APPENDIX D

Test Bore Report Results and Notes Relating to this Report

Douglas Partners
Geotechnics · Environment · Groundwater

NOTES RELATING TO THIS REPORT

Introduction

These notes have been provided to amplify the geotechnical report in regard to classification methods, specialist field procedures and certain matters relating to the Discussion and Comments section. Not all, of course, are necessarily relevant to all reports.

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

Description and Classification Methods

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

Soil types are described according to the predominating particle size, qualified by the grading of other particles present (eg. sandy clay) on the following bases:

Soil Classification	Particle Size
Clay	less than 0.002 mm
Silt	0.002 to 0.06 mm
Sand	0.06 to 2.00 mm
Gravel	2.00 to 60.00 mm

Cohesive soils are classified on the basis of strength either by laboratory testing or engineering examination. The strength terms are defined as follows.

Classification	Undrained Shear Strength kPa
Very soft	less than 12
Soft	12—25
Firm	25—50
Stiff	50—100
Very stiff	100—200
Hard	Greater than 200

Non-cohesive soils are classified on the basis of relative density, generally from the results of standard penetration tests (SPT) or Dutch cone penetrometer tests (CPT) as below:

Relative Density	SPT "N" Value (blows/300 mm)	CPT Cone Value (q_c — MPa)
Very loose	less than 5	less than 2
Loose	5—10	2—5
Medium dense	10—30	5—15
Dense	30—50	15—25
Very dense	greater than 50	greater than 25

Rock types are classified by their geological names. Where relevant, further information regarding rock classification is given on the following sheet.

Sampling

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

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

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

Details of the type and method of sampling are given in the report.

Drilling Methods.

The following is a brief summary of drilling methods currently adopted by the Company and some comments on their use and application.

Test Pits — these are excavated with a backhoe or a tracked excavator, allowing close examination of the in-situ soils if it is safe to descent into the pit. The depth of penetration is limited to about 3 m for a backhoe and up to 6 m for an excavator. A potential disadvantage is the disturbance caused by the excavation.

Large Diameter Auger (eg. Pengo) — the hole is advanced by a rotating plate or short spiral auger, generally 300 mm or larger in diameter. The cuttings are returned to the surface at intervals (generally of not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube sampling.

Continuous Sample Drilling — the hole is advanced by pushing a 100 mm diameter socket into the ground and withdrawing it at intervals to extrude the sample. This is the most reliable method of drilling in soils, since moisture content is unchanged and soil structure, strength, etc. is only marginally affected.

Continuous Spiral Flight Augers — the hole is advanced using 90—115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and in sands above the water

table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are very disturbed and may be contaminated. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively lower reliability, due to remoulding, contamination or softening of samples by ground water.

Non-core Rotary Drilling — the hole is advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from 'feel' and rate of penetration.

Rotary Mud Drilling — similar to rotary drilling, but using drilling mud as a circulating fluid. The mud tends to mask the cuttings and reliable identification is again only possible from separate intact sampling (eg. from SPT).

Continuous Core Drilling — a continuous core sample is obtained using a diamond-tipped core barrel, usually 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in very weak rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation.

Standard Penetration Tests

Standard penetration tests (abbreviated as SPT) are used mainly in non-cohesive soils, but occasionally also in cohesive soils as a means of determining density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, "Methods of Testing Soils for Engineering Purposes" — Test 6.3.1.

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

The test results are reported in the following form.

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

  as 4, 6, 7
  N = 13

- In the case where the test is discontinued short of full penetration, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm

  as 15, 30/40 mm.

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

Occasionally, the test method is used to obtain samples in 50 mm diameter thin walled sample tubes in clays. In such circumstances, the test results are shown on the borelogs in brackets.

Cone Penetrometer Testing and Interpretation

Cone penetrometer testing (sometimes referred to as Dutch cone — abbreviated as CPT) described in this report has been carried out using an electrical friction cone penetrometer. The test is described in Australian Standard 1289, Test 6.4.1.

In the tests, a 35 mm diameter rod with a cone-tipped end is pushed continuously into the soil, the reaction being provided by a specially designed truck or rig which is fitted with an hydraulic ram system. Measurements are made of the end bearing resistance on the cone and the friction resistance on a separate 130 mm long sleeve, immediately behind the cone. Transducers in the tip of the assembly are connected by electrical wires passing through the centre of the push rods to an amplifier and recorder unit mounted on the control truck.

As penetration occurs (at a rate of approximately 20 mm per second) the information is plotted on a computer screen and at the end of the test is stored on the computer for later plotting of the results.

The information provided on the plotted results comprises: —

- Cone resistance — the actual end bearing force divided by the cross sectional area of the cone — expressed in MPa.
- Sleeve friction — the frictional force on the sleeve divided by the surface area — expressed in kPa.
- Friction ratio — the ratio of sleeve friction to cone resistance, expressed in percent.

There are two scales available for measurement of cone resistance. The lower scale (0—5 MPa) is used in very soft soils where increased sensitivity is required and is shown in the graphs as a dotted line. The main scale (0—50 MPa) is less sensitive and is shown as a full line.

The ratios of the sleeve friction to cone resistance will vary with the type of soil encountered, with higher relative friction in clays than in sands. Friction ratios of 1%—2% are commonly encountered in sands and very soft clays rising to 4%—10% in stiff clays.

In sands, the relationship between cone resistance and SPT value is commonly in the range:—

q_c (MPa) = (0.4 to 0.6) N (blows per 300 mm)

In clays, the relationship between undrained shear strength and cone resistance is commonly in the range:—

q_c = (12 to 18) c_u

Interpretation of CPT values can also be made to allow estimation of modulus or compressibility values to allow calculation of foundation settlements.

Inferred stratification as shown on the attached reports is assessed from the cone and friction traces and from experience and information from nearby boreholes, etc. This information is presented for general guidance, but must be regarded as being to some extent interpretive. The test method provides a continuous profile of engineering properties, and where precise information on soil classification is required, direct drilling and sampling may be preferable.

Hand Penetrometers

Hand penetrometer tests are carried out by driving a rod into the ground with a falling weight hammer and measuring the blows for successive 150 mm increments of penetration. Normally, there is a depth limitation of 1.2 m but this may be extended in certain conditions by the use of extension rods.

Two relatively similar tests are used.

- Perth sand penetrometer — a 16 mm diameter flat-ended rod is driven with a 9 kg hammer, dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands (originating in Perth) and is mainly used in granular soils and filling.
- Cone penetrometer (sometimes known as the Scala Penetrometer) — a 16 mm rod with a 20 mm diameter cone end is driven with a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). The test was developed initially for pavement subgrade investigations, and published correlations of the test results with California bearing ratio have been published by various Road Authorities.

Laboratory Testing

Laboratory testing is carried out in accordance with Australian Standard 1289 "Methods of Testing Soil for Engineering Purposes". Details of the test procedure used are given on the individual report forms.

Bore Logs

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

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

Ground Water

Where ground water levels are measured in boreholes, there are several potential problems;

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

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

Engineering Reports

Engineering reports are prepared by qualified personnel and are based on the information obtained and on current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal (eg. a three storey building), the information and interpretation may not be relevant if the design proposal is changed (eg. to a twenty storey building). If this happens, the Company will be pleased to review the report and the sufficiency of the investigation work.

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

- unexpected variations in ground conditions — the potential for this will depend partly on bore spacing and sampling frequency
- changes in policy or interpretation of policy by statutory authorities
- the actions of contractors responding to commercial pressures.

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

Site Anomalies

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

Reproduction of Information for Contractual Purposes

Attention is drawn to the document "Guidelines for the Provision of Geotechnical Information in Tender Documents", published by the Institution of Engineers, Australia. Where information obtained from this investigation is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section

is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. The Company would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

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

AN ENGINEERING CLASSIFICATION OF SEDIMENTARY ROCKS IN THE SYDNEY AREA

This classification system provides a standardized terminology for the engineering description of the sandstone and shales in the Sydney area, but the terms and definitions may be used elsewhere when applicable.

Under this system rocks are classified by Rock Type, Degree of Weathering, Strength, Stratification Spacing, and Degree of Fracturing. These terms do not cover the full range of engineering properties. Descriptions of rock may also need to refer to other properties (e.g. durability, abrasiveness, etc.) where these are relevant.

ROCK TYPE DEFINITIONS

Rock Type	Definition
Conglomerate:	More than 50% of the rock consists of gravel sized (greater than 2mm) fragments
Sandstone:	More than 50% of the rock consists of sand sized (.06 to 2mm) fragments
Siltstone:	More than 50% of the rock consists of silt-sized (less than 0.06mm) granular particles and the rock is not laminated
Claystone:	More than 50% of the rock consists of clay or sericitic material and the rock is not laminated
Shale:	More than 50% of the rock consists of silt or clay sized particles and the rock is laminated

Rocks possessing characteristics of two groups are described by their predominant particle size with reference also to the minor constituents, e.g. clayey sandstone, sandy shale.

DEGREE OF WEATHERING

Term	Symbol	Definition
Extremely Weathered	EW	Rock substance affected by weathering to the extent that the rock exhibits soil properties - i.e. it can be remoulded and can be classified according to the Unified Classification System, but the texture of the original rock is still evident.
Highly Weathered	HW	Rock substance affected by weathering to the extent that limonite staining or bleaching affects the whole of the rock substance and other signs of chemical or physical decomposition are evident. Porosity and strength may be increased or decreased compared to the fresh rock usually as a result of iron leaching or deposition. The colour and strength of the original fresh rock substance is no longer recognisable.
Moderately Weathered	MW	Rock substance affected by weathering to the extent that staining or discolouration of the rock substance usually by limonite has taken place. The colour and texture of the fresh rock is no longer recognisable.
Slightly Weathered	SW	Rock substance affected by weathering to the extent that partial staining or discolouration of the rock substance usually by limonite has taken place. The colour and texture of the fresh rock is recognisable.
Fresh	Fs	Rock substance unaffected by weathering, limonite staining along joints.
Fresh	Fr	Rock substance unaffected by weathering.

STRATIFICATION SPACING

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

ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index (Is 50) and refers to the strength of the rock substance in the direction normal to the bedding. The test procedure is described by the International Society of Rock Mechanics (Reference).

Strength Term	Is(50) MPa	Field Guide	Approx. qu MPa*
Extremely Low:	0.03	Easily remoulded by hand to a material with soil properties	0.7
Very Low:	0.1	May be crumbled in the hand. Sandstone is “sugary” and friable.	2.4
Low:	0.3	A piece of core 150 mm long x 50 mm dia. may be broken by hand and easily scored with a knife. Sharp edges of core may be friable and break during handling.	7
Medium:	1	A piece of core 150 mm long x 50 mm dia. can be broken by hand with considerable difficulty. Readily scored with knife.	24
High:	3	A piece of core 150 mm long x 50 mm dia. cannot be broken by unaided hands, can be slightly scratched or scored with knife.	70
Very High:	10	A piece of core 150 mm long x 50 mm dia. may be broken readily with hand held hammer. Cannot be scratched with pen knife.	240
Extremely High:		A piece of core 150 mm long x 50 mm dia. is difficult to break with hand held hammer. Rings when struck with a hammer.	

* The approximate unconfined compressive strength (qu) shownin the table is based on an assumed ratio to the point load index of 24:1. This ratio may vary widely.

DEGREE OF FRACTURING

This classification applies to diamond drill cores and refers to the spacing of all types of natural fractures along which the core is discontinuous. These include bedding plane partings, joints and other rock defects, but exclude known artificial fractures such as drilling breaks

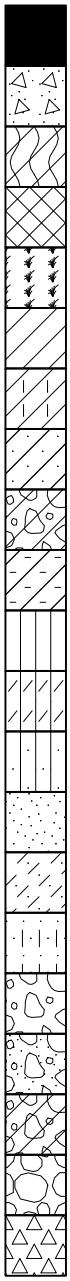
Term	Description
Fragmented:	The core is comprised primarily of fragments of length less than 20 mm, and mostly of width less than the core diameter.
Highly Fractured:	Core lengths are generally less than 20 mm - 40 mm with occasional fragments.
Fractured:	Core lengths are mainly 30 mm - 100 mm with occasional shorter and longer sections.
Slightly Fractured:	Core lengths are generally 300 mm - 1000 mm with occasional longer sections and occasional sections of 100 mm - 300 mm.
Unbroken:	The core does not contain any fracture.

