || RPD: 64	LCS-1	89%
Pyrene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	4.8 || 10 || RPD: 70	LCS-1	99%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo(a)anthracene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	2.1 || 5.1 || RPD: 83	[NR]	[NR]
Chrysene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	2.2 || 4.9 || RPD: 76	LCS-1	103%
Benzo(b+k)fluoranthene	mg/kg	0.2	GC.12 subset	<0.2	41144-1	3.3 || 8.0 || RPD: 83	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	GC.12 subset	<0.05	41144-1	2.7 || 6.8 || RPD: 86	LCS-1	114%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	1.4 || 3.4 || RPD: 83	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	0.2 || 0.5 || RPD: 86	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	GC.12 subset	<0.1	41144-1	1.2 || 3.3 || RPD: 93	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	113	41144-1	112 || 101 || RPD: 10	LCS-1	113%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			20/05/2010	41144-1	20/05/2010 || 20/05/2010	LCS-1	20/05/2010
Date analysed	-			20/05/2010	41144-1	20/05/2010 || 20/05/2010	LCS-1	20/05/2010
HCB	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	LCS-1	104%
gamma-BHC	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	LCS-1	104%
Heptachlor	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	LCS-1	93%
delta-BHC	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	LCS-1	103%
Heptachlor Epoxide	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	LCS-1	107%
gamma-Chlordane	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	LCS-1	106%
Dieldrin	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	LCS-1	111%
Endrin	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	LCS-1	104%
pp-DDD	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	LCS-1	111%
Endosulfan II	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	LCS-1	101%
Methoxychlor	mg/kg	0.1	GC-5	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-5	98	41144-1	99 || 100 || RPD: 1	LCS-1	100%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			20/05/2010	41144-1	20/05/2010 || 20/05/2010	LCS-1	20/05/2010
Date analysed	-			20/05/2010	41144-1	20/05/2010 || 20/05/2010	LCS-1	20/05/2010
Arochlor 1016	mg/kg	0.1	GC-6	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221*	mg/kg	0.1	GC-6	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	GC-6	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	GC-6	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	GC-6	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	GC-6	<0.1	41144-1	<0.1 || <0.1	LCS-1	110%
Arochlor 1260	mg/kg	0.1	GC-6	<0.1	41144-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-6	98	41144-1	99 || 100 || RPD: 1	LCS-1	99%

QUALITY CONTROL Total Phenolics in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			20/5/2010	41144-1	20/5/2010 || 20/5/2010	LCS-1	20/5/2010
Date analysed	-			20/5/2010	41144-1	20/5/2010 || 20/5/2010	LCS-1	20/5/2010
Total Phenolics (as Phenol)	mg/kg	5	LAB.30	<5.0	41144-1	<5.0 || <5.0	LCS-1	90%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			20/05/10	41144-1	20/05/10 || 20/05/10	LCS-1	20/05/10
Date analysed	-			21/05/10	41144-1	21/05/10 || 21/05/10	LCS-1	21/05/10
Arsenic	mg/kg	4	Metals.20 ICP-AES	<4	41144-1	5 || 4 || RPD: 22	LCS-1	106%
Cadmium	mg/kg	0.5	Metals.20 ICP-AES	<0.5	41144-1	<0.5 || <0.5	LCS-1	108%
Chromium	mg/kg	1	Metals.20 ICP-AES	<1	41144-1	5 || 4 || RPD: 22	LCS-1	107%
Copper	mg/kg	1	Metals.20 ICP-AES	<1	41144-1	11 || 11 || RPD: 0	LCS-1	108%
Lead	mg/kg	1	Metals.20 ICP-AES	<1	41144-1	7 || 6 || RPD: 15	LCS-1	107%
Mercury	mg/kg	0.1	Metals.21 CV-AAS	<0.1	41144-1	<0.1 || <0.1	LCS-1	100%
Nickel	mg/kg	1	Metals.20 ICP-AES	<1	41144-1	14 || 14 || RPD: 0	LCS-1	110%
Zinc	mg/kg	1	Metals.20 ICP-AES	<1	41144-1	12 || 12 || RPD: 0	LCS-1	110%

QUALITY CONTROL sPOCAS	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base || Duplicate || %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			20/5/10	41144-21	20/5/10 || 20/5/10	LCS	20/5/10
Date analysed	-			20/5/10	41144-21	20/5/10 || 20/5/10	LCS	20/5/10
pH kcl	pH units		LAB.64	5.2	41144-21	10.0 || 10.0 || RPD: 0	LCS	101%
TAA pH 6.5	moles H^+/t	5	LAB.64	<5	41144-21	<5 || <5	LCS	110%
s-TAA pH 6.5	%w/w S	0.01	LAB.64	<0.01	41144-21	<0.01 || <0.01	LCS	107%
pH ox	pH units		LAB.64	4.3	41144-21	7.3 || 7.4 || RPD: 1	LCS	104%
TPA pH 6.5	moles H^+/t	5	LAB.64	<5.0	41144-21	<5.0 || <5.0	LCS	75%
s-TPA pH 6.5	%w/w S	0.01	LAB.64	<0.01	41144-21	<0.01 || <0.01	LCS	75%
TSA pH 6.5	moles H^+/t	5	LAB.64	<5.0	41144-21	<5.0 || <5.0	LCS	70%
s-TSA pH 6.5	%w/w S	0.01	LAB.64	<0.01	41144-21	<0.01 || <0.01	LCS	69%
ANCe	% $CaCO_3$	0.05	LAB.64	<0.05	41144-21	0.63 || 0.63 || RPD: 0	[NR]	[NR]
a-ANCe	moles H^+/t	5	LAB.64	<5	41144-21	125 || 125 || RPD: 0	[NR]	[NR]
s-ANCe	%w/w S	0.05	LAB.64	<0.05	41144-21	0.20 || 0.20 || RPD: 0	[NR]	[NR]
SKCl	%w/w S	0.005	LAB.64	<0.005	41144-21	<0.005 || <0.005	LCS	122%
SP	%w/w	0.005	LAB.64	<0.005	41144-21	0.005 || <0.005	LCS	110%
SPOS	%w/w	0.005	LAB.64	<0.005	41144-21	<0.005 || <0.005	LCS	107%
a-SPOS	moles H^+/t	5	LAB.64	<5.0	41144-21	<5.0 || <5.0	LCS	108%
CaKCl	%w/w	0.005	LAB.64	<0.005	41144-21	0.11 || 0.11 || RPD: 0	LCS	91%
CaP	%w/w	0.005	LAB.64	<0.005	41144-21	0.42 || 0.34 || RPD: 21	LCS	85%
CaA	%w/w	0.005	LAB.64	<0.005	41144-21	0.32 || 0.23 || RPD: 33	[NR]	[NR]
MgKCl	%w/w	0.005	LAB.64	<0.005	41144-21	<0.005 || <0.005	LCS	90%
MgP	%w/w	0.005	LAB.64	<0.005	41144-21	0.016 || 0.013 || RPD: 21	LCS	102%
MgA	%w/w	0.005	LAB.64	<0.005	41144-21	0.013 || 0.011 || RPD: 17	[NR]	[NR]
SRAS	%w/w	0.005	LAB.64	<0.005	41144-21	<0.005 || <0.005	[NR]	[NR]
SHCl	%w/w S	0.005	LAB.64	<0.005	41144-21	0.005 || 0.005 || RPD: 0	LCS	88%
SNAS	%w/w S	0.005	LAB.64	<0.005	41144-21	<0.005 || <0.005	[NR]	[NR]
a-SNAS	moles H^+/t	5	LAB.64	<5	41144-21	<5 || <5	[NR]	[NR]
s-SNAS	%w/w S	0.01	LAB.64	<0.01	41144-21	<0.01 || <0.01	[NR]	[NR]
a-Net Acidity	moles H^+/t	10	LAB.64	<10	41144-21	<10 || <10	LCS	106%
Liming rate	kg $CaCO_3$/t	0.75	LAB.64	<0.75	41144-21	<0.75 || <0.75	LCS	106%

QUALITY CONTROL sPOCAS	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
a-Net Acidity without ANCE	moles H^+/t	10	LAB.64	<10	41144-21	<10 || <10	[NR]	[NR]
Liming rate without ANCE	kg $CaCO_3$/t	0.75	LAB.64	<0.75	41144-21	<0.75 || <0.75	[NR]	[NR]

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			20/5/10
Date analysed	-			20/5/10
Moisture	%	0.1	LAB.8	<0.10

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

QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	41144-11	20/05/2010 || 20/05/2010	41144-5	20/05/2010
Date analysed	-	41144-11	20/05/2010 || 20/05/2010	41144-5	20/05/2010
TPH C_{10} - C_{14}	mg/kg	41144-11	<50 || <50	41144-5	88%
TPH C_{15} - C_{28}	mg/kg	41144-11	870 || 850 || RPD: 2	41144-5	107%
TPH C_{29} - C_{36}	mg/kg	41144-11	550 || 560 || RPD: 2	41144-5	110%
Surrogate o-Terphenyl	%	41144-11	# || #	41144-5	91%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	41144-11	20/5/10 || 20/5/10	41144-5	20/5/10
Date analysed	-	41144-11	22/5/10 || 22/5/10	41144-5	21/5/10
Naphthalene	mg/kg	41144-11	0.7 || 0.7 || RPD: 0	41144-5	92%
Acenaphthylene	mg/kg	41144-11	2.2 || 2.3 || RPD: 4	[NR]	[NR]
Acenaphthene	mg/kg	41144-11	1.5 || 1.4 || RPD: 7	[NR]	[NR]
Fluorene	mg/kg	41144-11	2.4 || 2.4 || RPD: 0	41144-5	97%
Phenanthrene	mg/kg	41144-11	24 || 22 || RPD: 9	41144-5	93%
Anthracene	mg/kg	41144-11	6.4 || 6.1 || RPD: 5	[NR]	[NR]
Fluoranthene	mg/kg	41144-11	31 || 29 || RPD: 7	41144-5	90%
Pyrene	mg/kg	41144-11	28 || 26 || RPD: 7	41144-5	100%
Benzo(a)anthracene	mg/kg	41144-11	13 || 12 || RPD: 8	[NR]	[NR]
Chrysene	mg/kg	41144-11	13 || 13 || RPD: 0	41144-5	94%
Benzo(b+k)fluoranthene	mg/kg	41144-11	21 || 21 || RPD: 0	[NR]	[NR]
Benzo(a)pyrene	mg/kg	41144-11	16 || 16 || RPD: 0	41144-5	102%
Indeno(1,2,3-c,d)pyrene	mg/kg	41144-11	8.9 || 8.5 || RPD: 5	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	41144-11	1.4 || 1.5 || RPD: 7	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	41144-11	8.2 || 7.4 || RPD: 10	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Surrogate p-Terphenyl-d_{14}	%	41144-11	110 || 114 || RPD: 4	41144-5	103%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	41144-11	20/05/2010 || 20/05/2010	41144-5	20/05/2010
Date analysed	-	41144-11	20/05/2010 || 20/05/2010	41144-5	20/05/2010
HCB	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	41144-11	<0.1 || <0.1	41144-5	102%
gamma-BHC	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	41144-11	<0.1 || <0.1	41144-5	104%
Heptachlor	mg/kg	41144-11	<0.1 || <0.1	41144-5	104%
delta-BHC	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	41144-11	<0.1 || <0.1	41144-5	101%
Heptachlor Epoxide	mg/kg	41144-11	<0.1 || <0.1	41144-5	106%
gamma-Chlordane	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	41144-11	<0.1 || <0.1	41144-5	105%
Dieldrin	mg/kg	41144-11	<0.1 || <0.1	41144-5	110%
Endrin	mg/kg	41144-11	<0.1 || <0.1	41144-5	106%
pp-DDD	mg/kg	41144-11	<0.1 || <0.1	41144-5	112%
Endosulfan II	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	41144-11	<0.1 || <0.1	41144-5	103%
Methoxychlor	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	41144-11	99 || 100 || RPD: 1	41144-5	100%