REFERENCE

International Society of Rock Mechanics, Commission on Standardisation of Laboratory and Field Tests, Suggested Methods for Determining the Uniaxial Compressive Strength of Rock Materials and the Point Load Strength Index, Committee on Laboratory Tests Document No. 1 Final Draft October 1972

GRAPHIC SYMBOLS FOR SOIL & ROCK

SOIL



BITUMINOUS CONCRETE

CONCRETE

TOPSOIL

FILLING

PEAT

CLAY

SILTY CLAY

SANDY CLAY

GRAVELLY CLAY

SHALY CLAY

SILT

CLAYEY SILT

SANDY SILT

SAND

CLAYEY SAND

SILTY SAND

GRAVEL

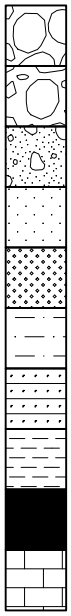
SANDY GRAVEL

CLAYEY GRAVEL

COBBLES/BOULDERS

TALUS

SEDIMENTARY ROCK



BOULDER CONGLOMERATE

CONGLOMERATE

CONGLOMERATIC SANDSTONE

SANDSTONE FINE GRAINED

SANDSTONE COARSE GRAINED

SILTSTONE

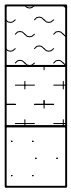
LAMINITE

MUDSTONE, CLAYSTONE, SHALE

COAL

LIMESTONE

METAMORPHIC ROCK

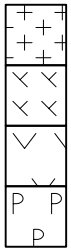


SLATE, PHYLITTE, SCHIST

GNEISS

QUARTZITE

IGNEOUS ROCK



GRANITE

DOLERITE, BASALT

TUFF

PORPHYRY

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BOREHOLE LOG

CLIENT: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 101
PROJECT No: 36569.03
DATE: 01 Jul 08
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, D - Drill Break)	Type	Core Rec. %	RQD %	Test Results & Comments
	0.06	BITUMINOUS CONCRETE							A			
	0.22	CONCRETE							E			PID=1.9ppm
		FILLING - light brown, fine to medium grained, sand filling with crushed sandstone							A			
	0.8	FILLING - light grey and red brown, silty clay and crushed sandstone filling							E			PID=1.2ppm
	1								A			3,4,12 N = 16
									E			PID=1.3ppm
	1.7	FILLING - light brown to brown, fine to medium grained, sand filling with some angular concrete gravel, humid							S			
	2								E			PID<1ppm
									E			PID<1ppm
									S			7,25/10mm refusal
	3								E			PID<1ppm
	3.0	SANDY CLAY - very stiff to hard, mottled orange red grey, sandy clay with ironstone bands										
	4								S			9,13,17 N = 30
	5											
									S			11,11,16 N = 27
	6							Note: Unless otherwise stated, rock is fractured along rough planar bedding planes or joints dipping 0°- 10°				
	6.7	SANDSTONE - extremely low strength, light grey brown, fine to medium grained sandstone with ironstone bands										
	7							7m: CORE LOSS: 120mm				
	7.0	SANDSTONE - very low strength, highly weathered, light grey and brown, fine grained sandstone with ironstone bands						7.3m: J85°- 90°, curved				
	8											
	8.1	SILTSTONE/SANDSTONE - extremely low to very low strength, extremely to highly weathered, grey and brown, fine grained sandstone/siltstone							C	96	36	
	8.85	SANDSTONE - high strength, slightly weathered then fresh, slightly fractured and unbroken, light grey, medium to coarse grained sandstone with very low strength bands						8.9m: B5°, carbonaceous clay 9.2m: J90° 9.24m: B0°, 10mm clay				PL(A) = 1.3MPa
	9											

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** HW to 3.0m

TYPE OF BORING: Diatube to 0.22m; Solid flight auger to 3.0m; Rotary to 7.0m; NMLC-Coring to 15.90m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: E = Environmental 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: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 101
PROJECT No: 36569.03
DATE: 01 Jul 08
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		SANDSTONE - high strength, slightly weathered then fresh, slightly fractured and unbroken, light grey, medium to coarse grained sandstone with very low strength bands *(continued)*						10.38m: B15°, clay veneer	C	100	99	PL(A) = 2.6MPa
	11							11.07m: B0°, 10mm sandy clay	C	100	99	PL(A) = 2.5MPa
	12							12.37m: B0°, 10mm sandy clay				PL(A) = 2MPa
	13											
	14							13.83m: B0°, clay veneer				PL(A) = 1.5MPa
	15							14.51m: B5°, clay smear	C	100	100	PL(A) = 1.5MPa
												PL(A) = 1.3MPa
	15.9 16	Bore discontinued at 15.9m										
	17											
	18											
	19											

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** HW to 3.0m

TYPE OF BORING: Diatube to 0.22m; Solid flight auger to 3.0m; Rotary to 7.0m; NMLC-Coring to 15.90m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: E = Environmental 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: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 102
PROJECT No: 36569.03
DATE: 27 Jun 08
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	0.05	BITUMINOUS CONCRETE										
	0.15	ROADBASE GRAVEL							A			PID<1ppm
		FILLING - light brown, fine to medium grained sand filling, with some gravel and brick fragments, humid							A			
	0.7								E			PID<1ppm
	1	FILLING - moderately compacted, dark grey brown, silty clay filling with fine sand and gravel, moist							A			pp = 8kPa 6,6 N = 12
	1.4	SANDY CLAY - stiff to very stiff, grey brown sandy clay with ironstone bands, moist							E* S			PID<1ppm
	2								E			PID<1ppm
	2.0	SANDY CLAY - very stiff, mottled red brown and light grey sandy clay with ironstone bands							E			PID<1ppm
	3								S			pp = 12kPa 5,11 N = 16
	4								S			pp = 16kPa 10,10 N = 20
	5							Note: Unless otherwise stated, rock is fractured along rough planar bedding planes or joints dipping 0°- 10°				
	5.5	SANDSTONE - medium strength, extremely to moderately weathered then fresh stained, fractured to slightly fractured, light grey and brown, fine to medium grained sandstone with some extremely low strength bands						5.5m: CORE LOSS: 100mm 5.5-7.8m: B0°- 5°, clayey & ironstained	C	97	72	PL(A) = 0.7MPa
	6											PL(A) = 0.7MPa
	7											PL(A) = 0.4MPa
	8							8.1m: J60°- 90°, curved, ironstained				PL(A) = 0.4MPa
	8.5							8.5m: CORE LOSS: 100mm				
	8.65	SANDSTONE - high strength, fresh, slightly fractured and unbroken, light grey, medium to coarse grained sandstone							C	95	87	PL(A) = 2.3MPa
	9	9.82-9.93m: extremely low strength band						9.82m: B0°, clayey				

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger to 2.5m; Rotary to 5.5m; NMLC-Coring to 16.25m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: 100% water loss at 8.5m. E = Environmental sample
*Denotes field replicate sample BD3/270608 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: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 102
PROJECT No: 36569.03
DATE: 27 Jun 08
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		SANDSTONE - high strength, fresh, slightly fractured and unbroken, light grey, medium to coarse grained sandstone *(continued)*							C	95	87	PL(A) = 1.9MPa
	11							11.06m: B10°, clayey				PL(A) = 2.5MPa
	11.52	SANDSTONE - high to very high then high strength, fresh, slightly fractured and unbroken, light grey medium to coarse grained sandstone						11.5m: B5°, 15mm sandy clay				
	12								C	100	85	
												PL(A) = 3.3MPa
	13							12.95m: B5°, 10mm sandy clay				PL(A) = 2.7MPa
	14											PL(A) = 1.7MPa
	15								C	100	100	PL(A) = 1.6MPa
	16											
	16.25	Bore discontinued at 16.25m										
	17											
	18											
	19											

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger to 2.5m; Rotary to 5.5m; NMLC-Coring to 16.25m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: 100% water loss at 8.5m. E = Environmental sample
*Denotes field replicate sample BD3/270608 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: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 103
PROJECT No: 36569.03
DATE: 13/6-1/7/08
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	0.05	BITUMINOUS CONCRETE							A			
	0.15	ROADBASE GRAVEL							E			PID<1ppm
		FILLING - light grey brown, fine to medium grained, sand filling with crushed sandstone and gravel, humid							E			PID<1ppm
									A			
									E			PID<1ppm
									A			25/100mm
									S			refusal
									E			PID<1ppm
	1.7	SANDY CLAY - very stiff, mottled orange grey sandy clay with ironstone bands, damp							E			PID<1ppm
	2.3	SANDY CLAY - very stiff to hard, mottled red, light grey sandy clay with ironstone band (possible extremely weathered sandstone)							E			PID<1ppm
									S			4,7,12 N = 19
									S			6,15,25/30mm refusal
								Note: Unless otherwise stated, rock is fractured along rough planar bedding planes or joints dipping 0°- 10°				
	5.4	SANDSTONE - extremely low strength, light grey, fine grained sandstone						5.54m: B0°, 15mm clay				PL(A) = 0.4MPa
	5.45	SANDSTONE - medium then low strength, highly to moderately weathered, slightly fractured, light grey brown fine grained sandstone with extremely and very low strength bands						5.98m: B0°, 20mm sandy clay	C	100	69	PL(A) = 0.2MPa
								6.49m: B0°, 15mm sandy clay 6.67m: J85°, ironstained				PL(A) = 0.2MPa
	7.15							7.15m: CORE LOSS: 180mm 7.5m: J60°- 90°, curved 7.58m: J45°, clayey				
	7.85	SANDSTONE - medium strength, fresh stained, slightly fractured, grey brown, fine to medium grained sandstone						8.11m: J35°, ironstained 8.18m: J30°, 85°, steeped				PL(A) = 0.5MPa
	8.6	SANDSTONE - medium then high strength, fresh stained, slightly fractured, light grey, medium to coarse grained sandstone						8.53m: B0°, clayey	C	94	80	PL(A) = 0.9MPa
								9.12m: J80°				
								9.51m: B0°, clayey				PL(A) = 1.5MPa

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger to 2.5m; Rotary to 5.45m; NMLC-Coring to 16.1m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Standpipe installed. E = Environmental 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,	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: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 103
PROJECT No: 36569.03
DATE: 13/6-1/7/08
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	10.0	SANDSTONE - high strength, fresh, slightly fractured and unbroken, light grey, medium to coarse grained sandstone						10.49m: B10°, 5mm sandy clay				PL(A) = 1.7MPa
	11							11.19m: B0°, 15mm sandy clay	C	100	99	PL(A) = 2.4MPa
	12											
	13							12.8m: B5°, clay veneer				PL(A) = 2.4MPa
	13.1	SANDSTONE - high to very high strength, fresh, unbroken, light grey, medium to coarse grained sandstone										PL(A) = 3MPa
	14											
	14.2	SANDSTONE - high strength, fresh, slightly fractured, light grey, medium to coarse grained sandstone						14.51m: B20°, clay veneer 14.66m: B5°, clay veneer	C	100	100	PL(A) = 1.9MPa
	15											
								15.51m: B0°, 10mm sandy clay				PL(A) = 1.7MPa
	16											
	16.1	Bore discontinued at 16.1m										
	17											
	18											
	19											

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger to 2.5m; Rotary to 5.45m; NMLC-Coring to 16.1m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Standpipe installed. E = Environmental 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,	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: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 104
PROJECT No: 36569.03
DATE: 25-26/6/08
SHEET 1 OF 4

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	0.03	BITUMINOUS CONCRETE							A			
	0.15	ROADBASE GRAVEL							E			PID<1ppm
		FILLING - light grey brown, fine to medium grained, sand filling with crushed sandstone and gravel, humid							A			
	0.65								E			PID<1ppm
1									A			
	1.1	FILLING - grey and red brown, silty clay filling with trace of fine sand, moist							E			9,10,12 N = 22
									S			PID<1ppm
	1.7	SANDY CLAY - very stiff, orange red brown sandy clay with ironstone band, damp										
									E*			PID<1ppm
2	2.1	SANDY CLAY - very stiff, red brown sandy clay with fine ironstone band, damp										
		SANDY CLAY - very stiff mottled orange, light grey sandy clay, damp							S			7,10,12 N = 22
3												
								Note: Unless otherwise stated, rock is fractured along rough, planar bedding planes or joints dipping 0°- 10°				
4									S			26 refusal
	4.5	SANDSTONE - very low strength, light grey brown, fine to medium grained sandstone with ironstone band										
	4.65 4.71							4.71m: B0°, clayey CORE LOSS: 200mm				
5		SANDSTONE - medium strength, moderately weathered, fractured to slightly fractured, brown, fine to medium grained sandstone						5.03m: J35°				PL(A) = 0.9MPa
								5.63m: B0°, 5mm clay				
								5.87-7.4m: B0°- 5°, ironstained	C	92	80	
6	6.1	SANDSTONE - medium strength, fresh stained to fresh, slightly fractured, light grey with brown stained, fine to medium grained sandstone										PL(A) = 0.9MPa
								6.65m: B5° ironstained with rock fragments				
7												PL(A) = 0.9MPa
	7.75							7.75m: CORE LOSS: 1150mm				
8									C	92	92	
9												
	9.25	SANDSTONE - high strength, fresh, unbroken, light grey medium to coarse grained sandstone						9.25m: B0°, clayey	C	100	100	PL(A) = 2.5MPa

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger to 2.5m; Rotary to 4.65m; NMLC-Coring to 30.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: E = Environmental sample
*Denotes field replicate sample BD2/250608 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,	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: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 104
PROJECT No: 36569.03
DATE: 25-26/6/08
SHEET 2 OF 4

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	10.0	SANDSTONE - high strength, fresh, slightly fractured and unbroken, light grey, medium to coarse grained sandstone with some carbonaceous laminations							C	100	100	PL(A) = 1.5MPa
	11							11.05m: B0°, clay veneer				
								11.6m: B5°, clay veneer				PL(A) = 2MPa
	12								C	100	100	
								12.13m: J25°, ironstained				PL(A) = 2.5MPa
	13											
												PL(A) = 1.8MPa
	14								C	100	100	
												PL(A) = 1.7MPa
	15							14.93m: B10°, clayey				PL(A) = 2.2MPa
	16								C	100	100	PL(A) = 1.9MPa
	17											PL(A) = 1.4MPa
	18							18.4m: B0°, clay veneer	C	100	100	PL(A) = 1.9MPa
	19							19.25m: J70°				PL(A) = 1.8MPa

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger to 2.5m; Rotary to 4.65m; NMLC-Coring to 30.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: E = Environmental sample
*Denotes field replicate sample BD2/250608 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,	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:

Douglas Partners
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BOREHOLE LOG

CLIENT: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 104
PROJECT No: 36569.03
DATE: 25-26/6/08
SHEET 3 OF 4

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	20.0	SANDSTONE - high then high to very high strength, fresh, slightly fractured and unbroken, light grey medium to coarse grained sandstone						19.9m: B0°, clayey	C	100	100	PL(A) = 2.4MPa
	21							21.38m: J75°	C	100	100	PL(A) = 2.5MPa
								21.65m: J75°, clayey 21.77m: J60°				
	22											PL(A) = 1.6MPa
								22.47m: B10°, clay veneer				PL(A) = 1.6MPa
	23							22.85m: J25°, clayey 22.87m: J75°- 85°, curved 23.17m: J75°	C	100	99	PL(A) = 1.7MPa
	24							24.16-24.75m: B0°- 10°, clay veneer				PL(A) = 1.9MPa
	25											
	26											
		26.55-26.70m: medium strength band							C	100	100	PL(A) = 1.8MPa PL(A) = 0.5MPa
	27											PL(A) = 1.8MPa
	28							28.35m: J75°				
												PL(A) = 2.2MPa
	29								C	100	100	PL(A) = 3.2MPa