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	41144-11	20/05/2010 || 20/05/2010	41144-5	20/05/2010
Date analysed	-	41144-11	20/05/2010 || 20/05/2010	41144-5	20/05/2010
Arochlor 1016	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221*	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	41144-11	<0.1 || <0.1	41144-5	106%
Arochlor 1260	mg/kg	41144-11	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	41144-11	99 || 100 || RPD: 1	41144-5	104%
QUALITY CONTROL Total Phenolics in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	41144-11	20/5/2010 || 20/5/2010	41144-3	20/5/2010
Date analysed	-	41144-11	20/5/2010 || 20/5/2010	41144-3	20/5/2010
Total Phenolics (as Phenol)	mg/kg	41144-11	<5.0 || <5.0	41144-3	92%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	41144-11	20/05/10 || 20/05/10	41144-5	20/05/10
Date analysed	-	41144-11	21/05/10 || 21/05/10	41144-5	21/05/10
Arsenic	mg/kg	41144-11	<4 || <4	41144-5	101%
Cadmium	mg/kg	41144-11	<0.5 || <0.5	41144-5	92%
Chromium	mg/kg	41144-11	11 || 9 || RPD: 20	41144-5	105%
Copper	mg/kg	41144-11	37 || 35 || RPD: 6	41144-5	119%
Lead	mg/kg	41144-11	45 || 43 || RPD: 5	41144-5	94%
Mercury	mg/kg	41144-11	<0.1 || <0.1	41144-5	110%
Nickel	mg/kg	41144-11	14 || 14 || RPD: 0	41144-5	98%
Zinc	mg/kg	41144-11	58 || 57 || RPD: 2	41144-5	99%

Report Comments:

Total Petroleum Hydrocarbons in soil (semivol):The RPD for duplicate results is accepted due to the non homogenous nature of the sample/s.# Percent recovery is not possible to report as the high concentration of analytes in the sample/s have caused interference.

PAH's in soil: The RPD for duplicate results is accepted due to the non homogenous nature of the sample/s.

Asbestos was analysed by Approved Identifier: Matt Mansfield

Asbestos was authorised by Approved Signatory: Matt Mansfield

INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than

RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

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 sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for

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

SAMPLE RECEIPT ADVICE

Client:

Douglas Partners
96 Hermitage Rd
West Ryde NSW 2114

ph: 02 9809 0666
Fax: 02 9809 4095

Attention: Kurt Plambeck

Sample log in details:

Your reference:	**71529.01, Opera House VAPS Project**
Envirolab Reference:	**41144**
Date received:	18/05/10
Date results expected to be reported:	**27/05/10**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	21 Soils
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice

Comments:

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

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: Opera House VAPS Project
Project No: ...71529.01..... Sampler: ...KDP.....
Project Mgr: ...KP.....Mob. Phone: 0402 057 147
Email: kurt.plambeck@douglaspartners.com.au
Date Required: ...standard ..... Lab Quote No. .....

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

Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W – water	Container type	Analytes: Heavy metals	TRH BTEX	PAH	OCP PCB	Phenols	Asbestos	VOC			Notes
201	0.4-0.5	1	17/5	S	G	T	T	T	✓	✓	✓	✓			
201	0.8-1	2													
201	1.3-1.5	3							✓	✓	✓				
202	0.4-0.5	4							✓	✓	✓				
202	0.6-0.8	5							✓	✓	✓	✓			
202	0.8-0.9	6													
203	0.4-0.5	7							✓	✓	✓				
203	0.8-1	8							✓	✓	✓	✓			
204	0.4-0.5	9							✓	✓	✓	✓			
204	0.8-1	10							✓	✓	✓				
205	0.3-0.5	11							✓	✓	✓				
205	1.3-1.5	12				⊥	⊥	⊥			✓				

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

Job No: 41144
Date received: 18/5/10
Time received: 4pm
Received by: Z.L.
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No. .....

Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114
Phone: (02) 9809 0666
Fax: (02) 9809 4095

Relinquished by: Signed: Date & Time: Received By: Z.L. Date & Time: 18/5/10 4pm

Relinquished by: Signed: Date & Time: Received By: Date & Time:

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: Opera House VAPS Project
Project No: ...71529.01..... Sampler: ...KDP.....
Project Mgr: ...KP.....Mob. Phone: 0402 057 147
Email: kurt.plambeck@douglaspartners.com.au
Date Required: ...standard ..... Lab Quote No. .....

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

Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W – water	Container type	Analytes: Heavy metals	TRH BTEX	PAH	OCP PCB	Phenols	Asbestos	VOC	BTEX	SPOCAS	Notes
205/	1.3-2.5	13	17/5	S	G	✓	✓	✓	✓	✓		✓			
BD2	70510	14				✓	✓	✓							interlab
BD4	70510	15				✓	✓	✓							intralab
trip spike		16					✓						✓		
trip blank		17					✓								
204/	1.2-1.3	18				✓	✓	✓						✓	
204/	1.0	19												✓	
205/	2.5	20												✓	
201/	1.0	21													

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

Relinquished by:	Signed:	Date & Time:	Received By: Z.L.	Date & Time: 18/5/10 4pm
Relinquished by:	Signed:	Date & Time:	Received By:	Date & Time:

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 41366

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Kurt Plambeck

Sample log in details:

Your Reference:	**71529.01, VAPs Opera House**
No. of samples:	7 Soils
Date samples received:	24/05/10
Date completed instructions received:	24/05/10

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:	31/05/10
Date of Preliminary Report:	Not Issued
Issue Date:	29/05/10

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Tests not covered by NATA are denoted with *.

Results Approved By:

Rhian Morgan
Metals Supervisor

Jacinta Hurst
Laboratory Manager

M. Mansfield
Matt Mansfield
Approved Signatory

Envirolab Reference: 41366
Revision No: R 00

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

VOCs in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	41366-2 206/0.8-1.0 24/05/2010 Soil
Date extracted	-	25/05/2010
Date analysed	-	26/05/2010
Dichlorodifluoromethane	mg/kg	<1.0
Chloromethane	mg/kg	<1.0
Vinyl Chloride	mg/kg	<1.0
Bromomethane	mg/kg	<1.0
Chloroethane	mg/kg	<1.0
Trichlorofluoromethane	mg/kg	<1.0
1,1-Dichloroethene	mg/kg	<1.0
trans-1,2-dichloroethene	mg/kg	<1.0
1,1-dichloroethane	mg/kg	<1.0
cis-1,2-dichloroethene	mg/kg	<1.0
bromochloromethane	mg/kg	<1.0
chloroform	mg/kg	<1.0
2,2-dichloropropane	mg/kg	<1.0
1,2-dichloroethane	mg/kg	<1.0
1,1,1-trichloroethane	mg/kg	<1.0
1,1-dichloropropene	mg/kg	<1.0
Cyclohexane	mg/kg	<1.0
carbon tetrachloride	mg/kg	<1.0
Benzene	mg/kg	<0.5
dibromomethane	mg/kg	<1.0
1,2-dichloropropane	mg/kg	<1.0
trichloroethene	mg/kg	<1.0
bromodichloromethane	mg/kg	<1.0
trans-1,3-dichloropropene	mg/kg	<1.0
cis-1,3-dichloropropene	mg/kg	<1.0
1,1,2-trichloroethane	mg/kg	<1.0
Toluene	mg/kg	<0.5
1,3-dichloropropane	mg/kg	<1.0
dibromochloromethane	mg/kg	<1.0
1,2-dibromoethane	mg/kg	<1.0
tetrachloroethene	mg/kg	<1.0
1,1,1,2-tetrachloroethane	mg/kg	<1.0
chlorobenzene	mg/kg	<1.0
Ethylbenzene	mg/kg	<1.0
bromoform	mg/kg	<1.0
m+p-xylene	mg/kg	<2.0
styrene	mg/kg	<1.0
1,1,2,2-tetrachloroethane	mg/kg	<1.0

VOCs in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	 41366-2 206/0.8-1.0 24/05/2010 Soil
o-Xylene	mg/kg	<1.0
1,2,3-trichloropropane	mg/kg	<1.0
isopropylbenzene	mg/kg	<1.0
bromobenzene	mg/kg	<1.0
n-propyl benzene	mg/kg	<1.0
2-chlorotoluene	mg/kg	<1.0
4-chlorotoluene	mg/kg	<1.0
1,3,5-trimethyl benzene	mg/kg	<1.0
tert-butyl benzene	mg/kg	<1.0
1,2,4-trimethyl benzene	mg/kg	<1.0
1,3-dichlorobenzene	mg/kg	<1.0
sec-butyl benzene	mg/kg	<1.0
1,4-dichlorobenzene	mg/kg	<1.0
4-isopropyl toluene	mg/kg	<1.0
1,2-dichlorobenzene	mg/kg	<1.0
n-butyl benzene	mg/kg	<1.0
1,2-dibromo-3-chloropropane	mg/kg	<1.0
1,2,4-trichlorobenzene	mg/kg	<1.0
hexachlorobutadiene	mg/kg	<1.0
1,2,3-trichlorobenzene	mg/kg	<1.0
Surrogate Dibromofluorometha	%	96
Surrogate aaa-Trifluorotoluene	%	119
Surrogate Toluene-d$_8$	%	119
Surrogate 4-Bromofluorobenzene	%	98

vTPH & BTEX in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	41366-1 206/0.4-0.5 24/05/2010 Soil	41366-2 206/0.8-1.0 24/05/2010 Soil	41366-3 206/1.1-1.2 24/05/2010 Soil	41366-4 BD1240510 24/05/2010 Soil	41366-6 Trip Spike 24/05/2010 Soil
Date extracted	-	25/5/10	25/5/10	25/5/10	25/5/10	25/5/10
Date analysed	-	26/5/10	26/5/10	26/5/10	26/5/10	26/5/10
vTPH C_6 - C_9	mg/kg	<25	<25	<25	<25	[NA]
Benzene	mg/kg	<0.5	<0.5	<0.5	<0.5	100%
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	122%
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0	<1.0	104%
m+p-xylene	mg/kg	<2.0	<2.0	<2.0	<2.0	104%
o-Xylene	mg/kg	<1.0	<1.0	<1.0	<1.0	104%
Surrogate aaa-Trifluorotoluene	%	100	119	101	99	109

vTPH & BTEX in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	41366-7 Trip Blank 24/05/2010 Soil
Date extracted	-	25/5/10
Date analysed	-	26/5/10
Benzene	mg/kg	<0.5
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1.0
m+p-xylene	mg/kg	<2.0
o-Xylene	mg/kg	<1.0
Surrogate aaa-Trifluorotoluene	%	86

sTPH in Soil (C10-C36)					
Our Reference:	UNITS	41366-1	41366-2	41366-3	41366-4
Your Reference	----------	206/0.4-0.5	206/0.8-1.0	206/1.1-1.2	BD1240510
Date Sampled	----------	24/05/2010	24/05/2010	24/05/2010	24/05/2010
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	25/05/2010	25/05/2010	25/05/2010	25/05/2010
Date analysed	-	25/05/2010	25/05/2010	25/05/2010	25/05/2010
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100
Surrogate o-Terphenyl	%	92	101	103	105