Bore discontinued at 30.0m

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger to 2.5m; Rotary to 4.65m; NMLC-Coring to 30.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: E = Environmental sample
*Denotes field replicate sample BD2/250608 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: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 104
PROJECT No: 36569.03
DATE: 25-26/6/08
SHEET 4 OF 4

RL	Depth (m)	Description of Strata	Degree of Weathering (EW, HW, MW, SW, FS, FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	30.0											
	31											
	32											
	33											
	34											
	35											
	36											
	37											
	38											
	39											

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger to 2.5m; Rotary to 4.65m; NMLC-Coring to 30.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: E = Environmental sample
*Denotes field replicate sample BD2/250608 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: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 105
PROJECT No: 36569.03
DATE: 27-30/6/08
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear D - Drill Break)	Type	Core Rec. %	RQD %	Test Results & Comments
	0.05	BITUMINOUS CONCRETE							A			
	0.15	ROADBASE GRAVEL							E			PID<1ppm
		FILLING - light grey brown, fine to medium grained, sand filling with crushed sandstone and gravel, humid							A			
	0.65								E			PID<1ppm
	1	FILLING - grey to grey brown, silty clay filling with brick fragments and charcoal, damp							A			9,9,8 N = 17
									E S			PID<1ppm
	1.6	SANDY CLAY - very stiff then hard, light grey and brown, fine grained sandy clay (weathered sandstone,) with ironstone bands							E			PID<1ppm
	2								E			PID<1ppm
									S			10,13,13 N = 26
	3											
	4							Note: Unless otherwise stated, rock is fractured along rough planar bedding planes or joints dipping 0°- 10°	S			8,17,24 N = 41
	5											
	5.05	SANDSTONE - low to medium strength, moderately weathered, slightly fractured, brown, fine to medium grained sandstone						5.41m: B5°, 2mm sandy clay 5.66m: B0°, clayey, ironstained	C	100	90	PL(A) = 0.3MPa
	6											
	6.05	SANDSTONE - medium strength, fresh stained then fresh, slightly fractured, light grey, fine grained sandstone with low to medium strength band										PL(A) = 0.9MPa
	7								C	100	96	PL(A) = 0.9MPa
	8											PL(A) = 0.9MPa
	8.8	SANDSTONE - high strength, fresh, slightly fractured, light grey, medium to coarse grained sandstone with medium strength band at 9.62m										PL(A) = 2.9MPa
	9								C	97	94	
	9.57							9.57m: CORE LOSS: 50mm				PL(A) = 0.9MPa

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger to 2.5m; Rotary to 5.05m; NMLC-Coring to 16.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: E = Environmental 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,	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: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 105
PROJECT No: 36569.03
DATE: 27-30/6/08
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	10.0	SANDSTONE - high strength, fresh, slightly fractured and unbroken, light grey, medium to coarse grained sandstone						10.72m: B10°, clayey 10.8m: B10°, clayey	C	97	94	
	11											
	12											PL(A) = 2.2MPa
	13								C	100	100	PL(A) = 2.5MPa
	14											
	15											PL(A) = 1.9MPa
									C	93	93	PL(A) = 1.7MPa
	15.89							15.89m: B0°- 10°, clayey CORE LOSS: 110mm				
	16 16.0	Bore discontinued at 16.0m										
	17											
	18											
	19											

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** HW to 2.5m

TYPE OF BORING: Solid flight auger to 2.5m; Rotary to 5.05m; NMLC-Coring to 16.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: E = Environmental 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: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 106
PROJECT No: 36569.03
DATE: 25 Jun 08
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	0.1	BITUMINOUS CONCRETE ROADBASE GRAVEL							A			
	0.45	FILLING - boulder and brick fragments filling							E			PID=1.1ppm
									A			
									E			PID<1ppm
	1								S			1,1,1 N = 2
	2	2.0 Bore discontinued at 2.0m										
	3											
	4											

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 2.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: E = Environmental 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,	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:

Douglas Partners
Geotechnics · Environment · Groundwater

BOREHOLE LOG

CLIENT: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 107
PROJECT No: 36569.03
DATE: 25 Jun 08
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	0.03	BITUMINOUS CONCRETE										
		CONCRETE										
	0.23	FILLING - light brown to red brown, sandy clay with crushed sandstone, moist to wet							E A			PID<1ppm
									E			PID<1ppm
	1								A			4,6,5 N = 11
									E* S			PID<1ppm
									E			PID<1ppm
	2								A			
	2.1	SANDY CLAY - stiff to very stiff, red brown sandy clay with ironstone gravel							E			PID<1ppm
	2.3	SANDY CLAY - very stiff, grey sandy clay with ironstone band, damp							S			6,10,12 N = 22
	2.5	Bore discontinued at 2.5m										
	3											
	4											

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 2.5m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: E = Environmental sample
*Denotes field replicate sample BD1/240608 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: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 108
PROJECT No: 36569.03
DATE: 25 Jun 08
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		BITUMINOUS CONCRETE										
	0.1	FILLING - crushed sandstone filling, with roadbase gravel							E			PID=1.7ppm
	0.5	FILLING - light brown to red brown, fine to medium grained, sand filling with crushed sandstone							A			
									E			PID=2.2ppm
									E			PID=2.7ppm
	1								A S			20,25/30mm refusal
	1.15	FILLING - red brown, fine to medium grained, sand filling with crushed sandstone, metal fragment							E			PID=1.8ppm
									E			PID=2.0ppm
	2											
									S/E			3,4,10 N = 14 PID=2.2ppm
	3	3.0 Bore discontinued at 3.0m										
	4											

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 3.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: E = Environmental 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,	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:

Douglas Partners
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BOREHOLE LOG

CLIENT: Energy Australia
PROJECT: Belmore Park Substation
LOCATION: Cnr Pitt, Hay & Campbell St, Haymarket

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

BORE No: 109
PROJECT No: 36569.03
DATE: 24 Jun 08
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding, J - Joint, S - Shear, D - Drill Break)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
	0.05	BITUMINOUS CONCRETE							A			
		FILLING - crushed sandstone filling, with some roadbase gravel, humid							E			PID=2.1ppm
									E			PID=2.3ppm
									E			
									A			
	0.9								E			PID=1.4ppm
	1	FILLING - grey to grey brown, sandy clay filling with brick fragments and charcoal, damp							A			
									E			6,6,7 N = 13
									S			PID<1ppm
									E			
									E			PID=1.1ppm
	2								E			
									E			PID=1.5ppm
									E			
									S			6,7,9 N = 16
	2.8	SANDY CLAY - very stiff, light grey sandy clay with ironstone bands, damp							E			PID<1ppm
	3 3.0	Bore discontinued at 3.0m							E			
	4											

RIG: Bobcat **DRILLER:** Eric **LOGGED:** SI **CASING:** Uncased

TYPE OF BORING: Solid flight auger to 3.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: E = Environmental 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,	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 E
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 20848

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrien

Sample log in details:

Your Reference:	**36569.03, Environmental Investigation**
No. of samples:	3 Waters
Date samples received:	09/07/08
Date completed instructions received:	09/07/08

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:	16/07/08
Date of Preliminary Report:	Not Issued
Issue Date:	15/07/08

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

Results Approved By:

Jacinta Hurst
Operations Manager

vTPH & BTEX in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20848-1 GW101/0907 08 9/07/2008 Water	20848-2 GW103/0907 08 9/07/2008 Water	20848-3 GWBD1/0907 08 9/07/2008 Water
Date extracted	-	10/07/2008	10/07/2008	10/07/2008
Date analysed	-	11/07/2008	11/07/2008	11/07/2008
TPH C_6 - C_9	µg/L	14	470	<10
Benzene	µg/L	<1.0	97	<1.0
Toluene	µg/L	1.6	68	<1.0
Ethylbenzene	µg/L	<1.0	67	<1.0
m+p-xylene	µg/L	5.0	140	<2.0
o-xylene	µg/L	2.6	73	<1.0
Surrogate Dibromofluoromethane	%	125	130	122
Surrogate toluene-d8	%	100	95	100
Surrogate 4-BFB	%	98	100	94

sTPH in Water (C10-C36) Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20848-1 GW101/090708 9/07/2008 Water	20848-2 GW103/090708 9/07/2008 Water
Date extracted	-	11/07/2008	11/07/2008
Date analysed	-	11/07/2008	11/07/2008
TPH C_{10} - C_{14}	µg/L	110	<50
TPH C_{15} - C_{28}	µg/L	<100	<100
TPH C_{29} - C_{36}	µg/L	<100	<100
Surrogate o-Terphenyl	%	122	130

PAHs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	20848-1 GW101/090708 9/07/2008 Water	20848-2 GW103/090708 9/07/2008 Water
Date extracted	-	11/07/2008	11/07/2008
Date analysed	-	11/07/2008	11/07/2008
Naphthalene	µg/L	<1	<1
Acenaphthylene	µg/L	<1	<1
Acenaphthene	µg/L	<1	<1
Fluorene	µg/L	<1	<1
Phenanthrene	µg/L	<1	<1
Anthracene	µg/L	<1	<1
Fluoranthene	µg/L	<1	<1
Pyrene	µg/L	<1	<1
Benzo(a)anthracene	µg/L	<1	<1
Chrysene	µg/L	<1	<1
Benzo(b+k)fluoranthene	µg/L	<2	<2
Benzo(a)pyrene	µg/L	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1
Surrogate p-Terphenyl-d_{14}	%	97	98

OCP in water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20848-1 GW101/090708 9/07/2008 Water	20848-2 GW103/090708 9/07/2008 Water
Date extracted	-	11/07/2008	11/07/2008
Date analysed	-	11/07/2008	11/07/2008
HCB	µg/L	<0.2	<0.2
alpha-BHC	µg/L	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2
DDT	µg/L	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2
Surrogate TCLMX	%	68	73

PCBs in Water Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	20848-1 GW101/090708 9/07/2008 Water	20848-2 GW103/090708 9/07/2008 Water
Date extracted	-	11/07/2008	11/07/2008
Date analysed	-	11/07/2008	11/07/2008
Arochlor 1016	µg/L	<2	<2
Arochlor 1232	µg/L	<2	<2
Arochlor 1242	µg/L	<2	<2
Arochlor 1248	µg/L	<2	<2
Arochlor 1254	µg/L	<2	<2
Arochlor 1260	µg/L	<2	<2
Surrogate TCLMX	%	68	73

Total Phenolics in Water			
Our Reference:	UNITS	20848-1	20848-2
Your Reference	----------	GW101/0907 08	GW103/0907 08
Date Sampled	----------	9/07/2008	9/07/2008
Type of sample		Water	Water
Date extracted	-	10/07/2008	10/07/2008
Date analysed	-	11/07/2008	11/07/2008
Total Phenolics (as Phenol)	mg/L	<0.050	<0.050

HM in water - dissolved Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20848-1 GW101/090708 9/07/2008 Water	20848-2 GW103/090708 9/07/2008 Water	20848-3 GWBD1/090708 9/07/2008 Water
Date prepared	-	11/07/2008	11/07/2008	11/07/2008
Date analysed	-	14/07/2008	14/07/2008	14/07/2008
Arsenic-Dissolved	µg/L	<1.0	<1.0	1.2
Cadmium-Dissolved	µg/L	0.10	<0.10	<0.10
Chromium-Dissolved	µg/L	<1.0	<1.0	<1.0
Copper-Dissolved	µg/L	1.8	<1.0	<1.0
Lead-Dissolved	µg/L	5.2	<1.0	<1.0
Mercury-Dissolved	µg/L	<0.50	<0.50	<0.50
Nickel-Dissolved	µg/L	5.6	3.3	6.5
Zinc-Dissolved	µg/L	42	15	19

Miscellaneous Inorganics			
Our Reference:	UNITS	20848-1	20848-2
Your Reference	----------	GW101/090708	GW103/090708
Date Sampled	----------	9/07/2008	9/07/2008
Type of sample		Water	Water
Date prepared	-	11/07/2008	11/07/2008
Date analysed	-	11/07/2008	11/07/2008
Calcium - Dissolved	mg/L	13	4.5
Magnesium - Dissolved	mg/L	7.4	6.8
Hardness by calculation	$mgCaCO_3$ /L	63	39

Method ID	Methodology Summary
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 hexane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC-6	Soil samples are extracted with hexane/acetone and waters with dichloromethane and analysed by GC-ECD.
LAB.30	Total Phenolics - determined colorimetrically following disitillation.
Metals.22 ICP-MS	Determination of various metals by ICP-MS.
Metals.21 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Metals.20 ICP-AES	Determination of various metals by ICP-AES.