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	41366-1 206/0.4-0.5 24/05/2010 Soil	41366-2 206/0.8-1.0 24/05/2010 Soil	41366-3 206/1.1-1.2 24/05/2010 Soil	41366-4 BD1240510 24/05/2010 Soil
Date extracted	-	25/5/10	25/5/10	25/5/10	25/5/10
Date analysed	-	26/5/10	26/5/10	26/5/10	26/5/10
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.7	1.5	0.7
Anthracene	mg/kg	<0.1	0.1	0.3	0.1
Fluoranthene	mg/kg	0.1	1.0	1.9	1.3
Pyrene	mg/kg	0.1	1.1	1.9	1.3
Benzo(a)anthracene	mg/kg	<0.1	0.5	0.9	0.6
Chrysene	mg/kg	0.1	0.6	1.0	0.7
Benzo(b+k)fluoranthene	mg/kg	<0.2	0.8	1.4	1.1
Benzo(a)pyrene	mg/kg	0.07	0.6	1	0.7
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.3	0.5	0.4
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.3	0.5	0.4
Surrogate p-Terphenyl-d_{14}	%	77	79	80	86

Organochlorine Pesticides in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	41366-1 206/0.4-0.5 24/05/2010 Soil	41366-2 206/0.8-1.0 24/05/2010 Soil
Date extracted	-	24/05/2010	24/05/2010
Date analysed	-	26/05/2010	26/05/2010
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 TCLMX	%	104	100

NA

PCBs in Soil			
Our Reference:	UNITS	41366-1	41366-2
Your Reference	----------	206/0.4-0.5	206/0.8-1.0
Date Sampled	----------	24/05/2010	24/05/2010
Type of sample		Soil	Soil
Date extracted	-	24/05/2010	24/05/2010
Date analysed	-	26/05/2010	26/05/2010
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	%	104	100

Total Phenolics in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	41366-1 206/0.4-0.5 24/05/2010 Soil	41366-2 206/0.8-1.0 24/05/2010 Soil
Date extracted	-	25/5/2010	25/5/2010
Date analysed	-	25/5/2010	25/5/2010
Total Phenolics (as Phenol)	mg/kg	<5.0	<5.0

sPOCAS		
Our Reference:	UNITS	41366-5
Your Reference	----------	206/1.0
Date Sampled	----------	24/05/2010
Type of sample		Soil
Date prepared	-	25/5/10
Date analysed	-	25/5/10
pH kcl	pH units	9.2
TAA pH 6.5	moles H^+/t	<5
s-TAA pH 6.5	%w/w S	<0.01
pH ox	pH units	7.2
TPA pH 6.5	moles H^+/t	<5.0
s-TPA pH 6.5	%w/w S	<0.01
TSA pH 6.5	moles H^+/t	<5.0
s-TSA pH 6.5	%w/w S	<0.01
ANCE	% $CaCO_3$	0.4
a-ANCE	moles H^+/t	80
s-ANCE	%w/w S	0.13
SKCl	%w/w S	0.014
SP	%w/w	0.014
SPOS	%w/w	<0.005
a-SPOS	moles H^+/t	<5.0
CaKCl	%w/w	0.13
CaP	%w/w	0.16
CaA	%w/w	0.038
MgKCl	%w/w	0.022
MgP	%w/w	0.036
MgA	%w/w	0.013
SRAS	%w/w	<0.005
SHCl	%w/w S	0.008
SNAS	%w/w S	<0.005
a-SNAS	moles H^+/t	<5
s-SNAS	%w/w S	<0.01
a-Net Acidity	moles H^+/t	<10
Liming rate	kg $CaCO_3$/t	<0.75
a-Net Acidity without ANCE	moles H^+/t	<10
Liming rate without ANCE	kg $CaCO_3$/t	<0.75

Acid Extractable metals in soil					
Our Reference:	UNITS	41366-1	41366-2	41366-3	41366-4
Your Reference	----------	206/0.4-0.5	206/0.8-1.0	206/1.1-1.2	BD1240510
Date Sampled	----------	24/05/2010	24/05/2010	24/05/2010	24/05/2010
Type of sample		Soil	Soil	Soil	Soil
Date digested	-	26/05/10	26/05/10	26/05/10	26/05/10
Date analysed	-	26/05/10	26/05/10	26/05/10	26/05/10
Arsenic	mg/kg	<4	<4	5	<4
Cadmium	mg/kg	<0.5	<0.5	<0.5	<0.5
Chromium	mg/kg	7	8	32	7
Copper	mg/kg	22	33	50	38
Lead	mg/kg	41	65	91	130
Mercury	mg/kg	0.1	0.3	0.4	0.5
Nickel	mg/kg	5	19	16	16
Zinc	mg/kg	31	78	100	110

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	41366-1 206/0.4-0.5 24/05/2010 Soil	41366-2 206/0.8-1.0 24/05/2010 Soil	41366-3 206/1.1-1.2 24/05/2010 Soil	41366-4 BD1240510 24/05/2010 Soil	41366-7 Trip Blank 24/05/2010 Soil
Date prepared	-	25/5/10	25/5/10	25/5/10	25/5/10	25/5/10
Date analysed	-	25/5/10	25/5/10	25/5/10	25/5/10	25/5/10
Moisture	%	7.1	9.3	8.7	8.6	21

Asbestos ID - soils			
Our Reference:	UNITS	41366-1	41366-2
Your Reference	----------	206/0.4-0.5	206/0.8-1.0
Date Sampled	----------	24/05/2010	24/05/2010
Type of sample		Soil	Soil
Date analysed	-	27/5/10	27/5/10
Sample Description	- NA	Approx 20g Sandy Soil	Approx 40g Soil & Rocks
Asbestos ID in soil	-	No asbestos found at reporting limit of 0.1g/kg	No asbestos found at reporting limit of 0.1g/kg
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected

Method ID	Methodology Summary
GC.14	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
GC.16	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.
GC.3	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC-5	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC-6	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
LAB.30	Total Phenolics - determined colorimetrically following disitillation.
LAB.64	sPOCAS determined using titrimetric and ICP-AES techniques. Based on Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.
LAB.8	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
AS4964-2004	Asbestos ID - Qualitative identification of asbestos type fibres in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques.

QUALITY CONTROL VOCs in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			25/05/2010	41366-2	25/05/2010 || 25/05/2010	LCS-4	25/05/2010
Date analysed	-			26/05/2010	41366-2	26/05/2010 || 26/05/2010	LCS-4	26/05/2010
Dichlorodifluoromethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
Chloromethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
Vinyl Chloride	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
Bromomethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
Chloroethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
Trichlorofluoromethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,1-Dichloroethene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
trans-1,2-dichloroethene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,1-dichloroethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	LCS-4	91%
cis-1,2-dichloroethene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
bromochloromethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
chloroform	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	LCS-4	87%
2,2-dichloropropane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,2-dichloroethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	LCS-4	87%
1,1,1-trichloroethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	LCS-4	86%
1,1-dichloropropene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
Cyclohexane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
carbon tetrachloride	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
Benzene	mg/kg	0.5	GC.14	<0.5	41366-2	<0.5 || <0.5	[NR]	[NR]
dibromomethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,2-dichloropropane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
trichloroethene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	LCS-4	77%
bromodichloromethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	LCS-4	77%
trans-1,3-dichloropropene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
cis-1,3-dichloropropene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,1,2-trichloroethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
Toluene	mg/kg	0.5	GC.14	<0.5	41366-2	<0.5 || <0.5	[NR]	[NR]
1,3-dichloropropane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
dibromochloromethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	LCS-4	74%
1,2-dibromoethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
tetrachloroethene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	LCS-4	80%
1,1,1,2-tetrachloroethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
chlorobenzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
Ethylbenzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
bromoform	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
m+p-xylene	mg/kg	2	GC.14	<2.0	41366-2	<2.0 || <2.0	[NR]	[NR]
styrene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,1,2,2-tetrachloroethane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]

QUALITY CONTROL VOCs in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
o-Xylene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,2,3-trichloropropane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
isopropylbenzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
bromobenzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
n-propyl benzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
2-chlorotoluene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
4-chlorotoluene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,3,5-trimethyl benzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
tert-butyl benzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,2,4-trimethyl benzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,3-dichlorobenzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
sec-butyl benzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,4-dichlorobenzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
4-isopropyl toluene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,2-dichlorobenzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
n-butyl benzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,2-dibromo-3-chloropropane	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,2,4-trichlorobenzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
hexachlorobutadiene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
1,2,3-trichlorobenzene	mg/kg	1	GC.14	<1.0	41366-2	<1.0 || <1.0	[NR]	[NR]
Surrogate Dibromofluorometha	%		GC.14	88	41366-2	96 || 88 || RPD: 9	LCS-4	89%
Surrogate aaa-Trifluorotoluene	%		GC.14	93	41366-2	119 || 112 || RPD: 6	LCS-4	98%
Surrogate Toluene-d8	%		GC.14	90	41366-2	119 || 112 || RPD: 6	LCS-4	91%
Surrogate 4-Bromofluorobenzene	%		GC.14	98	41366-2	98 || 97 || RPD: 1	LCS-4	97%

QUALITY CONTROL vTPH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			25/5/10	41366-2	25/5/10 || 25/5/10	LCS-4	26/5/10
Date analysed	-			26/5/10	41366-2	26/5/10 || 26/5/10	LCS-4	26/5/10
vTPH C_6 - C_9	mg/kg	25	GC.16	<25	41366-2	<25 || <25	LCS-4	98%
Benzene	mg/kg	0.5	GC.16	<0.5	41366-2	<0.5 || <0.5	LCS-4	96%
Toluene	mg/kg	0.5	GC.16	<0.5	41366-2	<0.5 || <0.5	LCS-4	101%
Ethylbenzene	mg/kg	1	GC.16	<1.0	41366-2	<1.0 || <1.0	LCS-4	96%
m+p-xylene	mg/kg	2	GC.16	<2.0	41366-2	<2.0 || <2.0	LCS-4	98%
o-Xylene	mg/kg	1	GC.16	<1.0	41366-2	<1.0 || <1.0	LCS-4	102%
Surrogate aaa-Trifluorotoluene	%		GC.16	93	41366-2	119 || 112 || RPD: 6	LCS-4	111%

QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			25/05/2010	41366-2	25/05/2010 || 25/05/2010	LCS-4	25/05/2010
Date analysed	-			25/05/2010	41366-2	25/05/2010 || 25/05/2010	LCS-4	25/05/2010
TPH C_{10} - C_{14}	mg/kg	50	GC.3	<50	41366-2	<50 || <50	LCS-4	89%
TPH C_{15} - C_{28}	mg/kg	100	GC.3	<100	41366-2	<100 || <100	LCS-4	99%
TPH C_{29} - C_{36}	mg/kg	100	GC.3	<100	41366-2	<100 || <100	LCS-4	97%
Surrogate o-Terphenyl	%		GC.3	94	41366-2	101 || 100 || RPD: 1	LCS-4	103%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			25/5/10	41366-2	25/5/10 || 25/5/10	LCS-5	25/5/10
Date analysed	-			26/5/10	41366-2	26/5/10 || 26/5/10	LCS-5	26/5/10
Naphthalene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	<0.1 || <0.1	LCS-5	87%
Acenaphthylene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	<0.1 || <0.1	LCS-5	95%
Phenanthrene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	0.7 || 0.6 || RPD: 15	LCS-5	95%
Anthracene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	0.1 || 0.1 || RPD: 0	[NR]	[NR]
Fluoranthene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	1.0 || 1.0 || RPD: 0	LCS-5	88%
Pyrene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	1.1 || 1.1 || RPD: 0	LCS-5	99%
Benzo(a)anthracene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	0.5 || 0.6 || RPD: 18	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Chrysene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	0.6 || 0.6 || RPD: 0	LCS-5	102%
Benzo(b+k)fluoranthene	mg/kg	0.2	GC.12 subset	<0.2	41366-2	0.8 || 0.9 || RPD: 12	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	GC.12 subset	<0.05	41366-2	0.6 || 0.7 || RPD: 15	LCS-5	105%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	0.3 || 0.4 || RPD: 29	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	<0.1 || 0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	GC.12 subset	<0.1	41366-2	0.3 || 0.5 || RPD: 50	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	96	41366-2	79 || 83 || RPD: 5	LCS-5	100%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/05/2010	41366-2	24/05/2010 || 24/05/2010	LCS-1	24/05/2010
Date analysed	-			26/05/2010	41366-2	26/05/2010 || 26/05/2010	LCS-1	26/05/2010
HCB	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	LCS-1	107%
gamma-BHC	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	LCS-1	100%
Heptachlor	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	LCS-1	92%
delta-BHC	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	LCS-1	105%
Heptachlor Epoxide	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	LCS-1	104%
gamma-Chlordane	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	LCS-1	99%
Dieldrin	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	LCS-1	104%
Endrin	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	LCS-1	94%
pp-DDD	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	LCS-1	95%
Endosulfan II	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	LCS-1	94%
Methoxychlor	mg/kg	0.1	GC-5	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-5	97	41366-2	100 || 98 || RPD: 2	LCS-1	99%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/05/2010	41366-2	24/05/2010 || 24/05/2010	LCS-1	24/05/2010
Date analysed	-			26/05/2010	41366-2	26/05/2010 || 26/05/2010	LCS-1	26/05/2010
Arochlor 1016	mg/kg	0.1	GC-6	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221*	mg/kg	0.1	GC-6	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	GC-6	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	GC-6	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	GC-6	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	GC-6	<0.1	41366-2	<0.1 || <0.1	LCS-1	99%
Arochlor 1260	mg/kg	0.1	GC-6	<0.1	41366-2	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-6	97	41366-2	100 || 98 || RPD: 2	LCS-1	99%

QUALITY CONTROL Total Phenolics in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			25/5/2010	41366-1	25/5/2010 || 25/5/2010	LCS-2	25/5/2010
Date analysed	-			25/5/2010	41366-1	25/5/2010 || 25/5/2010	LCS-2	25/5/2010
Total Phenolics (as Phenol)	mg/kg	5	LAB.30	<5.0	41366-1	<5.0 || <5.0	LCS-2	95%

QUALITY CONTROL sPOCAS	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			25/5/10	[NT]	[NT]	LCS	25/5/10
Date analysed	-			25/5/10	[NT]	[NT]	LCS	25/5/10
pH kcl	pH units		LAB.64	5.3	[NT]	[NT]	LCS	101%
TAA pH 6.5	moles H^+/t	5	LAB.64	<5	[NT]	[NT]	LCS	99%
s-TAA pH 6.5	%w/w S	0.01	LAB.64	<0.01	[NT]	[NT]	LCS	97%
pH ox	pH units		LAB.64	4.2	[NT]	[NT]	LCS	107%
TPA pH 6.5	moles H^+/t	5	LAB.64	<5.0	[NT]	[NT]	LCS	95%
s-TPA pH 6.5	%w/w S	0.01	LAB.64	<0.01	[NT]	[NT]	LCS	95%
TSA pH 6.5	moles H^+/t	5	LAB.64	<5.0	[NT]	[NT]	LCS	94%
s-TSA pH 6.5	%w/w S	0.01	LAB.64	<0.01	[NT]	[NT]	LCS	93%
ANCe	% $CaCO_3$	0.05	LAB.64	<0.05	[NT]	[NT]	[NR]	[NR]
a-ANCe	moles H^+/t	5	LAB.64	<5	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL sPOCAS	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
s-ANCE	%w/w S	0.05	LAB.64	<0.05	[NT]	[NT]	[NR]	[NR]
SKCl	%w/w S	0.005	LAB.64	<0.005	[NT]	[NT]	LCS	111%
SP	%w/w	0.005	LAB.64	<0.005	[NT]	[NT]	LCS	100%
SPOS	%w/w	0.005	LAB.64	<0.005	[NT]	[NT]	LCS	97%
a-SPOS	moles H^+/t	5	LAB.64	<5.0	[NT]	[NT]	LCS	98%
CaKCl	%w/w	0.005	LAB.64	<0.005	[NT]	[NT]	LCS	93%
CaP	%w/w	0.005	LAB.64	<0.005	[NT]	[NT]	LCS	78%
CaA	%w/w	0.005	LAB.64	<0.005	[NT]	[NT]	[NR]	[NR]
MgKCl	%w/w	0.005	LAB.64	<0.005	[NT]	[NT]	LCS	91%
MgP	%w/w	0.005	LAB.64	<0.005	[NT]	[NT]	LCS	95%
MgA	%w/w	0.005	LAB.64	<0.005	[NT]	[NT]	[NR]	[NR]
SRAS	%w/w	0.005	LAB.64	<0.005	[NT]	[NT]	[NR]	[NR]
SHCl	%w/w S	0.005	LAB.64	<0.005	[NT]	[NT]	LCS	89%
SNAS	%w/w S	0.005	LAB.64	<0.005	[NT]	[NT]	[NR]	[NR]
a-SNAS	moles H^+/t	5	LAB.64	<5	[NT]	[NT]	[NR]	[NR]
s-SNAS	%w/w S	0.01	LAB.64	<0.01	[NT]	[NT]	[NR]	[NR]
a-Net Acidity	moles H^+/t	10	LAB.64	<10	[NT]	[NT]	LCS	96%
Liming rate	kg $CaCO_3$/t	0.75	LAB.64	<0.75	[NT]	[NT]	LCS	96%
a-Net Acidity without ANCE	moles H^+/t	10	LAB.64	<10	[NT]	[NT]	[NR]	[NR]
Liming rate without ANCE	kg $CaCO_3$/t	0.75	LAB.64	<0.75	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date digested	-			26/05/10	41366-2	26/05/10 || 26/05/10	LCS-1	26/05/10
Date analysed	-			26/05/10	41366-2	26/05/10 || 26/05/10	LCS-1	26/05/10
Arsenic	mg/kg	4	Metals.20 ICP-AES	<4	41366-2	<4 || <4	LCS-1	100%
Cadmium	mg/kg	0.5	Metals.20 ICP-AES	<0.5	41366-2	<0.5 || <0.5	LCS-1	105%
Chromium	mg/kg	1	Metals.20 ICP-AES	<1	41366-2	8 || 8 || RPD: 0	LCS-1	106%
Copper	mg/kg	1	Metals.20 ICP-AES	<1	41366-2	33 || 31 || RPD: 6	LCS-1	110%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Lead	mg/kg	1	Metals.20 ICP-AES	<1	41366-2	65 || 69 || RPD: 6	LCS-1	101%
Mercury	mg/kg	0.1	Metals.21 CV-AAS	<0.1	41366-2	0.3 || 0.3 || RPD: 0	LCS-1	91%
Nickel	mg/kg	1	Metals.20 ICP-AES	<1	41366-2	19 || 12 || RPD: 45	LCS-1	108%
Zinc	mg/kg	1	Metals.20 ICP-AES	<1	41366-2	78 || 83 || RPD: 6	LCS-1	106%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			25/5/10
Date analysed	-			25/5/10
Moisture	%	0.1	LAB.8	<0.10