QUALITY CONTROL vTPH & BTEX in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			10/07/2008	[NT]	[NT]	LCS-W1	10/07/2008 %
Date analysed	-			11/07/2008	[NT]	[NT]	LCS-W1	11/07/2008 %
TPH C_6 - C_9	µg/L	10	GC.16	<10	[NT]	[NT]	LCS-W1	96%
Benzene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	99%
Toluene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	91%
Ethylbenzene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	94%
m+p-xylene	µg/L	2	GC.16	<2.0	[NT]	[NT]	LCS-W1	97%
o-xylene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	96%
Surrogate Dibromofluoromethane	%		GC.16	106	[NT]	[NT]	LCS-W1	110%
Surrogate toluene-d8	%		GC.16	93	[NT]	[NT]	LCS-W1	93%
Surrogate 4-BFB	%		GC.16	82	[NT]	[NT]	LCS-W1	96%
QUALITY CONTROL sTPH in Water (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/7/08	[NT]	[NT]	LCS-W1	11/7/08%
Date analysed	-			11/7/08	[NT]	[NT]	LCS-W1	11/7/08%
TPH C_{10} - C_{14}	µg/L	50	GC.3	<50	[NT]	[NT]	LCS-W1	66%
TPH C_{15} - C_{28}	µg/L	100	GC.3	<100	[NT]	[NT]	LCS-W1	110%
TPH C_{29} - C_{36}	µg/L	100	GC.3	<100	[NT]	[NT]	LCS-W1	101%
Surrogate o-Terphenyl	%		GC.3	117	[NT]	[NT]	LCS-W1	124%
QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/07/2008	[NT]	[NT]	LCS-W1	11/07/2008 %
Date analysed	-			11/07/2008	[NT]	[NT]	LCS-W1	11/07/2008 %
Naphthalene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	93%
Acenaphthylene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	90%
Phenanthrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	90%
Anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	88%

QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	91%
Benzo(a)anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	106%
Benzo(b+k)fluoranthene	µg/L	2	GC.12 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	LCS-W1	87%
Indeno(1,2,3-c,d)pyrene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	GC.12 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	87	[NT]	[NT]	LCS-W1	98%
QUALITY CONTROL OCP in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/7/08	[NT]	[NT]	LCS-W1	11/7/08%
Date analysed	-			11/7/08	[NT]	[NT]	LCS-W1	11/7/08%
HCB	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
alpha-BHC	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	72%
gamma-BHC	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
beta-BHC	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	105%
Heptachlor	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	72%
delta-BHC	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Aldrin	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	78%
Heptachlor Epoxide	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	80%
gamma-Chlordane	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
alpha-Chlordane	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Endosulfan I	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
pp-DDE	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	91%
Dieldrin	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	92%
Endrin	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	95%
pp-DDD	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	95%
Endosulfan II	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
DDT	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	LCS-W1	92%
Methoxychlor	µg/L	0.2	GC-5	<0.2	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		GC-5	66	[NT]	[NT]	LCS-W1	73%

QUALITY CONTROL PCBs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/7/08	[NT]	[NT]	LCS-W1	11/7/08%
Date analysed	-			11/7/08	[NT]	[NT]	LCS-W1	11/7/08%
Arochlor 1016	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	µg/L	2	GC-6	<2	[NT]	[NT]	LCS-W1	80%
Arochlor 1260	µg/L	2	GC-6	<2	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		GC-6	66	[NT]	[NT]	LCS-W1	92%
QUALITY CONTROL Total Phenolics in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			10/7/08	20848-1	10/07/2008 || 10/07/2008	LCS-1	10/7/08%
Date analysed	-			11/7/08	20848-1	11/07/2008 || 11/07/2008	LCS-1	11/7/08%
Total Phenolics (as Phenol)	mg/L	0.05	LAB.30	<0.050	20848-1	<0.050 || <0.050	LCS-1	106%
QUALITY CONTROL HM in water - dissolved	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			11/07/2008	[NT]	[NT]	LCS-W1	11/07/2008 %
Date analysed	-			14/07/2008	[NT]	[NT]	LCS-W1	14/07/2008 %
Arsenic-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	109%
Cadmium-Dissolved	µg/L	0.1	Metals.22 ICP-MS	<0.10	[NT]	[NT]	LCS-W1	102%
Chromium-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	104%
Copper-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	105%
Lead-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	106%
Mercury-Dissolved	µg/L	0.5	Metals.21 CV-AAS	<0.50	[NT]	[NT]	LCS-W1	87%
Nickel-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	106%
Zinc-Dissolved	µg/L	1	Metals.22 ICP-MS	<1.0	[NT]	[NT]	LCS-W1	108%

QUALITY CONTROL **Miscellaneous Inorganics**	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			11/07/08	20848-1	11/07/2008 || 11/07/2008	LCS-W1	11/07/08%
Date analysed	-			11/07/08	20848-1	11/07/2008 || 11/07/2008	LCS-W1	11/07/08%
Calcium - Dissolved	mg/L	0.03	Metals.20 ICP-AES	<0.03	20848-1	13 || 14 || RPD: 7	LCS-W1	99%
Magnesium - Dissolved	mg/L	0.03	Metals.20 ICP-AES	<0.03	20848-1	7.4 || 7.7 || RPD: 4	LCS-W1	95%
Hardness by calculation	mgCaCO3/L	1	Metals.20 ICP-AES	<1	20848-1	63 || 67 || RPD: 6	[NR]	[NR]

QUALITY CONTROL Total Phenolics in Water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	20848-2	10/7/08%
Date analysed	-	[NT]	[NT]	20848-2	11/7/08%
Total Phenolics (as Phenol)	mg/L	[NT]	[NT]	20848-2	105%

QUALITY CONTROL HM in water - dissolved	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	20848-2	11/07/2008%
Date analysed	-	[NT]	[NT]	20848-2	14/07/2008%
Arsenic-Dissolved	µg/L	[NT]	[NT]	20848-2	111%
Cadmium-Dissolved	µg/L	[NT]	[NT]	20848-2	109%
Chromium-Dissolved	µg/L	[NT]	[NT]	20848-2	104%
Copper-Dissolved	µg/L	[NT]	[NT]	20848-2	100%
Lead-Dissolved	µg/L	[NT]	[NT]	20848-2	100%
Mercury-Dissolved	µg/L	[NT]	[NT]	20848-2	95%
Nickel-Dissolved	µg/L	[NT]	[NT]	20848-2	107%
Zinc-Dissolved	µg/L	[NT]	[NT]	20848-2	100%

QUALITY CONTROL Miscellaneous Inorganics	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	20848-2	11/07/08%
Date analysed	-	[NT]	[NT]	20848-2	11/07/08%
Calcium - Dissolved	mg/L	[NT]	[NT]	20848-2	101%
Magnesium - Dissolved	mg/L	[NT]	[NT]	20848-2	100%
Hardness by calculation	mgCaCO3/L	[NT]	[NT]	[NR]	[NR]

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job

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

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:

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 SVOC and speciated phenols.

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CERTIFICATE OF ANALYSIS 20627

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrien

Sample log in details:

Your Reference:	**36569.03, Contamination Assessment**
No. of samples:	3 Soils
Date samples received:	01/07/08
Date completed instructions received:	01/07/08

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:	8/07/08
Date of Preliminary Report:	Not Issued
Issue Date:	8/07/08

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Tests not covered by NATA are denoted with *.

Results Approved By:

Jacinta Hurst
Operations Manager

Joshua Lim
Chemist

vTPH & BTEX in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	20627-1 101/2.7-3.0 1/07/2008 Soil	20627-2 103/0.2-0.4 30/06/2008 Soil	20627-3 103/2.2-2.5 30/06/2008 Soil
Date extracted	-	2/07/2008	2/07/2008	2/07/2008
Date analysed	-	3/07/2008	3/07/2008	3/07/2008
vTPH C_6 - C_9	mg/kg	<25	<25	<25
Benzene	mg/kg	<0.5	<0.5	<0.5
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1.0	<1.0	<1.0
m+p-xylene	mg/kg	<2.0	<2.0	<2.0
o-Xylene	mg/kg	<1.0	<1.0	<1.0
Surrogate aaa-Trifluorotoluene	%	111	101	108

sTPH in Soil (C10-C36) Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20627-1 101/2.7-3.0 1/07/2008 Soil	20627-2 103/0.2-0.4 30/06/2008 Soil	20627-3 103/2.2-2.5 30/06/2008 Soil
Date extracted	-	2/07/2008	2/07/2008	2/07/2008
Date analysed	-	2/07/2008	2/07/2008	2/07/2008
TPH C_{10} - C_{14}	mg/kg	<50	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100	<100
Surrogate o-Terphenyl	%	94	91	91

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	20627-1 101/2.7-3.0 1/07/2008 Soil	20627-2 103/0.2-0.4 30/06/2008 Soil	20627-3 103/2.2-2.5 30/06/2008 Soil
Date extracted	-	2/07/2008	2/07/2008	2/07/2008
Date analysed	-	2/07/2008	2/07/2008	2/07/2008
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.4	<0.1	0.5
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.8	0.1	0.7
Pyrene	mg/kg	1.0	0.2	0.7
Benzo(a)anthracene	mg/kg	0.6	<0.1	0.4
Chrysene	mg/kg	0.8	0.1	0.5
Benzo(b+k)fluoranthene	mg/kg	1.3	<0.2	0.9
Benzo(a)pyrene	mg/kg	0.9	0.1	0.7
Indeno(1,2,3-c,d)pyrene	mg/kg	0.6	<0.1	0.4
Dibenzo(a,h)anthracene	mg/kg	0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.6	<0.1	0.4
Surrogate p-Terphenyl-d_{14}	%	93	93	93

Organochlorine Pesticides in soil	-			
Our Reference:	UNITS	20627-1	20627-2	20627-3
Your Reference	----------	101/2.7-3.0	103/0.2-0.4	103/2.2-2.5
Date Sampled	----------	1/07/2008	30/06/2008	30/06/2008
Type of sample		Soil	Soil	Soil
Date extracted	-	2/07/2008	2/07/2008	2/07/2008
Date analysed	-	3/07/2008	3/07/2008	3/07/2008
HCB	mg/kg	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Surrogate TCLMX	%	87	84	84

PCBs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	20627-1 101/2.7-3.0 1/07/2008 Soil	20627-2 103/0.2-0.4 30/06/2008 Soil	20627-3 103/2.2-2.5 30/06/2008 Soil
Date extracted	-	2/07/2008	2/07/2008	2/07/2008
Date analysed	-	3/07/2008	3/07/2008	3/07/2008
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1
Surrogate TCLMX	%	87	84	84

Total Phenolics in Soil				
Our Reference:	UNITS	20627-1	20627-2	20627-3
Your Reference	----------	101/2.7-3.0	103/0.2-0.4	103/2.2-2.5
Date Sampled	----------	1/07/2008	30/06/2008	30/06/2008
Type of sample		Soil	Soil	Soil
Date extracted	-	2/07/2008	2/07/2008	2/07/2008
Date analysed	-	2/07/2008	2/07/2008	2/07/2008
Total Phenolics (as Phenol)	mg/kg	<5.0	<5.0	<5.0

Acid Extractable metals in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	20627-1 101/2.7-3.0 1/07/2008 Soil	20627-2 103/0.2-0.4 30/06/2008 Soil	20627-3 103/2.2-2.5 30/06/2008 Soil
Date digested	-	2/07/2008	2/07/2008	2/07/2008
Date analysed	-	3/07/2008	3/07/2008	3/07/2008
Arsenic	mg/kg	4.7	<4.0	6.5
Cadmium	mg/kg	1.2	<1.0	<1.0
Chromium	mg/kg	21	9.2	19
Copper	mg/kg	100	8.3	17
Lead	mg/kg	150	29	640
Mercury	mg/kg	<0.10	<0.10	<0.10
Nickel	mg/kg	11	1.3	5.7
Zinc	mg/kg	120	17	290

Miscellaneous Inorg - soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20627-1 101/2.7-3.0 1/07/2008 Soil	20627-2 103/0.2-0.4 30/06/2008 Soil	20627-3 103/2.2-2.5 30/06/2008 Soil
Date prepared	-	3/07/2008	3/07/2008	3/07/2008
Date analysed	-	3/07/2008	3/07/2008	3/07/2008
Total Cyanide	mg/kg	<0.5	<0.5	<0.5
pH 1:5 soil:water	pH Units	11.9	7.9	11.1

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20627-1 101/2.7-3.0 1/07/2008 Soil	20627-2 103/0.2-0.4 30/06/2008 Soil	20627-3 103/2.2-2.5 30/06/2008 Soil
Date prepared	-	2/07/2008	2/07/2008	2/07/2008
Date analysed	-	2/07/2008	2/07/2008	2/07/2008
Moisture	%	5.3	11	9.6

Asbestos ID - soils				
Our Reference:	UNITS	20627-1	20627-2	20627-3
Your Reference	----------	101/2.7-3.0	103/0.2-0.4	103/2.2-2.5
Date Sampled	----------	1/07/2008	30/06/2008	30/06/2008
Type of sample		Soil	Soil	Soil
Date analysed	-	7/07/2008	7/07/2008	7/07/2008
Sample Description	-	30g sand	30g sand	30g sand
Asbestos ID in soil	-	No asbestos detected	No asbestos detected	No asbestos detected
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected	Respirable fibres not detected

Method ID	Methodology Summary
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 hexane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC-6	Soil samples are extracted with hexane/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.13	Cyanide - determined colourimetrically, following distillation. Based on APHA 20th ED, 4500-CN_C,E.
LAB.1	pH - Measured using pH meter and electrode in accordance with APHA 20th ED, 4500-H+.
LAB.8	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
ASB.1	Qualitative identification of asbestos type fibres in bulk using Polarised Light Microscopy and Dispersion Staining Techniques.

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	-			2/7/08	[NT]	[NT]	LCS-2	2/7/08%
Date analysed	-			3/7/08	[NT]	[NT]	LCS-2	3/7/08%
vTPH C_6 - C_9	mg/kg	25	GC.16	<25	[NT]	[NT]	LCS-2	127%
Benzene	mg/kg	0.5	GC.16	<0.5	[NT]	[NT]	LCS-2	88%
Toluene	mg/kg	0.5	GC.16	<0.5	[NT]	[NT]	LCS-2	140%
Ethylbenzene	mg/kg	1	GC.16	<1.0	[NT]	[NT]	LCS-2	126%
m+p-xylene	mg/kg	2	GC.16	<2.0	[NT]	[NT]	LCS-2	140%
o-Xylene	mg/kg	1	GC.16	<1.0	[NT]	[NT]	LCS-2	140%
Surrogate aaa-Trifluorotoluene	%		GC.16	97	[NT]	[NT]	LCS-2	117%
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	-			2/7/08	[NT]	[NT]	LCS-2	2/7/08%
Date analysed	-			3/7/08	[NT]	[NT]	LCS-2	2/7/08%
TPH C_{10} - C_{14}	mg/kg	50	GC.3	<50	[NT]	[NT]	LCS-2	96%
TPH C_{15} - C_{28}	mg/kg	100	GC.3	<100	[NT]	[NT]	LCS-2	104%
TPH C_{29} - C_{36}	mg/kg	100	GC.3	<100	[NT]	[NT]	LCS-2	114%
Surrogate o-Terphenyl	%		GC.3	90	[NT]	[NT]	LCS-2	91%
QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			2/7/08	[NT]	[NT]	LCS-2	2/7/08%
Date analysed	-			2/7/08	[NT]	[NT]	LCS-2	2/7/08%
Naphthalene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	LCS-2	106%
Acenaphthylene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	LCS-2	100%
Phenanthrene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	LCS-2	106%
Anthracene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Pyrene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	LCS-2	104%
Benzo(a)anthracene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	LCS-2	108%
Chrysene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo(b+k)fluoranthene	mg/kg	0.2	GC.12 subset	<0.2	[NT]	[NT]	LCS-2	125%
Benzo(a)pyrene	mg/kg	0.05	GC.12 subset	<0.05	[NT]	[NT]	[NR]	[NR]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	LCS-2	103%
Dibenzo(a,h)anthracene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	GC.12 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	93	[NT]	[NT]	LCS-2	92%
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	-			2/7/08	[NT]	[NT]	LCS-2	2/7/08%
Date analysed	-			3/7/08	[NT]	[NT]	LCS-2	3/7/08%
HCB	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	LCS-2	62%
gamma-BHC	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	LCS-2	98%
Heptachlor	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	LCS-2	65%
delta-BHC	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	LCS-2	75%
Heptachlor Epoxide	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	LCS-2	74%
gamma-Chlordane	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	LCS-2	85%
Dieldrin	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	LCS-2	86%
Endrin	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	LCS-2	88%
pp-DDD	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	LCS-2	90%
Endosulfan II	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	LCS-2	85%
Methoxychlor	mg/kg	0.1	GC-5	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		GC-5	77	[NT]	[NT]	LCS-2	76%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			2/7/08	[NT]	[NT]	LCS-2	2/7/08%
Date analysed	-			3/7/08	[NT]	[NT]	LCS-2	3/7/08%
Arochlor 1016	mg/kg	0.1	GC-6	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	GC-6	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	GC-6	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	GC-6	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	GC-6	<0.1	[NT]	[NT]	LCS-2	104%
Arochlor 1260	mg/kg	0.1	GC-6	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		GC-6	77	[NT]	[NT]	LCS-2	83%

QUALITY CONTROL Total Phenolics in Soil	UNITS	PQL	METHOD	Blank
Date extracted	-			2/7/08
Date analysed	-			2/7/08
Total Phenolics (as Phenol)	mg/kg	5	LAB.30	<5.0

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	-			02/07/08	[NT]	[NT]	LCS-1	02/07/08%
Date analysed	-			03/07/08	[NT]	[NT]	LCS-1	03/07/08%
Arsenic	mg/kg	4	Metals.20 ICP-AES	<4.0	[NT]	[NT]	LCS-1	102%
Cadmium	mg/kg	1	Metals.20 ICP-AES	<1.0	[NT]	[NT]	LCS-1	104%
Chromium	mg/kg	1	Metals.20 ICP-AES	<1.0	[NT]	[NT]	LCS-1	105%
Copper	mg/kg	1	Metals.20 ICP-AES	<1.0	[NT]	[NT]	LCS-1	106%
Lead	mg/kg	1	Metals.20 ICP-AES	<1.0	[NT]	[NT]	LCS-1	103%
Mercury	mg/kg	0.1	Metals.21 CV-AAS	<0.10	[NT]	[NT]	LCS-1	113%
Nickel	mg/kg	1	Metals.20 ICP-AES	<1.0	[NT]	[NT]	LCS-1	104%
Zinc	mg/kg	1	Metals.20 ICP-AES	<1.0	[NT]	[NT]	LCS-1	105%

QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			03/07/2008	20627-1	3/07/2008 || 3/07/2008	LCS-1	03/07/2008 %
Date analysed	-			03/07/2008	20627-1	3/07/2008 || 3/07/2008	LCS-1	03/07/2008 %
Total Cyanide	mg/kg	0.5	LAB.13	<0.5	20627-1	<0.5 || <0.5	LCS-1	113%
pH 1:5 soil:water	pH Units		LAB.1	[NT]	20627-1	11.9 || 11.9 || RPD: 0	LCS-1	101%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			2/07/08
Date analysed	-			2/07/08
Moisture	%	0.1	LAB.8	<0.10

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

Report Comments:

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample.
Envirolab recommends supplying 30-40g of sample in it's own container.
Asbestos was analysed by Approved Identifier: Joshua Lim

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

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:

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 SVOC and speciated phenols.

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: CONTAMINATION ASSESSMENT
Project No: 36569.03 Sampler: Jessica Derrien
Project Mgr: GSM Mob. Phone: 0418 274 129
Email: Jessica.derrien@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: As	Cd	Cr	Cu	Pb	Hg	Zn	BTEX/ TPH	OPs/ PCBs	PAH	Phenols	VOCs	Other: Cyanide	Analytes Notes: pH	Asbestos
101	2.7-3.0	1	1/7/18	S	G	I	I	I	I	I	I	I	I	I	I	I		I	I	I
103	0.2-0.4	2	30/6	S	G	I	I	I	I	I	I	I	I	I	I	I		I	I	I
103	2.2-2.5	3	30/6	S	G	I	I	I	I	I	I	I	I	I	I	I		I	I	I

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: 9910 6200
Job No: 20627
Date received: 1/7/18
Time received:
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: J Derrien	Signed:	Date & Time: 1/7 2:00pm	Received By: Simon S	Date & Time: 1/7/18	
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 20571

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrien

Sample log in details:

Your Reference:	**36569.03, Contamination Assessment**
No. of samples:	8 Soils
Date samples received:	30/06/08
Date completed instructions received:	30/06/08

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:	7/07/08
Date of Preliminary Report:	Not Issued
Issue Date:	7/07/08

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

Results Approved By:

Jacinta Hurst
Operations Manager

Joshua Lim
Chemist

vTPH & BTEX in Soil						
Our Reference:	UNITS	20571-1	20571-2	20571-3	20571-4	20571-5
Your Reference	----------	102/0.7-1.0	104/0.7-1.0	105/0.3-0.5	106/0.2-0.5	107/1.2-1.5
Date Sampled	----------	27/06/2008	25/06/2008	27/06/2008	24/06/2008	24/06/2008
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
Date analysed	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
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	%	86	89	105	102	119

vTPH & BTEX in Soil			
Our Reference:	UNITS	20571-6	20571-7
Your Reference	----------	108/0.8-1.0	109/0.05-0.2
Date Sampled	----------	24/06/2008	24/06/2008
Type of sample		Soil	Soil
Date extracted	-	1/07/2008	1/07/2008
Date analysed	-	1/07/2008	1/07/2008
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	%	134	116

sTPH in Soil (C10-C36)						
Our Reference:	UNITS	20571-1	20571-2	20571-3	20571-4	20571-5
Your Reference	----------	102/0.7-1.0	104/0.7-1.0	105/0.3-0.5	106/0.2-0.5	107/1.2-1.5
Date Sampled	----------	27/06/2008	25/06/2008	27/06/2008	24/06/2008	24/06/2008
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
Date analysed	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
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	%	60	76	78	75	77

sTPH in Soil (C10-C36)			
Our Reference:	UNITS	20571-6	20571-7
Your Reference	----------	108/0.8-1.0	109/0.05-0.2
Date Sampled	----------	24/06/2008	24/06/2008
Type of sample		Soil	Soil
Date extracted	-	1/07/2008	1/07/2008
Date analysed	-	1/07/2008	1/07/2008
TPH C_{10} - C_{14}	mg/kg	<50	<50
TPH C_{15} - C_{28}	mg/kg	<100	<100
TPH C_{29} - C_{36}	mg/kg	<100	<100
Surrogate o-Terphenyl	%	78	77

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20571-1 102/0.7-1.0 27/06/2008 Soil	20571-2 104/0.7-1.0 25/06/2008 Soil	20571-3 105/0.3-0.5 27/06/2008 Soil	20571-4 106/0.2-0.5 24/06/2008 Soil	20571-5 107/1.2-1.5 24/06/2008 Soil
Date extracted	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
Date analysed	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
Naphthalene	mg/kg	1.0	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.4	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.6	0.1	0.3
Pyrene	mg/kg	<0.1	<0.1	0.6	0.2	0.3
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.3	0.1	0.2
Chrysene	mg/kg	<0.1	<0.1	0.4	0.1	0.2
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	0.6	0.2	0.3
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.5	0.1	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.3	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.3	0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	63	90	93	91	92

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20571-6 108/0.8-1.0 24/06/2008 Soil	20571-7 109/0.05-0.2 24/06/2008 Soil	20571-8 BD1/240608 24/06/2008 Soil
Date extracted	-	1/07/2008	1/07/2008	1/07/2008
Date analysed	-	1/07/2008	1/07/2008	1/07/2008
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.5	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.8	0.1	0.2
Pyrene	mg/kg	1.0	0.1	0.2
Benzo(a)anthracene	mg/kg	0.8	0.1	0.1
Chrysene	mg/kg	0.9	0.2	0.1
Benzo(b+k)fluoranthene	mg/kg	1.6	0.2	0.2
Benzo(a)pyrene	mg/kg	1.4	0.1	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	0.8	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.8	<0.1	<0.1
Surrogate p-Terphenyl-d_{14}	%	95	95	91

Organochlorine Pesticides in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20571-1 102/0.7-1.0 27/06/2008 Soil	20571-2 104/0.7-1.0 25/06/2008 Soil	20571-3 105/0.3-0.5 27/06/2008 Soil	20571-4 106/0.2-0.5 24/06/2008 Soil	20571-5 107/1.2-1.5 24/06/2008 Soil
Date extracted	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
Date analysed	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
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	%	114	118	113	112	117

Organochlorine Pesticides in soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20571-6 108/0.8-1.0 24/06/2008 Soil	20571-7 109/0.05-0.2 24/06/2008 Soil
Date extracted	-	1/07/2008	1/07/2008
Date analysed	-	1/07/2008	1/07/2008
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	%	126	115

PCBs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20571-1 102/0.7-1.0 27/06/2008 Soil	20571-2 104/0.7-1.0 25/06/2008 Soil	20571-3 105/0.3-0.5 27/06/2008 Soil	20571-4 106/0.2-0.5 24/06/2008 Soil	20571-5 107/1.2-1.5 24/06/2008 Soil
Date extracted	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
Date analysed	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
Arochlor 1016	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	%	114	118	113	112	117

PCBs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20571-6 108/0.8-1.0 24/06/2008 Soil	20571-7 109/0.05-0.2 24/06/2008 Soil
Date extracted	-	1/07/2008	1/07/2008
Date analysed	-	1/07/2008	1/07/2008
Arochlor 1016	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	%	126	115

Total Phenolics in Soil						
Our Reference:	UNITS	20571-1	20571-2	20571-3	20571-4	20571-5
Your Reference	----------	102/0.7-1.0	104/0.7-1.0	105/0.3-0.5	106/0.2-0.5	107/1.2-1.5
Date Sampled	----------	27/06/2008	25/06/2008	27/06/2008	24/06/2008	24/06/2008
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
Date analysed	-	2/07/2008	2/07/2008	2/07/2008	2/07/2008	2/07/2008
Total Phenolics (as Phenol)	mg/kg	<5.0	<5.0	<5.0	<5.0	<5.0

Total Phenolics in Soil			
Our Reference:	UNITS	20571-6	20571-7
Your Reference	----------	108/0.8-1.0	109/0.05-0.2
Date Sampled	----------	24/06/2008	24/06/2008
Type of sample		Soil	Soil
Date extracted	-	1/07/2008	1/07/2008
Date analysed	-	2/07/2008	2/07/2008
Total Phenolics (as Phenol)	mg/kg	<5.0	<5.0

Acid Extractable metals in soil	UNITS	20571-1	20571-2	20571-3	20571-4	20571-5
Our Reference:	----------	102/0.7-1.0	104/0.7-1.0	105/0.3-0.5	106/0.2-0.5	107/1.2-1.5
Your Reference	----------	27/06/2008	25/06/2008	27/06/2008	24/06/2008	24/06/2008
Date Sampled		Soil	Soil	Soil	Soil	Soil
Type of sample						
Date digested	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
Date analysed	-	2/07/2008	2/07/2008	2/07/2008	2/07/2008	2/07/2008
Arsenic	mg/kg	7.5	7.3	4.4	<4.0	<4.0
Cadmium	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	mg/kg	15	16	12	8.7	11
Copper	mg/kg	9.9	12	24	23	15
Lead	mg/kg	47	92	290	140	160
Mercury	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10
Nickel	mg/kg	3.9	6.9	9.9	23	4.1
Zinc	mg/kg	20	57	290	200	41

Acid Extractable metals in soil	UNITS	20571-6	20571-7	20571-8
Our Reference:	----------	108/0.8-1.0	109/0.05-0.2	BD1/240608
Your Reference	----------	24/06/2008	24/06/2008	24/06/2008
Date Sampled		Soil	Soil	Soil
Type of sample				
Date digested	-	1/07/2008	1/07/2008	1/07/2008
Date analysed	-	2/07/2008	2/07/2008	2/07/2008
Arsenic	mg/kg	5.7	5.0	<4.0
Cadmium	mg/kg	<1.0	<1.0	<1.0
Chromium	mg/kg	9.5	7.7	8.5
Copper	mg/kg	13	21	10
Lead	mg/kg	540	58	80
Mercury	mg/kg	<0.10	<0.10	<0.10
Nickel	mg/kg	3.5	6.3	3.0
Zinc	mg/kg	400	70	31

Miscellaneous Inorg - soil						
Our Reference:	UNITS	20571-1	20571-2	20571-3	20571-4	20571-5
Your Reference	----------	102/0.7-1.0	104/0.7-1.0	105/0.3-0.5	106/0.2-0.5	107/1.2-1.5
Date Sampled	----------	27/06/2008	25/06/2008	27/06/2008	24/06/2008	24/06/2008
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
Date analysed	-	2/07/2008	2/07/2008	2/07/2008	2/07/2008	2/07/2008
Total Cyanide	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
pH 1:5 soil:water	pH Units	7.4	6.3	9.4	9.2	8.9

Miscellaneous Inorg - soil			
Our Reference:	UNITS	20571-6	20571-7
Your Reference	----------	108/0.8-1.0	109/0.05-0.2
Date Sampled	----------	24/06/2008	24/06/2008
Type of sample		Soil	Soil
Date prepared	-	1/07/2008	1/07/2008
Date analysed	-	2/07/2008	2/07/2008
Total Cyanide	mg/kg	<0.5	<0.5
pH 1:5 soil:water	pH Units	8.8	9.1

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20571-1 102/0.7-1.0 27/06/2008 Soil	20571-2 104/0.7-1.0 25/06/2008 Soil	20571-3 105/0.3-0.5 27/06/2008 Soil	20571-4 106/0.2-0.5 24/06/2008 Soil	20571-5 107/1.2-1.5 24/06/2008 Soil
Date prepared	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
Date analysed	-	1/07/2008	1/07/2008	1/07/2008	1/07/2008	1/07/2008
Moisture	%	15	15	11	6.6	13

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20571-6 108/0.8-1.0 24/06/2008 Soil	20571-7 109/0.05-0.2 24/06/2008 Soil	20571-8 BD1/240608 24/06/2008 Soil
Date prepared	-	1/07/2008	1/07/2008	1/07/2008
Date analysed	-	1/07/2008	1/07/2008	1/07/2008
Moisture	%	7.6	5.0	13

Asbestos ID - soils						
Our Reference:	UNITS	20571-1	20571-2	20571-3	20571-4	20571-5
Your Reference	----------	102/0.7-1.0	104/0.7-1.0	105/0.3-0.5	106/0.2-0.5	107/1.2-1.5
Date Sampled	----------	27/06/2008	25/06/2008	27/06/2008	24/06/2008	24/06/2008
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	7/07/2008	7/07/2008	7/07/2008	7/07/2008	7/07/2008
Sample Description	-	40g clay	40g clay	40g clay	40g clay	40g clay
Asbestos ID in soil	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
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	20571-6	20571-7
Your Reference	----------	108/0.8-1.0	109/0.05-0.2
Date Sampled	----------	24/06/2008	24/06/2008
Type of sample		Soil	Soil
Date analysed	-	7/07/2008	7/07/2008
Sample Description	-	40g clay	40g clay
Asbestos ID in soil	-	No asbestos detected	No asbestos detected
Trace Analysis	-	Respirable fibres not detected	Respirable fibres not detected

Method ID	Methodology Summary
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 hexane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
GC-6	Soil samples are extracted with hexane/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.13	Cyanide - determined colourimetrically, following distillation. Based on APHA 20th ED, 4500-CN_C,E.
LAB.1	pH - Measured using pH meter and electrode in accordance with APHA 20th ED, 4500-H+.
LAB.8	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.
ASB.1	Qualitative identification of asbestos type fibres in bulk using Polarised Light Microscopy and Dispersion Staining Techniques.

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	-			01/07/2008	20571-1	1/07/2008 || 1/07/2008	LCS-2	01/07/2008 %
Date analysed	-			01/07/2008	20571-1	1/07/2008 || 1/07/2008	LCS-2	01/07/2008 %
vTPH C_6 - C_9	mg/kg	25	GC.16	<25	20571-1	<25 || <25	LCS-2	119%
Benzene	mg/kg	0.5	GC.16	<0.5	20571-1	<0.5 || <0.5	LCS-2	97%
Toluene	mg/kg	0.5	GC.16	<0.5	20571-1	<0.5 || <0.5	LCS-2	122%
Ethylbenzene	mg/kg	1	GC.16	<1.0	20571-1	<1.0 || <1.0	LCS-2	134%
m+p-xylene	mg/kg	2	GC.16	<2.0	20571-1	<2.0 || <2.0	LCS-2	122%
o-Xylene	mg/kg	1	GC.16	<1.0	20571-1	<1.0 || <1.0	LCS-2	100%
Surrogate aaa-Trifluorotoluene	%		GC.16	133	20571-1	86 || 85 || RPD: 1	LCS-2	134%
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	-			01/07/2008	20571-1	1/07/2008 || 1/07/2008	LCS-2	01/07/2008 %
Date analysed	-			01/07/2008	20571-1	1/07/2008 || 1/07/2008	LCS-2	01/07/2008 %
TPH C_{10} - C_{14}	mg/kg	50	GC.3	<50	20571-1	<50 || <50	LCS-2	92%
TPH C_{15} - C_{28}	mg/kg	100	GC.3	<100	20571-1	<100 || <100	LCS-2	97%
TPH C_{29} - C_{36}	mg/kg	100	GC.3	<100	20571-1	<100 || <100	LCS-2	107%
Surrogate o-Terphenyl	%		GC.3	76	20571-1	60 || 79 || RPD: 27	LCS-2	76%
QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/07/2008	20571-1	1/07/2008 || 1/07/2008	LCS-2	01/07/2008 %
Date analysed	-			01/07/2008	20571-1	1/07/2008 || 1/07/2008	LCS-2	01/07/2008 %
Naphthalene	mg/kg	0.1	GC.12 subset	<0.1	20571-1	1.0 || 0.2 || RPD: 133	LCS-2	106%
Acenaphthylene	mg/kg	0.1	GC.12 subset	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	GC.12 subset	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	GC.12 subset	<0.1	20571-1	<0.1 || <0.1	LCS-2	98%
Phenanthrene	mg/kg	0.1	GC.12 subset	<0.1	20571-1	<0.1 || <0.1	LCS-2	101%
Anthracene	mg/kg	0.1	GC.12 subset	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	GC.12 subset	<0.1	20571-1	<0.1 || <0.1	LCS-2	98%
Pyrene	mg/kg	0.1	GC.12 subset	<0.1	20571-1	<0.1 || <0.1	LCS-2	101%

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	20571-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	GC.12 subset	<0.1	20571-1	<0.1 || <0.1	LCS-2	113%
Benzo(b+k)fluoranthene	mg/kg	0.2	GC.12 subset	<0.2	20571-1	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	GC.12 subset	<0.05	20571-1	<0.05 || <0.05	LCS-2	98%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	GC.12 subset	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	GC.12 subset	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	GC.12 subset	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12 subset	95	20571-1	63 || 92 || RPD: 37	LCS-2	95%
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	-			01/07/2008	20571-1	1/07/2008 || 1/07/2008	LCS-2	01/07/2008 %
Date analysed	-			01/07/2008	20571-1	1/07/2008 || 1/07/2008	LCS-2	01/07/2008 %
HCB	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	LCS-2	70%
gamma-BHC	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	LCS-2	109%
Heptachlor	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	LCS-2	83%
delta-BHC	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	LCS-2	116%
Heptachlor Epoxide	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	LCS-2	91%
gamma-Chlordane	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	LCS-2	134%
Dieldrin	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	LCS-2	126%
Endrin	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	LCS-2	133%
pp-DDD	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	LCS-2	105%
Endosulfan II	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	LCS-2	106%
Methoxychlor	mg/kg	0.1	GC-5	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-5	115	20571-1	114 || 116 || RPD: 2	LCS-2	114%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/07/2008	20571-1	1/07/2008 || 1/07/2008	LCS-2	01/07/2008 %
Date analysed	-			01/07/2008	20571-1	1/07/2008 || 1/07/2008	LCS-2	01/07/2008 %
Arochlor 1016	mg/kg	0.1	GC-6	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	GC-6	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	GC-6	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	GC-6	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	GC-6	<0.1	20571-1	<0.1 || <0.1	LCS-2	113%
Arochlor 1260	mg/kg	0.1	GC-6	<0.1	20571-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		GC-6	115	20571-1	114 || 116 || RPD: 2	LCS-2	78%
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	-			01/07/08	20571-1	1/07/2008 || 1/07/2008	LCS-2	01/07/08%
Date analysed	-			02/07/08	20571-1	2/07/2008 || 2/07/2008	LCS-2	02/07/08%
Total Phenolics (as Phenol)	mg/kg	5	LAB.30	<5.0	20571-1	<5.0 || <5.0	LCS-2	96%%
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	-			01/07/08	20571-1	1/07/2008 || 1/07/2008	LCS-2	01/07/08%
Date analysed	-			02/07/08	20571-1	2/07/2008 || 2/07/2008	LCS-2	02/07/08%
Arsenic	mg/kg	4	Metals.20 ICP-AES	<4.0	20571-1	7.5 || 8.4 || RPD: 11	LCS-2	101%
Cadmium	mg/kg	1	Metals.20 ICP-AES	<1.0	20571-1	<1.0 || <1.0	LCS-2	108%
Chromium	mg/kg	1	Metals.20 ICP-AES	<1.0	20571-1	15 || 15 || RPD: 0	LCS-2	106%
Copper	mg/kg	1	Metals.20 ICP-AES	<1.0	20571-1	9.9 || 13 || RPD: 27	LCS-2	107%
Lead	mg/kg	1	Metals.20 ICP-AES	<1.0	20571-1	47 || 42 || RPD: 11	LCS-2	103%
Mercury	mg/kg	0.1	Metals.21 CV-AAS	<0.10	20571-1	<0.10 || <0.10	LCS-2	109%
Nickel	mg/kg	1	Metals.20 ICP-AES	<1.0	20571-1	3.9 || 3.1 || RPD: 23	LCS-2	104%
Zinc	mg/kg	1	Metals.20 ICP-AES	<1.0	20571-1	20 || 19 || RPD: 5	LCS-2	104%

QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			01/07/2008	20571-1	1/07/2008 || 1/07/2008	LCS-1	01/07/08%
Date analysed	-			02/07/2008	20571-1	2/07/2008 || 2/07/2008	LCS-1	02/07/08%
Total Cyanide	mg/kg	0.5	LAB.13	<0.5	20571-1	<0.5 || <0.5	LCS-1	100%
pH 1:5 soil:water	pH Units		LAB.1	[NT]	20571-1	7.4 || 7.4 || RPD: 0	[NR]	[NR]

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD
Date prepared	-			1/7/08	20571-1	1/07/2008 || 1/07/2008
Date analysed	-			1/7/08	20571-1	1/07/2008 || 1/07/2008
Moisture	%	0.1	LAB.8	<0.10	20571-1	15 || 15 || RPD: 0

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

QUALITY CONTROL vTPH & BTEX in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	20571-2	01/07/2008%
Date analysed	-	[NT]	[NT]	20571-2	01/07/2008%
vTPH C_6 - C_9	mg/kg	[NT]	[NT]	20571-2	115%
Benzene	mg/kg	[NT]	[NT]	20571-2	88%
Toluene	mg/kg	[NT]	[NT]	20571-2	116%
Ethylbenzene	mg/kg	[NT]	[NT]	20571-2	118%
m+p-xylene	mg/kg	[NT]	[NT]	20571-2	126%
o-Xylene	mg/kg	[NT]	[NT]	20571-2	128%
Surrogate aaa-Trifluorotoluene	%	[NT]	[NT]	20571-2	111%

QUALITY CONTROL sTPH in Soil (C10-C36)	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	20571-2	01/07/2008%
Date analysed	-	[NT]	[NT]	20571-2	01/07/2008%
TPH C_{10} - C_{14}	mg/kg	[NT]	[NT]	20571-2	94%
TPH C_{15} - C_{28}	mg/kg	[NT]	[NT]	20571-2	94%
TPH C_{29} - C_{36}	mg/kg	[NT]	[NT]	20571-2	109%
Surrogate o-Terphenyl	%	[NT]	[NT]	20571-2	77%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	20571-2	01/07/2008%
Date analysed	-	[NT]	[NT]	20571-2	01/07/2008%
Naphthalene	mg/kg	[NT]	[NT]	20571-2	102%
Acenaphthylene	mg/kg	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	[NT]	[NT]	20571-2	95%
Phenanthrene	mg/kg	[NT]	[NT]	20571-2	95%
Anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	[NT]	[NT]	20571-2	91%
Pyrene	mg/kg	[NT]	[NT]	20571-2	95%
Benzo(a)anthracene	mg/kg	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	[NT]	[NT]	20571-2	109%
Benzo(b+k)fluoranthene	mg/kg	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	[NT]	[NT]	20571-2	85%
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]	20571-2	94%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	20571-2	01/07/2008%
Date analysed	-	[NT]	[NT]	20571-2	01/07/2008%
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	20571-2	66%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	20571-2	100%
Heptachlor	mg/kg	[NT]	[NT]	20571-2	80%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	20571-2	108%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	20571-2	83%
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]	20571-2	120%
Dieldrin	mg/kg	[NT]	[NT]	20571-2	113%
Endrin	mg/kg	[NT]	[NT]	20571-2	116%
pp-DDD	mg/kg	[NT]	[NT]	20571-2	90%
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]	20571-2	86%
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	20571-2	114%

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	20571-2	01/07/2008%
Date analysed	-	[NT]	[NT]	20571-2	01/07/2008%
Arochlor 1016	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]	20571-2	112%
Arochlor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	20571-2	142%
QUALITY CONTROL Total Phenolics in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	20571-2	01/07/08%
Date analysed	-	[NT]	[NT]	20571-2	02/07/08%
Total Phenolics (as Phenol)	mg/kg	[NT]	[NT]	20571-2	102%%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	20571-2	01/07/08%
Date analysed	-	[NT]	[NT]	20571-2	02/07/08%
Arsenic	mg/kg	[NT]	[NT]	20571-2	90%
Cadmium	mg/kg	[NT]	[NT]	20571-2	95%
Chromium	mg/kg	[NT]	[NT]	20571-2	96%
Copper	mg/kg	[NT]	[NT]	20571-2	100%
Lead	mg/kg	[NT]	[NT]	20571-2	90%
Mercury	mg/kg	[NT]	[NT]	20571-2	111%
Nickel	mg/kg	[NT]	[NT]	20571-2	88%
Zinc	mg/kg	[NT]	[NT]	20571-2	81%

QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	[NT]	[NT]	20571-2	01/07/08%
Date analysed	-	[NT]	[NT]	20571-2	02/07/08%
Total Cyanide	mg/kg	[NT]	[NT]	20571-2	89%
pH 1:5 soil:water	pH Units	[NT]	[NT]	[NR]	[NR]

Report Comments:

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample.
Envirolab recommends supplying 30-40g of sample in it's own container.
Asbestos was analysed by Approved Identifier: Joshua Lim

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

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:

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 SVOC and speciated phenols.

Douglas Partners
Geotechnics - Environment - Groundwater

CHAIN OF CUSTODY

Project Name: CONTAMINATION ASSESSMENT
Project No: 36569.03 Sampler: Jessica Derrien
Project Mgr: GSY Mob. Phone: 0418 274 129
Email: Jessica.derrien@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: As	Cd	Cr	Cu	Pb	Hg	Zn	BTEX/ TPH	OPs/ PCBs	PAH	Phenols		Other: Cyanide	Analytes: pH	Notes: Asbestos
102/0.7-1.0		1	27/6	S	G	T	T	T	T	T	T	T	T	T	T	T		T	T	T
104/0.7-1.0		2	25/6	S	G															
105/0.3-0.5		3	27/6	S	G															
106/0.2-0.5		4	24/6	S	G															
107/1.2-1.5		5	24/6	S	G															
108/0.8-1.0		6	24/6	S	G															
109/0.05-0.2		7	24/6	S	G	T	T						T	T		T			T	T
BD/240608		8	24/6	S	G	T	T	T	T	T	T	T								

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

Job No: 20571
Date received: 30/6/08
Time received: 1200hrs
Received by: E
Temp: Cooled/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:	Date & Time:
J Derrien		30/6/08 10:00		30/6/08 1200hrs
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 20627-A

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrien

Sample log in details:

Your Reference:	**36569.03, Contamination Assessment**
No. of samples:	Additional Testing on 2 Soils
Date samples received:	01/07/08
Date completed instructions received:	09/07/08

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:	16/07/08
Date of Preliminary Report:	Not Issued
Issue Date:	15/07/08

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

Results Approved By:

Jacinta Hurst
Operations Manager

Metals in TCLP Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ---------- 	 20627-A-1 101/2.7-3.0 1/07/2008 Soil	 20627-A-3 103/2.2-2.5 30/06/2008 Soil
Date extracted	-	11/07/2008	11/07/2008
Date analysed	-	15/07/2008	15/07/2008
pH of soil for fluid# determ.	pH units	10.10	9.60
pH of soil for fluid # determ. (acid)	pH units	1.30	1.40
Extraction fluid used	-	1	1
pH of final Leachate	pH units	6.80	6.20
Lead in TCLP	mg/L	0.05	1.3

PAHs in TCLP (USEPA 1311) Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20627-A-1 101/2.7-3.0 1/07/2008 Soil	20627-A-3 103/2.2-2.5 30/06/2008 Soil
Date extracted	-	14/07/2008	14/07/2008
Date analysed	-	14/07/2008	14/07/2008
Naphthalene	mg/L	<0.001	<0.001
Acenaphthylene	mg/L	<0.001	<0.001
Acenaphthene	mg/L	<0.001	<0.001
Fluorene	mg/L	<0.001	<0.001
Phenanthrene	mg/L	<0.001	<0.001
Anthracene	mg/L	<0.001	<0.001
Fluoranthene	mg/L	<0.001	<0.001
Pyrene	mg/L	<0.001	<0.001
Benzo(a)anthracene	mg/L	<0.001	<0.001
Chrysene	mg/L	<0.001	<0.001
Benzo(b+k)fluoranthene	mg/L	<0.002	<0.002
Benzo(a)pyrene	mg/L	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene	mg/L	<0.001	<0.001
Dibenzo(a,h)anthracene	mg/L	<0.001	<0.001
Benzo(g,h,i)perylene	mg/L	<0.001	<0.001
Surrogate p-Terphenyl-d_{14}	%	99	97

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
GC.12 subset	Leachates are extracted with Dichloromethane and analysed by GC-MS.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC.12	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.

QUALITY CONTROL Metals in TCLP	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/7/08	[NT]	[NT]	LCS-W1	11/7/08%
Date analysed	-			15/7/08	[NT]	[NT]	LCS-W1	15/7/08%
Lead in TCLP	mg/L	0.03	Metals.20 ICP-AES	<0.03	[NT]	[NT]	LCS-W1	97%
QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/7/08	[NT]	[NT]	LCS-W1	14/7/08%
Date analysed	-			14/7/08	[NT]	[NT]	LCS-W1	14/7/08%
Naphthalene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	104%
Acenaphthylene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	90%
Phenanthrene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	94%
Anthracene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	91%
Pyrene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	96%
Benzo(a)anthracene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	105%
Benzo(b+k)fluoranthene	mg/L	0.002	GC.12 subset	<0.002	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	84%
Indeno(1,2,3-c,d)pyrene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12	97	[NT]	[NT]	LCS-W1	88%

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job

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

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:

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 SVOC and speciated phenols.

Aileen Hie

From: Jessica Derrien [Jessica.Derrien@douglaspartners.com.au]
Sent: Wednesday, 9 July 2008 8:49 AM
To: Aileen Hie
Subject: TCLP ANALYSIS 36569.03/ 20627 & 20571

Your references: 20627 / 20571

DP reference: 36569.03

Can you please organize TCLP analysis on the following samples:

1 101/2.7-3.0 – lead and PAH *
102/0.7-1.0 – PAH
3 103/2.2-2.5 - lead and PAH *
105/0.3-0.5 - lead and PAH
106/0.2-0.5 - lead and PAH
107/1.2-1.5 - lead and PAH
108/0.8-1.0 - lead and PAH

Thank you.

Jessica Derrien | Environmental Scientist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 8878 0620 | F: 02 9809 4095 | M: 0418 274 129 | E: Jessica.Derrien@douglaspartners.com.au

* Envirolab Ref: 20627A

Due : 16/7/08

Std T1A.

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 20571-A

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrien

Sample log in details:

Your Reference:	**36569.03, Contamination Assessment**
No. of samples:	Additional Testing on 5 Soils
Date samples received:	30/06/08
Date completed instructions received:	09/07/08

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:	16/07/08
Date of Preliminary Report:	Not Issued
Issue Date:	15/07/08

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

Results Approved By:

Jacinta Hurst
Operations Manager

Metals in TCLP Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20571-A-1 102/0.7-1.0 27/06/2008 Soil	20571-A-3 105/0.3-0.5 27/06/2008 Soil	20571-A-4 106/0.2-0.5 24/06/2008 Soil	20571-A-5 107/1.2-1.5 24/06/2008 Soil	20571-A-6 108/0.8-1.0 24/06/2008 Soil
Date extracted	-	11/07/2008	11/07/2008	11/07/2008	11/07/2008	11/07/2008
Date analysed	-	[NA]	15/07/2008	15/07/2008	15/07/2008	15/07/2008
pH of soil for fluid# determ.	pH units	8.90	9.40	9.50	9.10	9.30
pH of soil for fluid # determ. (acid)	pH units	1.30	1.30	1.30	1.40	1.30
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	4.80	5.10	5.10	4.80	5.20
Lead in TCLP	mg/L	[NA]	1.8	1.0	0.13	6.8

PAHs in TCLP (USEPA 1311) Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20571-A-1 102/0.7-1.0 27/06/2008 Soil	20571-A-3 105/0.3-0.5 27/06/2008 Soil	20571-A-4 106/0.2-0.5 24/06/2008 Soil	20571-A-5 107/1.2-1.5 24/06/2008 Soil	20571-A-6 108/0.8-1.0 24/06/2008 Soil
Date extracted	-	14/07/2008	14/07/2008	14/07/2008	14/07/2008	14/07/2008
Date analysed	-	14/07/2008	14/07/2008	14/07/2008	14/07/2008	14/07/2008
Naphthalene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthylene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluorene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Phenanthrene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Anthracene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluoranthene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Pyrene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Chrysene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(b+k)fluoranthene	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Benzo(a)pyrene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Surrogate p-Terphenyl-d_{14}	%	88	105	95	103	100

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
GC.12 subset	Leachates are extracted with Dichloromethane and analysed by GC-MS.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC.12	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.

QUALITY CONTROL Metals in TCLP	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/7/08	[NT]	[NT]	LCS-W1	11/7/08%
Date analysed	-			15/7/08	[NT]	[NT]	LCS-W1	15/7/08%
Lead in TCLP	mg/L	0.03	Metals.20 ICP-AES	<0.03	[NT]	[NT]	LCS-W1	97%
QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/7/08	[NT]	[NT]	LCS-W1	14/7/08%
Date analysed	-			14/7/08	[NT]	[NT]	LCS-W1	14/7/08%
Naphthalene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	104%
Acenaphthylene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	90%
Phenanthrene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	94%
Anthracene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	91%
Pyrene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	96%
Benzo(a)anthracene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	105%
Benzo(b+k)fluoranthene	mg/L	0.002	GC.12 subset	<0.002	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	84%
Indeno(1,2,3-c,d)pyrene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12	97	[NT]	[NT]	LCS-W1	88%

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job

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

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:

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 SVOC and speciated phenols.

Aileen Hie

From: Jessica Derrien [Jessica.Derrien@douglaspartners.com.au]
Sent: Wednesday, 9 July 2008 8:49 AM
To: Aileen Hie
Subject: TCLP ANALYSIS 36569.03/ 20627 & 20571

Your references: 20627 / 20571

DP reference: 36569.03

Can you please organize TCLP analysis on the following samples:

1 101/2.7-3.0 – lead and PAH
2 102/0.7-1.0 – PAH
3 103/2.2-2.5 - lead and PAH
4 105/0.3-0.5 - lead and PAH
5 106/0.2-0.5 - lead and PAH
6 107/1.2-1.5 - lead and PAH
108/0.8-1.0 - lead and PAH

Thank you.

Jessica Derrien | Environmental Scientist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 8878 0620 | F: 02 9809 4095 | M: 0418 274 129 | E: Jessica.Derrien@douglaspartners.com.au

Envirolab Ref: 20571A
Due: 16/7/08
Std TIA.

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 20571-A

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrien

Sample log in details:

Your Reference:	**36569.03, Contamination Assessment**
No. of samples:	Additional Testing on 5 Soils
Date samples received:	30/06/08
Date completed instructions received:	09/07/08

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:	16/07/08
Date of Preliminary Report:	Not Issued
Issue Date:	15/07/08

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

Results Approved By:

Jacinta Hurst
Operations Manager

Metals in TCLP Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20571-A-1 102/0.7-1.0 27/06/2008 Soil	20571-A-3 105/0.3-0.5 27/06/2008 Soil	20571-A-4 106/0.2-0.5 24/06/2008 Soil	20571-A-5 107/1.2-1.5 24/06/2008 Soil	20571-A-6 108/0.8-1.0 24/06/2008 Soil
Date extracted	-	11/07/2008	11/07/2008	11/07/2008	11/07/2008	11/07/2008
Date analysed	-	[NA]	15/07/2008	15/07/2008	15/07/2008	15/07/2008
pH of soil for fluid# determ.	pH units	8.90	9.40	9.50	9.10	9.30
pH of soil for fluid # determ. (acid)	pH units	1.30	1.30	1.30	1.40	1.30
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	4.80	5.10	5.10	4.80	5.20
Lead in TCLP	mg/L	[NA]	1.8	1.0	0.13	6.8

PAHs in TCLP (USEPA 1311) Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	20571-A-1 102/0.7-1.0 27/06/2008 Soil	20571-A-3 105/0.3-0.5 27/06/2008 Soil	20571-A-4 106/0.2-0.5 24/06/2008 Soil	20571-A-5 107/1.2-1.5 24/06/2008 Soil	20571-A-6 108/0.8-1.0 24/06/2008 Soil
Date extracted	-	14/07/2008	14/07/2008	14/07/2008	14/07/2008	14/07/2008
Date analysed	-	14/07/2008	14/07/2008	14/07/2008	14/07/2008	14/07/2008
Naphthalene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthylene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluorene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Phenanthrene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Anthracene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluoranthene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Pyrene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Chrysene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(b+k)fluoranthene	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Benzo(a)pyrene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Surrogate p-Terphenyl-d14	%	88	105	95	103	100

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP).
Metals.20 ICP-AES	Determination of various metals by ICP-AES.
GC.12 subset	Leachates are extracted with Dichloromethane and analysed by GC-MS.
GC.12 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
GC.12	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.

QUALITY CONTROL Metals in TCLP	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			11/7/08	[NT]	[NT]	LCS-W1	11/7/08%
Date analysed	-			15/7/08	[NT]	[NT]	LCS-W1	15/7/08%
Lead in TCLP	mg/L	0.03	Metals.20 ICP-AES	<0.03	[NT]	[NT]	LCS-W1	97%
QUALITY CONTROL PAHs in TCLP (USEPA 1311)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/7/08	[NT]	[NT]	LCS-W1	14/7/08%
Date analysed	-			14/7/08	[NT]	[NT]	LCS-W1	14/7/08%
Naphthalene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	104%
Acenaphthylene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	90%
Phenanthrene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	94%
Anthracene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	91%
Pyrene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	96%
Benzo(a)anthracene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	105%
Benzo(b+k)fluoranthene	mg/L	0.002	GC.12 subset	<0.002	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	LCS-W1	84%
Indeno(1,2,3-c,d)pyrene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/L	0.001	GC.12 subset	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		GC.12	97	[NT]	[NT]	LCS-W1	88%

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job

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

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:

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 SVOC and speciated phenols.

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 21309

Client:
Douglas Partners
96 Hermitage Rd
West Ryde
NSW 2114

Attention: Jessica Derrien

Sample log in details:

Your Reference:	**36569.03, Phase 2 Contamination Assess.**
No. of samples:	1 Water
Date samples received:	28/07/08
Date completed instructions received:	28/07/08

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:	4/08/08
Date of Preliminary Report:	Not Issued
Issue Date:	4/08/08

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

Results Approved By:

Jacinta Hurst
Operations Manager

vTPH & BTEX in Water		
Our Reference:	UNITS	21309-1
Your Reference	----------	GW103/280708
Date Sampled	----------	28/07/2008
Type of sample		Water
Date extracted	-	1/08/2008
Date analysed	-	1/08/2000
TPH C_6 - C_9	µg/L	<10
Benzene	µg/L	<1.0
Toluene	µg/L	<1.0
Ethylbenzene	µg/L	<1.0
m+p-xylene	µg/L	<2.0
o-xylene	µg/L	<1.0
Surrogate Dibromofluoromethane	%	99
Surrogate toluene-d8	%	104
Surrogate 4-BFB	%	91

Method ID	Methodology Summary
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.

QUALITY CONTROL vTPH & BTEX in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			1/8/08	[NT]	[NT]	LCS-W1	1/8/08%
Date analysed	-			1/8/08	[NT]	[NT]	LCS-W1	1/8/08%
TPH C_6 - C_9	µg/L	10	GC.16	<10	[NT]	[NT]	LCS-W1	101%
Benzene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	96%
Toluene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	101%
Ethylbenzene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	101%
m+p-xylene	µg/L	2	GC.16	<2.0	[NT]	[NT]	LCS-W1	104%
o-xylene	µg/L	1	GC.16	<1.0	[NT]	[NT]	LCS-W1	103%
Surrogate Dibromofluoromethane	%		GC.16	99	[NT]	[NT]	LCS-W1	98%
Surrogate toluene-d8	%		GC.16	104	[NT]	[NT]	LCS-W1	98%
Surrogate 4-BFB	%		GC.16	96	[NT]	[NT]	LCS-W1	99%

Report Comments:

Asbestos was analysed by Approved Identifier: Not applicable for this job

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

Quality Control Definitions

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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.

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Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: CONTAMINATION ASSESSMENT
Project No: 36569.03 Sampler: Jessica Derrien
Project Mgr: GSY Mob. Phone: 0418 274 129
Email: Jessica.derrien@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: As	Cd	Cr	Cu	Pb	Hg	Zn	BTEX/ TPH	OPs/ PCBs	PAH	Phenols	[illegible]	Other: Cyanide	Analytes: pH	Notes: Asbestos
102	0.7-1.0	1	27/6	S	G	T	T	T	T	T	T	T	T	T	T	T		T	T	T
104	0.7-1.0	2	25/6	S	G	T	T	T	T	T	T	T	T	T	T	T		T	T	T
105	0.3-0.5	3	27/6	S	G	T	T	T	T	T	T	T	T	T	T	T		T	T	T
106	0.2-0.5	4	24/6	S	G	T	T	T	T	T	T	T	T	T	T	T		T	T	T
107	1.2-1.5	5	24/6	S	G	T	T	T	T	T	T	T	T	T	T	T		T	T	T
108	0.8-1.0	6	24/6	S	G	T	T	T	T	T	T	T	T	T	T	T		T	T	T
109	0.05-0.2	7	24/6	S	G	T	T	T	T	T	T	T	T	T	T	T		T	T	T
BD1/240608		8	24/6	S	G	T	T	T	T	T	T	T	T	T	T	T		T	T	T

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

Job No: 20571
Date received: 30/6/08
Time received: 1200hrs
Received by: E
Temp: Cool/Ambient
Cooling: Ice/Ice pack
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: J Derrien Signed: Date & Time: 30/6/08 10:00 Received By: Date & Time: 30/6/08 1200hrs
Relinquished by: Signed: Date & Time: Received By: Date & Time:

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: CONTAMINATION ASSESSMENT
Project No: 36569.03 Sampler: ..... Jessica Derrien.....
Project Mgr: GSM....Mob. Phone:0418 274 129 .....
Email: Jessica.derrien@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: As	Cd	Cr	Cu	Pb	Hg	Zn	BTEX/ TPH	OPs/ PCBs	PAH	Phenols	VOCs	Other: Cyanide	Analytes Notes: pH	Asbestos
101	2.7-3.0	1	1/7/18	S	G	I	I	I	I	I	I	I	I	I	I	I		I	I	I
103	0.2-0.4	2	30/6	S	G	I	I	I	I	I	I	I	I	I	I	I		I	I	I
103	2.2-2.5	3	30/6	S	G	I	I	I	I	I	I	I	I	I	I	I		I		

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: 9910 6200
Job No: 20627
Date received: 1/7/18
Time received: 5
Received by: S
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: J. Derrien	Signed:	Date & Time: 1/7 2:00pm.	Received By: Simon S	Date & Time: 1/7/18	S/E
Relinquished by:	Signed:	Date & Time:	Received By:	Date & Time:	

Douglas Partners
Geotechnics - Environment - Groundwater

CHAIN OF CUSTODY

Project Name: Environmental Investigation
Project No: 36569.03 Sampler: Jessica Derrien
Project Mgr: GSH Mob. Phone:0418 274 129
Email: Jessica.derrien@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: As	Cd	Cr	Cu	Pb	Hg	Zn	BTEX/ TPH	OPs/ PCBs	PAH	Phenols	VOCs	Other	Notes
GW101	090708	1	9/7/08	W	G/P	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
GW103	090708	2	9/7/08	W	G/P	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
GWBD1	090708	3	9/7/08	W	G/P	✓	✓	✓	✓	✓	✓	✓	✓						

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: 9910 6200
Job No: 20848
Date received: 9/7/8
Time received: 5
Received by: SC
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: J. Denver Signed: Date & Time: 9/7/08 3pm Received By: Simon Song Date & Time: 9/7/8 5
Relinquished by: Signed: Date & Time: Received By: Date & Time:

Aileen Hie

From: Jessica Derrien [Jessica.Derrien@douglaspartners.com.au]
Sent: Wednesday, 9 July 2008 8:49 AM
To: Aileen Hie
Subject: TCLP ANALYSIS 36569.03/ 20627 & 20571

Your references: 20627 / 20571

DP reference: 36569.03

Can you please organize TCLP analysis on the following samples:

1 101/2.7-3.0 – lead and PAH *
102/0.7-1.0 – PAH
3 103/2.2-2.5 - lead and PAH *
105/0.3-0.5 - lead and PAH
106/0.2-0.5 - lead and PAH
107/1.2-1.5 - lead and PAH
108/0.8-1.0 - lead and PAH

Thank you.

Jessica Derrien | Environmental Scientist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 8878 0620 | F: 02 9809 4095 | M: 0418 274 129 | E: Jessica.Derrien@douglaspartners.com.au

* Envirolab Ref: 20627A

Due : 16/7/08

Std T1A.

Aileen Hie

From: Jessica Derrien [Jessica.Derrien@douglaspartners.com.au]
Sent: Wednesday, 9 July 2008 8:49 AM
To: Aileen Hie
Subject: TCLP ANALYSIS 36569.03/ 20627 & 20571

Your references: 20627 / 20571

DP reference: 36569.03

Can you please organize TCLP analysis on the following samples:

101/2.7-3.0 – lead and PAH
1 102/0.7-1.0 – PAH
103/2.2-2.5 - lead and PAH
3 105/0.3-0.5 - lead and PAH
4 106/0.2-0.5 - lead and PAH
5 107/1.2-1.5 - lead and PAH
6 108/0.8-1.0 - lead and PAH

Thank you.

Jessica Derrien | Environmental Scientist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 8878 0620 | F: 02 9809 4095 | M: 0418 274 129 | E: Jessica.Derrien@douglaspartners.com.au

Envirolab Ref: 20571A
Due: 16/7/08
Std TIA.

Douglas Partners
Geotechnics · Environment · Groundwater

CHAIN OF CUSTODY

Project Name: Phase 2 Contamination Assessment
Project No: 36569.03 Sampler: Jessica Derrien
Project Mgr: CSM Mob. Phone: 0418 274 129
Email: Jessica.derrien@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: As	Cd	Cr	Cu	Pb	Hg	Zn	BTEX/ TPH	OPs/ PCBs	PAH	Phenols	VOCs	Other	Notes
GW103	280708		28/7/08	W	G.													✓	

TPH & BTEX.

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

Job No: 21304
Date received: 28/7
Time received: 3:30pm
Received by: KT
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: J. Derrien Signed: Date & Time: 28/7/08 Received By: Kyle Hallwell Date & Time: 28/7-3:30pm

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

APPENDIX F
Quality Assurance/Quality Control Procedures and Results

QA/QC PROCEDURES AND RESULTS

Quality assurance and control formed an integral part of this assessment. The results of the QA/QC assessments are detailed below.

The Data Quality Indicators (DQI's) have been addressed within the report as follows in Table F1.

Table F1 – DQIs and Evaluation Procedures

DQI	Evaluation Procedure
Documentation completeness	Completion of field and laboratory documentation including chain of custody, test bore reports.
Data completeness	Sampling density appropriate for preliminary assessment, analysis of appropriate contaminants, analysis of appropriate soil horizons, analysis of appropriate QA samples etc
Data comparability	Use of NATA accredited analytical methods, use of consistent sampling technique, commitment to equipment decontamination, field sample storage techniques etc.
Data representativeness	Sampling from targeted areas and a broad grid pattern across the site in order to obtain samples representative of contamination present.
Precision and accuracy for sampling and analysis	Use of NATA accredited analytical methods, achievement of 30-50% RPD for replicate analysis (as appropriate) and achievement of laboratory QC criteria.

As indicated above, the DQIs for sampling and analysis were achieved and the quality of the data satisfactorily meets the objectives of the current assessment.

FIELD QUALITY ASSURANCE AND QUALITY CONTROL

The field QC procedures for sampling as prescribed in Douglas Partners *Field Procedures Manual* were followed at all times during the validation assessment. Field sampling comprised replicate sampling, at a rate of approximately one replicate sample for every ten original samples.

Rinsate Sample

Rinsate (Field Blank) samples are used to provide an indication of any cross contamination which may occur between samples. Disposable sampling equipment was used during this assessment, eliminating the chance of cross contamination, and therefore there was no need for rinsate samples.

Relative Percentage Difference

Ten samples were selected for analytical analysis, including one replicate sample. A measure of the consistency of results is derived by the calculation of relative percentage differences (RPDs) for replicate samples. A RPD of ± 30% is generally considered acceptable by the EPA, although some exceptions apply. The comparative results of analysis were included in Table F2.

Table F2 – Comparative Results of Replicate Sample Analysis for Heavy Metals

Sample ID	As	Cd	Cr	Cu	Pb	Hg	Zn	Total PAH	B(a)P
107/1.2-1.5	<4	<1	11	15	140	<0.1	4.1	1.5	0.2
BD1/240608 [1]	<4	<1	8.5	10	160	<0.1	3.0	0.9	0.1
RPD (%)	0	0	25.6	**40**	13.3	0	**30.9**	**50**	**66.7**

Notes:
1 field replicate of sample above
Bold RPD greater than ± 30%

All the RPD results fall within the typical acceptable range (± 30%) with the exception of copper, zinc, and PAH. Although, the exceedances are not considered significant as they are the result of small differences in small numbers and are still within the SAC.

It is therefore considered that the results indicate an acceptable consistency between the sample and its replicate and indicate suitable field sampling methodology was adopted and laboratory precision was achieved.

Laboratory QA/QC Procedures

The analytical laboratory is accredited by the National Association of Testing Authorities (NATA) and is required to conduct in-house QA/QC procedures. These are normally incorporated into every analytical run and include the following:-

Reagent Blank

A reagent blank sample is prepared and analysed at the beginning of every analytical run, following calibration of the analytical apparatus. The laboratory results for reagent blanks for soil analysis indicated that concentrations of all analytes were below respective laboratory practical quantitation (detection) limits. These results are included in the laboratory report in Appendix E.

Spike Recovery

This is a sample replicate prepared by adding a known amount of analyte prior to analysis, and then treated exactly the same as all other samples. The recovery result indicates the proportion of the known concentration of the analyte that is detected during analysis. These results are included in the laboratory report in Appendix E.

The spike recovery rates are compared with limits as specified in Envirolab Services Quality Control System, and any exceedances are highlighted in the report.

As no exceedances and no comments were noted on the report, it is considered that the results indicate that the analytical results are not significantly affected by matrix interference.

Surrogate Recovery

This sample is prepared by adding a known amount of surrogate, which behaves similarly to the analyte, prior to analysis to each sample. The recovery result indicates the proportion of the known concentration of the surrogate that is detected during analysis.

As no exceedances and no comments were noted on the report, it is considered that the results indicate that the analytical results are not significantly affected by matrix interference.

Duplicates

These are additional portions of a sample which are analysed in exactly the same manner as all other samples. The duplicate sample results are included in the laboratory results in Appendix E.

In overall terms, therefore, the data quality objectives have been attained and the quality of the investigation data is considered acceptable.