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

QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	41366-1	25/05/2010
Date analysed	-	[NT]	[NT]	41366-1	25/05/2010
TPH C_{10} - C_{14}	mg/kg	[NT]	[NT]	41366-1	82%
TPH C_{15} - C_{28}	mg/kg	[NT]	[NT]	41366-1	102%
TPH C_{29} - C_{36}	mg/kg	[NT]	[NT]	41366-1	97%
Surrogate o-Terphenyl	%	[NT]	[NT]	41366-1	106%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	41366-1	25/5/10
Date analysed	-	[NT]	[NT]	41366-1	26/5/10
Naphthalene	mg/kg	[NT]	[NT]	41366-1	86%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	41366-1	91%
Phenanthrene	mg/kg	[NT]	[NT]	41366-1	90%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	41366-1	92%
Pyrene	mg/kg	[NT]	[NT]	41366-1	100%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	41366-1	97%
Benzo(b+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	41366-1	101%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Indeno(1,2,3-c,d)pyrene	mg/kg	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%	[NT]	[NT]	41366-1	79%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	41366-1	24/05/2010
Date analysed	-	[NT]	[NT]	41366-1	26/05/2010
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	41366-1	111%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	41366-1	99%
Heptachlor	mg/kg	[NT]	[NT]	41366-1	86%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	41366-1	106%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	41366-1	103%
gamma-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	[NT]	[NT]	41366-1	96%
Dieldrin	mg/kg	[NT]	[NT]	41366-1	103%
Endrin	mg/kg	[NT]	[NT]	41366-1	86%
pp-DDD	mg/kg	[NT]	[NT]	41366-1	91%
Endosulfan II	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	[NT]	[NT]	41366-1	90%
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	41366-1	100%

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	41366-1	24/05/2010
Date analysed	-	[NT]	[NT]	41366-1	26/05/2010
Arochlor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1221*	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	[NT]	[NT]	41366-1	101%
Arochlor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	41366-1	110%

Report Comments:

Asbestos was analysed by Approved Identifier: Matt Mansfield
Asbestos was authorised by Approved Signatory: Matt Mansfield
INS: Insufficient sample for this test NT: Not tested PQL: Practical Quantitation Limit <: Less than >: Greater than
RPD: Relative Percent Difference NA: Test not required LCS: Laboratory Control Sample NR: Not requested

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 sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes and LCS: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable. Surrogates: 60-140% is acceptable for general organics and 10-140% for

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

SAMPLE RECEIPT ADVICE

Client:

Douglas Partners
96 Hermitage Rd
West Ryde NSW 2114

ph: 02 9809 0666
Fax: 02 9809 4095

Attention: Kurt Plambeck

Sample log in details:

Your reference:	**71529.01, VAPs Opera House**
Envirolab Reference:	**41366**
Date received:	24/05/10
Date results expected to be reported:	**31/05/10**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	7 Soils
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice

Comments:

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

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: VAPs Opera House
Project No: ...71529.01..... Sampler: ...KDP.....
Project Mgr: ...KP.....Mob. Phone: 0402 057 147
Email: kurt.plambeck@douglaspartners.com.au
Date Required: ...standard ..... Lab Quote No. .....

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

	Sample ID	Sample Depth	Lab ID	Sampling Date	Sample Type S - soil W – water	Container type	Analytes: Heavy metals	TRH BTEX	PAH	OCP PCB	Phenols ~~PAH~~	Asbestos	SPOCAS	BTEX	VOC	Notes
1	206	0.4-0.5		24/5	S	G	✓	✓	✓	✓	✓	✓				
2	206	0.8-1.0								✓	✓	✓			✓	
3	206	1.1-1.2														
4	BD1	0510														
5	206	1.0				B							✓			
6	trip sp.					G								✓		
7	tr. pb blank					G								✓		

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

Job No: 41366
Date received: 24/05/10
Time received: 4pm HM
Received by:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Lab Report No. .....

Send Results to: Douglas Partners Address: 96 Hermitage Road, West Ryde 2114 Phone: (02) 9809 0666 Fax: (02) 9809 4095

Relinquished by: KP Signed: KP Date & Time: 24/5 12pm Received By: Hindo Date & Time:

Relinquished by: Signed: Date & Time: Received By: Date & Time: