Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.
Result is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
OC Pesticides in Soil Method: ME-(AU)-[ENV]AN400/AN420					
Tetrachloro-m-xylene (TCMX) (Surrogate)	TP70 0-0.1	SE103091.001	%	60 - 130%	105
	TP70 0.1-0.4	SE103091.002	%	60 - 130%	107
	TP71 0-0.1	SE103091.003	%	60 - 130%	103
	TP72 0-0.1	SE103091.004	%	60 - 130%	100
	TP72 0.1-0.4	SE103091.005	%	60 - 130%	98
	TP73 0-0.1	SE103091.006	%	60 - 130%	100
	TP74 0-0.1	SE103091.007	%	60 - 130%	103
	TP75 0-0.15	SE103091.008	%	60 - 130%	102
	TP76 0-0.3	SE103091.009	%	60 - 130%	105
	TP77 0-0.3	SE103091.010	%	60 - 130%	101
	TP78 0-0.3	SE103091.011	%	60 - 130%	103
	TP79 0-0.1	SE103091.012	%	60 - 130%	100
	TP80 0-0.15	SE103091.013	%	60 - 130%	81
	SD6	SE103091.014	%	60 - 130%	97
	SP2	SE103091.015	%	60 - 130%	103
	Duplicate D6	SE103091.016	%	60 - 130%	114
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420					
2-fluorobiphenyl (Surrogate)	TP70 0.1-0.4	SE103091.002	%	60 - 130%	94
	TP72 0.1-0.4	SE103091.005	%	60 - 130%	85
	TP76 0-0.3	SE103091.009	%	60 - 130%	93
	TP77 0-0.3	SE103091.010	%	60 - 130%	73
	TP78 0-0.3	SE103091.011	%	60 - 130%	92
	SP2	SE103091.015	%	60 - 130%	89
	Duplicate D6	SE103091.016	%	60 - 130%	83
d14-p-terphenyl (Surrogate)	TP70 0.1-0.4	SE103091.002	%	60 - 130%	100
	TP72 0.1-0.4	SE103091.005	%	60 - 130%	105
	TP76 0-0.3	SE103091.009	%	60 - 130%	101
	TP77 0-0.3	SE103091.010	%	60 - 130%	99
	TP78 0-0.3	SE103091.011	%	60 - 130%	105
	SP2	SE103091.015	%	60 - 130%	105
	Duplicate D6	SE103091.016	%	60 - 130%	96
d5-nitrobenzene (Surrogate)	TP70 0.1-0.4	SE103091.002	%	60 - 130%	90
	TP72 0.1-0.4	SE103091.005	%	60 - 130%	94
	TP76 0-0.3	SE103091.009	%	60 - 130%	94
	TP77 0-0.3	SE103091.010	%	60 - 130%	75
	TP78 0-0.3	SE103091.011	%	60 - 130%	98
	SP2	SE103091.015	%	60 - 130%	95
	Duplicate D6	SE103091.016	%	60 - 130%	88
PCBs in Soil Method: ME-(AU)-[ENV]AN400/AN420					
Tetrachloro-m-xylene (TCMX) (Surrogate)	TP70 0.1-0.4	SE103091.002	%	60 - 130%	107
	TP72 0.1-0.4	SE103091.005	%	60 - 130%	98
	TP76 0-0.3	SE103091.009	%	60 - 130%	105
	TP77 0-0.3	SE103091.010	%	60 - 130%	101
	TP78 0-0.3	SE103091.011	%	60 - 130%	103
	SP2	SE103091.015	%	60 - 130%	103
	Duplicate D6	SE103091.016	%	60 - 130%	114
VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434					
Bromofluorobenzene (Surrogate)	Trip Spike TS2	SE103091.018	%	60 - 130%	103
d4-1,2-dichloroethane (Surrogate)	Trip Spike TS2	SE103091.018	%	60 - 130%	105
d8-toluene (Surrogate)	Trip Spike TS2	SE103091.018	%	60 - 130%	102
Dibromofluoromethane (Surrogate)	Trip Spike TS2	SE103091.018	%	60 - 130%	87
Bromofluorobenzene (Surrogate)	TP70 0.1-0.4	SE103091.002	%	60 - 130%	100
	TP72 0.1-0.4	SE103091.005	%	60 - 130%	102
	TP76 0-0.3	SE103091.009	%	60 - 130%	104

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.
Result is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Continued... VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434					
Bromofluorobenzene (Surrogate)	TP77 0-0.3	SE103091.010	%	60 - 130%	101
	TP78 0-0.3	SE103091.011	%	60 - 130%	102
	SP2	SE103091.015	%	60 - 130%	103
	Duplicate D6	SE103091.016	%	60 - 130%	105
d4-1,2-dichloroethane (Surrogate)	TP70 0.1-0.4	SE103091.002	%	60 - 130%	99
	TP72 0.1-0.4	SE103091.005	%	60 - 130%	102
	TP76 0-0.3	SE103091.009	%	60 - 130%	100
	TP77 0-0.3	SE103091.010	%	60 - 130%	99
	TP78 0-0.3	SE103091.011	%	60 - 130%	98
	SP2	SE103091.015	%	60 - 130%	99
	Duplicate D6	SE103091.016	%	60 - 130%	102
d8-toluene (Surrogate)	TP70 0.1-0.4	SE103091.002	%	60 - 130%	95
	TP72 0.1-0.4	SE103091.005	%	60 - 130%	98
	TP76 0-0.3	SE103091.009	%	60 - 130%	92
	TP77 0-0.3	SE103091.010	%	60 - 130%	92
	TP78 0-0.3	SE103091.011	%	60 - 130%	92
	SP2	SE103091.015	%	60 - 130%	91
	Duplicate D6	SE103091.016	%	60 - 130%	93
Dibromofluoromethane (Surrogate)	TP70 0.1-0.4	SE103091.002	%	60 - 130%	96
	TP72 0.1-0.4	SE103091.005	%	60 - 130%	101
	TP76 0-0.3	SE103091.009	%	60 - 130%	97
	TP77 0-0.3	SE103091.010	%	60 - 130%	97
	TP78 0-0.3	SE103091.011	%	60 - 130%	97
	SP2	SE103091.015	%	60 - 130%	96
	Duplicate D6	SE103091.016	%	60 - 130%	102
Volatile Petroleum Hydrocarbons in Soil Method: ME-(AU)-[ENV]AN433/AN434					
Trifluorotoluene (Surrogate)	TP70 0.1-0.4	SE103091.002	%	60 - 130%	102
	TP72 0.1-0.4	SE103091.005	%	60 - 130%	89
	TP76 0-0.3	SE103091.009	%	60 - 130%	92
	TP77 0-0.3	SE103091.010	%	60 - 130%	98
	TP78 0-0.3	SE103091.011	%	60 - 130%	113
	SP2	SE103091.015	%	60 - 130%	103
	Duplicate D6	SE103091.016	%	60 - 130%	86

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, which is typically 2.5 times the statistically determined method detection limit (MDL).
Result is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

Parameter	Units	Control LOR	BLK MB
Mercury (dissolved) in Water Method: ME-(AU)-[ENV]AN311/AN312			
LB008531.001			
Mercury	mg/L	0.0001	<0.0001
Mercury in Soil Method: ME-(AU)-[ENV]AN312			
LB008386.001			
Mercury	mg/kg	0.05	<0.05
Metals in Water (Dissolved) by ICPOES Method: ME-(AU)-[ENV]AN320/AN321			
LB008561.001			
Arsenic, As	mg/L	0.05	<0.05
Cadmium, Cd	mg/L	0.005	<0.005
Chromium, Cr	mg/L	0.005	<0.005
Copper, Cu	mg/L	0.01	<0.01
Lead, Pb	mg/L	0.02	<0.02
Nickel, Ni	mg/L	0.01	<0.010
Zinc, Zn	mg/L	0.01	<0.01
OC Pesticides in Soil Method: ME-(AU)-[ENV]AN400/AN420			
LB008393.001			
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1
Lindane	mg/kg	0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1
Aldrin	mg/kg	0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1
Dieldrin	mg/kg	0.05	<0.1
Endrin	mg/kg	0.2	<0.2
Beta Endosulfan	mg/kg	0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1
Surrogates			
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	104
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420			
LB008394.001			
Naphthalene	mg/kg	0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1
Fluorene	mg/kg	0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1
Anthracene	mg/kg	0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1
Pyrene	mg/kg	0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, which is typically 2.5 times the statistically determined method detection limit (MDL).
Result is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

Parameter	Units	Control LOR	BLK MB
Continued... PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420			
LB008394.001			
Chrysene	mg/kg	0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1
Total PAH	mg/kg	0.8	<0.8
Surrogates			
d5-nitrobenzene (Surrogate)	%	-	103
2-fluorobiphenyl (Surrogate)	%	-	93
d14-p-terphenyl (Surrogate)	%	-	107
PCBs in Soil Method: ME-(AU)-[ENV]AN400/AN420			
LB008393.001			
Arochlor 1016	mg/kg	0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1
Surrogates			
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	104
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: ME-(AU)-[ENV]AN040/AN320			
LB008384.001			
Arsenic, As	mg/kg	3	<3
Cadmium, Cd	mg/kg	0.3	<0.3
Chromium, Cr	mg/kg	0.3	<0.3
Copper, Cu	mg/kg	0.5	<0.5
Lead, Pb	mg/kg	1	<1
Nickel, Ni	mg/kg	0.5	<0.5
Zinc, Zn	mg/kg	0.5	<0.5
LB008387.001			
Arsenic, As	mg/kg	3	<3
Cadmium, Cd	mg/kg	0.3	<0.3
Chromium, Cr	mg/kg	0.3	<0.3
Copper, Cu	mg/kg	0.5	<0.5
Lead, Pb	mg/kg	1	<1
Nickel, Ni	mg/kg	0.5	<0.5
Zinc, Zn	mg/kg	0.5	<0.5
TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403			
LB008391.001			
TRH C10-C14	mg/kg	20	<20
TRH C15-C28	mg/kg	50	<50

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, which is typically 2.5 times the statistically determined method detection limit (MDL).
Result is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

Parameter	Units	Control LOR	BLK MB
VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434			
LB008381.001			
Monocyclic Aromatic Hydrocarbons			
Benzene	mg/kg	0.1	<0.1
Toluene	mg/kg	0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2
o-xylene	mg/kg	0.1	<0.1
Oxygenated Compounds			
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1
Surrogates			
Dibromofluoromethane (Surrogate)	%	-	85
d4-1,2-dichloroethane (Surrogate)	%	-	88
d8-toluene (Surrogate)	%	-	104
Bromofluorobenzene (Surrogate)	%	-	102
LB008483.001			
Monocyclic Aromatic Hydrocarbons			
Benzene	mg/kg	0.1	<0.1
Toluene	mg/kg	0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2
o-xylene	mg/kg	0.1	<0.1
Oxygenated Compounds			
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1
Surrogates			
Dibromofluoromethane (Surrogate)	%	-	96
d4-1,2-dichloroethane (Surrogate)	%	-	100
d8-toluene (Surrogate)	%	-	95
Bromofluorobenzene (Surrogate)	%	-	101
Totals			
Total BTEX*	mg/kg	-	0
Volatile Petroleum Hydrocarbons in Soil Method: ME-(AU)-[ENV]AN433/AN434			
LB008381.001			
TRH C6-C9	mg/kg	20	<20
Surrogates			
Trifluorotoluene (Surrogate)	%	-	119

Duplicates are calculated as relative percent difference (RPD) using the formula RPD = | OriginalResult - ReplicateResult | x 100 / Mean
The RPD is evaluated against the maximum allowable RPD criteria and can be graphically represented by a curve calculated from the statistical detection limit and limiting repeatability using the formula: MaxAllowableDifference = 100 x StatisticalDetectionLimit / Mean + LimitingRepeatability
Where the MaxAllowableDifference evaluates to a number larger than 200 it is displayed as 200.
RPD is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Sample Name	SE103083.002-DUP			
Parameter	Units	LOR	Original Result	Duplicate Result	Criteria %	RPD %
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest **Method: ME-(AU)-[ENV]AN040/AN320**						
LB008384.014						
Arsenic, As	mg/kg	3	<3	<3	200	0
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
Chromium, Cr	mg/kg	0.3	4.8	4.7	36	2
Copper, Cu	mg/kg	0.5	18	15	33	19
Lead, Pb	mg/kg	1	19	19	35	2
Nickel, Ni	mg/kg	0.5	17	14	33	17
Zinc, Zn	mg/kg	0.5	61	57	31	7

		Sample Name	SE103091.002-DUP			
Parameter	Units	LOR	Original Result	Duplicate Result	Criteria %	RPD %
OC Pesticides in Soil **Method: ME-(AU)-[ENV]AN400/AN420**						
LB008393.005						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
Lindane	mg/kg	0.1	<0.1	<0.1	200	0
Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
Dieldrin	mg/kg	0.05	<0.1	<0.1	200	0
Endrin	mg/kg	0.2	<0.2	<0.2	200	0
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	110	110	30	0
PAH (Polynuclear Aromatic Hydrocarbons) in Soil **Method: ME-(AU)-[ENV]AN420**						
LB008394.004						
Naphthalene	mg/kg	0.1	0.1	0.1	110	8
2-methylnaphthalene	mg/kg	0.1	0.1	0.1	107	0
1-methylnaphthalene	mg/kg	0.1	0.1	0.1	107	0
Acenaphthylene	mg/kg	0.1	0.8	0.8	43	1
Acenaphthene	mg/kg	0.1	0.1	0.1	101	0
Fluorene	mg/kg	0.1	0.8	0.8	42	0
Phenanthrene	mg/kg	0.1	6.3	6.4	32	2

Duplicates are calculated as relative percent difference (RPD) using the formula RPD = | OriginalResult - ReplicateResult | x 100 / Mean
The RPD is evaluated against the maximum allowable RPD criteria and can be graphically represented by a curve calculated from the statistical detection limit and limiting repeatability using the formula: MaxAllowableDifference = 100 x StatisticalDetectionLimit / Mean + LimitingRepeatability
Where the MaxAllowableDifference evaluates to a number larger than 200 it is displayed as 200.
RPD is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Sample Name	SE103091.002-DUP			
Parameter	Units	LOR	Original Result	Duplicate Result	Criteria %	RPD %
Continued... PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420						
LB008394.004						
Anthracene	mg/kg	0.1	1.9	1.9	35	0
Fluoranthene	mg/kg	0.1	6.3	6.4	32	2
Pyrene	mg/kg	0.1	5.4	5.4	32	1
Benzo(a)anthracene	mg/kg	0.1	3.4	3.3	33	4
Chrysene	mg/kg	0.1	1.5	1.5	37	3
Benzo(b)fluoranthene	mg/kg	0.1	2.4	2.5	34	4
Benzo(k)fluoranthene	mg/kg	0.1	0.8	1.0	41	18
Benzo(a)pyrene	mg/kg	0.1	1.8	1.8	35	1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.8	0.8	43	1
Dibenzo(a&h)anthracene	mg/kg	0.1	0.2	0.2	77	5
Benzo(ghi)perylene	mg/kg	0.1	0.8	0.8	42	1
Total PAH	mg/kg	0.8	33	34	32	1
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	90.0	90.0	30	0
2-fluorobiphenyl (Surrogate)	%	-	94.0	94.0	30	0
d14-p-terphenyl (Surrogate)	%	-	100.0	98.0	30	2
PCBs in Soil Method: ME-(AU)-[ENV]AN400/AN420						
LB008393.005						
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	110	110	30	0
TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403						
LB008391.005						
TRH C10-C14	mg/kg	20	<20	<20	200	0
TRH C15-C28	mg/kg	50	140	150	65	5
TRH C29-C40	mg/kg	150	<150	<150	200	0

Duplicates are calculated as relative percent difference (RPD) using the formula RPD = | OriginalResult - ReplicateResult | x 100 / Mean
The RPD is evaluated against the maximum allowable RPD criteria and can be graphically represented by a curve calculated from the statistical detection limit and limiting repeatability using the formula: MaxAllowableDifference = 100 x StatisticalDetectionLimit / Mean + LimitingRepeatability
Where the MaxAllowableDifference evaluates to a number larger than 200 it is displayed as 200.
RPD is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Sample Name	SE103091.006-DUP			
Parameter	**Units**	**LOR**	**Original Result**	**Duplicate Result**	**Criteria %**	**RPD %**
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest **Method: ME-(AU)-[ENV]AN040/AN320**						
LB008384.024						
Arsenic, As	mg/kg	3	9	10	63	8
Cadmium, Cd	mg/kg	0.3	0.8	0.8	67	3
Chromium, Cr	mg/kg	0.3	28	27	31	6
Copper, Cu	mg/kg	0.5	11	11	34	0
Lead, Pb	mg/kg	1	27	27	34	0
Nickel, Ni	mg/kg	0.5	6.0	6.7	38	10
Zinc, Zn	mg/kg	0.5	26	28	32	10

		Sample Name	SE103091.010-DUP			
Parameter	**Units**	**LOR**	**Original Result**	**Duplicate Result**	**Criteria %**	**RPD %**
Mercury in Soil **Method: ME-(AU)-[ENV]AN312**						
LB008386.014						
Mercury	mg/kg	0.05	<0.05	<0.05	200	0
Moisture Content **Method: ME-(AU)-[ENV]AN234**						
LB008332.011						
% Moisture	%	0.5	13	14	34	3

		Sample Name	SE103091.015-DUP			
Parameter	**Units**	**LOR**	**Original Result**	**Duplicate Result**	**Criteria %**	**RPD %**
OC Pesticides in Soil **Method: ME-(AU)-[ENV]AN400/AN420**						
LB008393.019						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
Lindane	mg/kg	0.1	<0.1	<0.1	200	0
Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
Dieldrin	mg/kg	0.05	<0.1	<0.1	200	0
Endrin	mg/kg	0.2	<0.2	<0.2	200	0
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0

Duplicates are calculated as relative percent difference (RPD) using the formula RPD = | OriginalResult - ReplicateResult | x 100 / Mean
The RPD is evaluated against the maximum allowable RPD criteria and can be graphically represented by a curve calculated from the statistical detection limit and limiting repeatability using the formula: MaxAllowableDifference = 100 x StatisticalDetectionLimit / Mean + LimitingRepeatability
Where the MaxAllowableDifference evaluates to a number larger than 200 it is displayed as 200.
RPD is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Sample Name	SE103091.015-DUP			
Parameter	Units	LOR	Original Result	Duplicate Result	Criteria %	RPD %
Continued... OC Pesticides in Soil Method: ME-(AU)-[ENV]AN400/AN420						
LB008393.019						
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	100	100	30	1
PCBs in Soil Method: ME-(AU)-[ENV]AN400/AN420						
LB008393.019						
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	100	100	30	1

		Sample Name	SE103091.016-DUP			
Parameter	Units	LOR	Original Result	Duplicate Result	Criteria %	RPD %
Moisture Content Method: ME-(AU)-[ENV]AN234						
LB008332.018						
% Moisture	%	0.5	16	15	33	7
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: ME-(AU)-[ENV]AN040/AN320						
LB008387.014						
Arsenic, As	mg/kg	3	6	5	84	13
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	143	0
Chromium, Cr	mg/kg	0.3	15	12	32	19
Copper, Cu	mg/kg	0.5	17	19	33	10
Lead, Pb	mg/kg	1	12	13	38	3
Nickel, Ni	mg/kg	0.5	3.1	3.0	46	3
Zinc, Zn	mg/kg	0.5	24	29	32	18

		Sample Name	SE103091.017-DUP			
Parameter	Units	LOR	Original Result	Duplicate Result	Criteria %	RPD %
Metals in Water (Dissolved) by ICPOES Method: ME-(AU)-[ENV]AN320/AN321						
LB008561.004						
Arsenic, As	mg/L	0.05	<0.05	<0.05	200	0
Cadmium, Cd	mg/L	0.005	<0.005	<0.005	200	0
Chromium, Cr	mg/L	0.005	<0.005	<0.005	200	0
Copper, Cu	mg/L	0.01	<0.01	<0.01	200	0
Lead, Pb	mg/L	0.02	<0.02	<0.02	200	0
Nickel, Ni	mg/L	0.01	<0.010	<0.010	200	0
Zinc, Zn	mg/L	0.01	<0.01	<0.01	200	0

Duplicates are calculated as relative percent difference (RPD) using the formula RPD = | OriginalResult - ReplicateResult | x 100 / Mean
The RPD is evaluated against the maximum allowable RPD criteria and can be graphically represented by a curve calculated from the statistical detection limit and limiting repeatability using the formula: MaxAllowableDifference = 100 x StatisticalDetectionLimit / Mean + LimitingRepeatability
Where the MaxAllowableDifference evaluates to a number larger than 200 it is displayed as 200.
RPD is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Sample Name	SE103096.001-DUP			
Parameter	**Units**	**LOR**	**Original Result**	**Duplicate Result**	**Criteria %**	**RPD %**
Mercury in Soil Method: ME-(AU)-[ENV]AN312						
LB008386.022						
Mercury	mg/kg	0.05	<0.05	<0.05	191	0
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: ME-(AU)-[ENV]AN040/AN320						
LB008387.016						
Arsenic, As	mg/kg	3	5	4	98	8
Cadmium, Cd	mg/kg	0.3	0.5	0.5	87	6
Chromium, Cr	mg/kg	0.3	17	17	32	0
Copper, Cu	mg/kg	0.5	17	17	33	1
Lead, Pb	mg/kg	1	20	19	35	3
Nickel, Ni	mg/kg	0.5	4.4	4.7	41	6
Zinc, Zn	mg/kg	0.5	90	91	31	1

		Sample Name	SE103104.002-DUP			
Parameter	**Units**	**LOR**	**Original Result**	**Duplicate Result**	**Criteria %**	**RPD %**
Volatile Petroleum Hydrocarbons in Soil Method: ME-(AU)-[ENV]AN433/AN434						
LB008381.015						
TRH C6-C9	mg/kg	20	<20	<20	200	0
Surrogates						
Trifluorotoluene (Surrogate)	%	-	119.0	75	30	**45†**

		Sample Name	SE103107.001-DUP			
Parameter	**Units**	**LOR**	**Original Result**	**Duplicate Result**	**Criteria %**	**RPD %**
VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434						
LB008483.013						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	200	0
Toluene	mg/kg	0.1	<0.1	<0.1	200	0
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
Oxygenated Compounds						
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	200	0
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	96.0	95.0	50	1
d4-1,2-dichloroethane (Surrogate)	%	-	96.0	95.0	50	1
d8-toluene (Surrogate)	%	-	94.0	94.0	50	0
Bromofluorobenzene (Surrogate)	%	-	101.0	104.0	50	3
Totals						
Total BTEX*	mg/kg	-	0	0	200	NA
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0

Duplicates are calculated as relative percent difference (RPD) using the formula RPD = | OriginalResult - ReplicateResult | x 100 / Mean
The RPD is evaluated against the maximum allowable RPD criteria and can be graphically represented by a curve calculated from the statistical detection limit and limiting repeatability using the formula: MaxAllowableDifference = 100 x StatisticalDetectionLimit / Mean + LimitingRepeatability
Where the MaxAllowableDifference evaluates to a number larger than 200 it is displayed as 200.
RPD is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Sample Name	SE103158.007-DUP			
Parameter	Units	LOR	Original Result	Duplicate Result	Criteria %	RPD %
Mercury (dissolved) in Water Method: ME-(AU)-[ENV]AN311/AN312						
LB008531.009						
Mercury	µg/L	0.0001	<0.0001	<0.0001	97	3

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022).
For more information refer to the footnotes in the concluding page of the report.
Recovery is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Control	LCS STD			
Parameter	Units	LOR	Result	Expected Result	Criteria %	Recovery %
Mercury (dissolved) in Water Method: ME-(AU)-[ENV]AN311/AN312						
LB008531.002						
Mercury	mg/L	0.0001	0.0081	0.008	80 - 120	101
Mercury in Soil Method: ME-(AU)-[ENV]AN312						
LB008386.002						
Mercury	mg/kg	0.05	0.20	0.2	70 - 130	101
Metals in Water (Dissolved) by ICPOES Method: ME-(AU)-[ENV]AN320/AN321						
LB008561.002						
Arsenic, As	mg/L	0.05	1.9	2	80 - 120	94
Cadmium, Cd	mg/L	0.005	1.9	2	80 - 120	96
Chromium, Cr	mg/L	0.005	1.9	2	80 - 120	96
Copper, Cu	mg/L	0.01	2.0	2	80 - 120	98
Lead, Pb	mg/L	0.02	1.9	2	80 - 120	97
Nickel, Ni	mg/L	0.01	1.9	2	80 - 120	96
Zinc, Zn	mg/L	0.01	1.9	2	80 - 120	95
OC Pesticides in Soil Method: ME-(AU)-[ENV]AN400/AN420						
LB008393.002						
Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	116
Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	115
Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	107
Dieldrin	mg/kg	0.05	0.2	0.2	60 - 140	110
Endrin	mg/kg	0.2	0.2	0.2	60 - 140	118
p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	116
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	92	100	60 - 140	92
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420						
LB008394.002						
Naphthalene	mg/kg	0.1	3.3	3.37	60 - 140	98
Acenaphthylene	mg/kg	0.1	3.5	3.37	60 - 140	103
Acenaphthene	mg/kg	0.1	3.5	3.37	60 - 140	104
Phenanthrene	mg/kg	0.1	3.5	3.37	60 - 140	104
Anthracene	mg/kg	0.1	3.8	3.37	60 - 140	111
Fluoranthene	mg/kg	0.1	3.6	3.37	60 - 140	107
Pyrene	mg/kg	0.1	3.7	3.37	60 - 140	110
Benzo(a)pyrene	mg/kg	0.1	3.7	3.37	60 - 140	111
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	101.0	100	60 - 140	101
2-fluorobiphenyl (Surrogate)	%	-	95.0	100	60 - 140	95
d14-p-terphenyl (Surrogate)	%	-	110.0	100	60 - 140	110
PCBs in Soil Method: ME-(AU)-[ENV]AN400/AN420						
LB008393.002						
Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	118
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	99	100	60 - 140	99

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022).
For more information refer to the footnotes in the concluding page of the report.
Recovery is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Control	LCS STD			
Parameter	Units	LOR	Result	Expected Result	Criteria %	Recovery %
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: ME-(AU)-[ENV]AN040/AN320						
LB008384.002						
Arsenic, As	mg/kg	3	50	50	80 - 120	101
Cadmium, Cd	mg/kg	0.3	51	50	80 - 120	102
Chromium, Cr	mg/kg	0.3	51	50	80 - 120	102
Copper, Cu	mg/kg	0.5	50	50	80 - 120	101
Lead, Pb	mg/kg	1	50	50	80 - 120	101
Nickel, Ni	mg/kg	0.5	52	50	80 - 120	104
Zinc, Zn	mg/kg	0.5	52	50	80 - 120	103
LB008387.002						
Arsenic, As	mg/kg	3	51	50	80 - 120	103
Cadmium, Cd	mg/kg	0.3	51	50	80 - 120	102
Chromium, Cr	mg/kg	0.3	51	50	80 - 120	102
Copper, Cu	mg/kg	0.5	51	50	80 - 120	102
Lead, Pb	mg/kg	1	50	50	80 - 120	100
Nickel, Ni	mg/kg	0.5	52	50	80 - 120	104
Zinc, Zn	mg/kg	0.5	51	50	80 - 120	103
TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403						
LB008391.002						
TRH C10-C14	mg/kg	20	47	40	60 - 140	118
TRH C15-C28	mg/kg	50	50	40	60 - 140	125
VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434						
LB008381.002						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	2.1	2.27	60 - 140	91
Toluene	mg/kg	0.1	2.5	2.27	60 - 140	110
Ethylbenzene	mg/kg	0.1	2.2	2.27	60 - 140	96
m/p-xylene	mg/kg	0.2	4.5	4.54	60 - 140	99
o-xylene	mg/kg	0.1	2.4	2.27	60 - 140	104
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	78.0	100	60 - 140	78
d4-1,2-dichloroethane (Surrogate)	%	-	89.0	100	60 - 140	89
d8-toluene (Surrogate)	%	-	103.0	100	60 - 140	103
Bromofluorobenzene (Surrogate)	%	-	104.0	100	60 - 140	104
LB008483.002						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	2.6	2.27	60 - 140	115
Toluene	mg/kg	0.1	2.5	2.27	60 - 140	112
Ethylbenzene	mg/kg	0.1	3.0	2.27	60 - 140	133
m/p-xylene	mg/kg	0.2	5.9	4.54	60 - 140	130
o-xylene	mg/kg	0.1	2.8	2.27	60 - 140	125
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	93.0	100	60 - 140	93
d4-1,2-dichloroethane (Surrogate)	%	-	97.0	100	60 - 140	97
d8-toluene (Surrogate)	%	-	94.0	100	60 - 140	94
Bromofluorobenzene (Surrogate)	%	-	101.0	100	60 - 140	101
Volatile Petroleum Hydrocarbons in Soil Method: ME-(AU)-[ENV]AN433/AN434						
LB008381.002						
TRH C6-C9	mg/kg	20	29	23	60 - 140	125

Matrix spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub-sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of the report. Recovery is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Control	MS			
Parameter	Units	LOR	Result	Original Result	Spike Added	Recovery %
Mercury in Soil Method: ME-(AU)-[ENV]AN312						
LB008386.004						
Mercury	mg/kg	0.05	0.24	0.06	0.2	88
OC Pesticides in Soil Method: ME-(AU)-[ENV]AN400/AN420						
LB008393.022						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	NA
Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	NA
Lindane	mg/kg	0.1	<0.1	<0.1	-	NA
Heptachlor	mg/kg	0.1	0.3	<0.1	0.2	135
Aldrin	mg/kg	0.1	0.3	<0.1	0.2	135
Beta BHC	mg/kg	0.1	<0.1	<0.1	-	NA
Delta BHC	mg/kg	0.1	0.3	<0.1	0.2	130
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	NA
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	NA
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	NA
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	NA
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	NA
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	NA
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	NA
Dieldrin	mg/kg	0.05	0.3	<0.1	0.2	135
Endrin	mg/kg	0.2	0.3	<0.2	0.2	135
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	NA
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	NA
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	NA
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	NA
p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	95
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	NA
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	NA
Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	NA
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	NA
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	120	110	100	117
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420						
LB008394.010						
Naphthalene	mg/kg	0.1	3.7	<0.1	3.37	108
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	NA
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	NA
Acenaphthylene	mg/kg	0.1	3.7	<0.1	3.37	108
Acenaphthene	mg/kg	0.1	4.0	<0.1	3.37	117
Fluorene	mg/kg	0.1	<0.1	<0.1	-	NA
Phenanthrene	mg/kg	0.1	3.6	<0.1	3.37	108
Anthracene	mg/kg	0.1	3.6	<0.1	3.37	108
Fluoranthene	mg/kg	0.1	3.7	<0.1	3.37	108
Pyrene	mg/kg	0.1	3.9	<0.1	3.37	115
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	NA
Chrysene	mg/kg	0.1	<0.1	<0.1	-	NA
Benzo(b)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	NA
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	NA
Benzo(a)pyrene	mg/kg	0.1	3.5	<0.1	3.37	104
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	NA
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	-	NA
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	NA
Total PAH	mg/kg	0.8	30	<0.8	-	NA

Matrix spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub-sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of the report. Recovery is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Control	MS			
Parameter	Units	LOR	Result	Original Result	Spike Added	Recovery %
Continued... PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420						
LB008394.010						
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	100.0	95.0	100	100
2-fluorobiphenyl (Surrogate)	%	-	96.0	89.0	100	96
d14-p-terphenyl (Surrogate)	%	-	101.0	105.0	100	101
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: ME-(AU)-[ENV]AN040/AN320						
LB008384.004						
Arsenic, As	mg/kg	3	36	<3	50	**69†**
Recovery failed acceptance criteria due to matrix interference.						
LB008387.004						
Arsenic, As	mg/kg	3	44	7	50	73
Cadmium, Cd	mg/kg	0.3	37	0.5	50	73
Chromium, Cr	mg/kg	0.3	55	24	50	**63†**
Copper, Cu	mg/kg	0.5	47	8.6	50	78
Lead, Pb	mg/kg	1	65	32	50	**65†**
Nickel, Ni	mg/kg	0.5	43	5.3	50	75
Zinc, Zn	mg/kg	0.5	56	17	50	79
Recovery failed acceptance criteria due to sample heterogeneity.						
Recovery failed acceptance criteria due to sample heterogeneity.						
TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403						
LB008391.009						
TRH C10-C14	mg/kg	20	48	<20	40	118
TRH C15-C28	mg/kg	50	56	<50	40	98
TRH C29-C40	mg/kg	150	<150	<150	-	NA
VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434						
LB008483.004						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	2.4	<0.1	2.27	105
Toluene	mg/kg	0.1	2.4	<0.1	2.27	107
Ethylbenzene	mg/kg	0.1	2.8	<0.1	2.27	124
m/p-xylene	mg/kg	0.2	5.6	<0.2	4.54	124
o-xylene	mg/kg	0.1	2.8	<0.1	2.27	122
Oxygenated Compounds						
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	-	NA
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	96.0	96.0	100	96
d4-1,2-dichloroethane (Surrogate)	%	-	99.0	99.0	100	99
d8-toluene (Surrogate)	%	-	97.0	95.0	100	97
Bromofluorobenzene (Surrogate)	%	-	99.0	100.0	100	99
Totals						
Total BTEX*	mg/kg	-	16	0	-	NA
Total Xylenes*	mg/kg	0.3	8.4	<0.3	-	NA

Matrix spike duplicates are calculated as relative percent difference using the formula RPD = | OriginalResult - ReplicateResult | x 100 / Mean
The original result is the analyte concentration of the matrix spike and the replicate result is the analyte concentration of the matrix spike duplicate.
The RPD is evaluated against the maximum allowable RPD criteria and can be graphically represented by a curve calculated from the statistical detection limit and limiting repeatability using the formula: MaxAllowableDifference = 100 x StatisticalDetectionLimit / Mean + LimitingRepeatability
RPD is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

No Matrix Spike Duplicates were required for this job.

FOOTNOTES

IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
*	NATA Accreditation does not cover this analysis.
^	Performed by outside laboratory.
LOR	Limit of Reporting
QFH	QC result is above the upper tolerance
QFL	QC result is below the lower tolerance
NA	The sample was not analysed for this analyte

Samples analysed as received.
Solid samples expressed on a dry weight basis.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-09.pdf

This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

This test report shall not be reproduced, except in full.

COC received 4/11/14 @ 6:30 pm

SGS
Received By 07/11/14
Time ..... 2.00 pm
Samples intact ..... Y
Ice/Cooler Pack ..... Y
Temperature on Receipt ..... 2.7°C
Storage Location 9785-6, W032
SE 103091

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	**SGS ENVIRONMENTAL SERVICES** **UNIT 16** **33 MADDOX STREET** **ALEXANDRIA NSW 2015**	**Sampling By:**	JK
PH:	**02 8594 0400** **FAX:** **02 8594 0499**	**Project Manager:**	AB
ATTN:	**MS ANGELA MAMALICOS**		

Sampling details				**Sample type**		**Results required by: Normal Turnaround Time**									
	Location	**Depth (m)**	**Date**	**Time**	**Soil**	**Material**									
							Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	**TPH* & BTEX**	**PAH**	**OCP**	**PCB**				**KEEP SAMPLE**
1	TP70	0-0.1	4/11/2011	-	SG		✓			✓					YES
2	TP70	0.1-0.4	4/11/2011	-	SG		✓	✓	✓	✓	✓				YES
	TP70	0.45-0.55	4/11/2011	-	SG										YES
3	TP71	0-0.1	4/11/2011	-	SG		✓			✓					YES
4	TP72	0-0.1	4/11/2011	-	SG		✓			✓					YES
5	TP72	0.1-0.4	4/11/2011	-	SG		✓	✓	✓	✓	✓				YES
	TP72	0.65-0.75	4/11/2011	-	SG										YES
6	TP73	0-0.1	4/11/2011	-	SG		✓			✓					YES
7	TP74	0-0.1	4/11/2011	-	SG		✓			✓					YES
8	TP75	0-0.15	4/11/2011	-	SG		✓			✓					YES
9	TP76	0-0.3	4/11/2011	-	SG		✓	✓	✓	✓	✓				YES
	TP76	0.45-0.55	4/11/2011	-	SG										YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
ANWAR BARBHUYIA	AB	4/11/2011	Suba		07/11/14 2.00

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece	✓	Test required

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 **FAX:** 02 8594 0499

ATTN: MS ANGELA MAMALICOS

Sampling By: JK **Job No:** 12576/1

Project:

Project Manager: AB **Location:** Marsden Park Precinct

Results required by: Normal Turnaround Time

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	BTEX				KEEP SAMPLE
10	TP77	0-0.3	4/11/2011	-	SG		✓	✓	✓	✓	✓					YES
	TP77	0.35-0.45	4/11/2011	-	SG											YES
11	TP78	0-0.3	4/11/2011	-	SG		✓	✓	✓	✓	✓					YES
	TP78	0.55-0.65	4/11/2011	-	SG											YES
12	TP79	0-0.1	4/11/2011	-	SG		✓			✓						YES
13	TP80	0-0.15	4/11/2011	-	SG		✓			✓						YES
14	SD6	0-0.1	4/11/2011	-	SG		✓			✓						YES
15	SP2		4/11/2011	-	SG		✓	✓	✓	✓	✓					YES
16	Duplicate D6		4/11/2011	-	SG		✓	✓	✓	✓	✓					YES
17	Rinsate R7		4/11/2011	-		WG	✓									YES
18	Trip Spike TS2											✓				YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
ANWAR BARBHUYIA	AB	4/11/2011	Suba		07/11/11 2:22

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece	✓	Test required

* Purge & Trap

SAMPLE RECEIPT ADVICE

SE103091

CLIENT DETAILS

Contact	Anwar Barbhuyia
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	anwar.barbhuyia@geotech.com.au
Project	**12576-1 - Marsden Park Precinct**
Order Number	(Not specified)
Samples	18

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Mon 7/11/2011
Report Due	Mon 14/11/2011
SGS Reference	**SE103091**

SUBMISSION DETAILS

This is to confirm that 18 samples were received on Monday 7/11/2011. Results are expected to be ready by Monday 14/11/2011. Please quote SGS reference SE103091 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	16 Soils, 1 Water	Type of documentation received	COC
Date documentation received	7/11/2011	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	2.7°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Samples will be held for one month for water samples and two months for soil samples from date of report, unless otherwise instructed.

COMMENTS

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm as at the date of this document. Attention is drawn to the limitations of liability and to the clauses of indemnification.

SAMPLE RECEIPT ADVICE

SE103091

CLIENT DETAILS

Client: Geotechnique

Project: 12576-1 - Marsden Park Precinct

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	OC Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in	PCBs in Soil	Total Recoverable Metals in Soil by ICPOES from	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	TP70 0-0.1	1	26	-	-	7	-	-	-
002	TP70 0.1-0.4	1	26	22	11	7	4	12	6
003	TP71 0-0.1	1	26	-	-	7	-	-	-
004	TP72 0-0.1	1	26	-	-	7	-	-	-
005	TP72 0.1-0.4	1	26	22	11	7	4	12	6
006	TP73 0-0.1	1	26	-	-	7	-	-	-
007	TP74 0-0.1	1	26	-	-	7	-	-	-
008	TP75 0-0.15	1	26	-	-	7	-	-	-
009	TP76 0-0.3	1	26	22	11	7	4	12	6
010	TP77 0-0.3	1	26	22	11	7	4	12	6
011	TP78 0-0.3	1	26	22	11	7	4	12	6
012	TP79 0-0.1	1	26	-	-	7	-	-	-
013	TP80 0-0.15	1	26	-	-	7	-	-	-
014	SD6	1	26	-	-	7	-	-	-
015	SP2	1	26	22	11	7	4	12	6
016	Duplicate D6	1	26	22	11	7	4	12	6
018	Trip Spike TS2	-	-	-	-	-	-	12	-

CONTINUED OVERLEAF

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction.

SAMPLE RECEIPT ADVICE

SE103091

CLIENT DETAILS

Client	Geotechnique	Project	12576-1 - Marsden Park Precinct

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Metals in Water (Dissolved) by ICPOES	Moisture Content
001	TP70 0-0.1	-	-	1
002	TP70 0.1-0.4	-	-	1
003	TP71 0-0.1	-	-	1
004	TP72 0-0.1	-	-	1
005	TP72 0.1-0.4	-	-	1
006	TP73 0-0.1	-	-	1
007	TP74 0-0.1	-	-	1
008	TP75 0-0.15	-	-	1
009	TP76 0-0.3	-	-	1
010	TP77 0-0.3	-	-	1
011	TP78 0-0.3	-	-	1
012	TP79 0-0.1	-	-	1
013	TP80 0-0.15	-	-	1
014	SD6	-	-	1
015	SP2	-	-	1
016	Duplicate D6	-	-	1
017	Rinsate R7	1	7	-

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction.

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS

Contact	Anwar Barbhuyia
Client	Geotechnique
Address	P.O. Box 880 NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	anwar.barbhuyia@geotech.com.au
Project	**12576/1-Marsden Park Precinct - Waters**
Order Number	(Not specified)
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	SE103363 R0
Report Number	0000012981
Date Reported	30 Nov 2011
Date Received	16 Nov 2011

COMMENTS

The document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

OCP (LOR 0.01-0.05µg/L) and PCB Congeners (LOR 0.004-0.01µg/L) subcontracted to SGS Perth Environmental, 10 Reid Rd Newburn WA, NATA Accreditation Number 2562, Site Number 898,
PCB Aurochlors will be reported if PCB Congeners are positive.

B Aurochlor reported if PCB Congeners positive.Detection limit(s) raised due to the presence of surfactants in the sample, which interfere the analytical process.

Detection limit(s) for anions raised due to the presence of interferences in the sample

For Trace metals, LOR has been raised for sample #1 and 2 by a dilution of 10 due to sample matrix interferences.
.

SIGNATORIES

Andy Sutton
Organics Chemist

Dong Liang
Inorganics Metals Team Leader

Ly Kim Ha
Organics Supervisor

Snezana Kostoska
Inorganics Chemist

Parameter	Units	LOR	Sample Number: SE103363.001 Sample Matrix: Water Sample Date: 16 Nov 2011 Sample Name: G/W MW1-1	Sample Number: SE103363.002 Sample Matrix: Water Sample Date: 16 Nov 2011 Sample Name: G/W MW2-1
VOCs in Water Method: AN433/AN434				
Monocyclic Aromatic Hydrocarbons				
Benzene	µg/L	0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5
m/p-xylene	µg/L	1	<1	<1
o-xylene	µg/L	0.5	<0.5	<0.5
Oxygenated Compounds				
MtBE (Methyl-tert-butyl ether)	µg/L	0.5	<0.5	<0.5
Surrogates				
Dibromofluoromethane (Surrogate)	%	-	**108**	**108**
d4-1,2-dichloroethane (Surrogate)	%	-	**116**	**114**
d8-toluene (Surrogate)	%	-	**101**	**102**
Bromofluorobenzene (Surrogate)	%	-	**101**	**100**
Totals				
Total Xylenes	µg/L	1.5	<1.5	<1.5
Total BTEX	µg/L	3	<3	<3
Volatile Petroleum Hydrocarbons in Water Method: AN433/AN434				
TRH C6-C9	µg/L	40	<40	<40
Surrogates				
Trifluorotoluene (Surrogate)	%	-	**101**	**102**
Dibromofluoromethane (Surrogate)	%	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-	-
d8-toluene (Surrogate)	%	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-
TPH (Total Petroleum Hydrocarbons) in Water Method: AN403				
TPH C10-C14 Silica Gel	µg/L	40	**55**	**170**
TPH C15-C28 Silica Gel	µg/L	100	<100	<100
TPH C29-C36 Silica Gel	µg/L	100	<100	<100
TPH C37-C40 Silica Gel	µg/L	100	<100	<100
PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: AN420				
Naphthalene	µg/L	0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1
Benzo(b)fluoranthene	µg/L	0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	µg/L	0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	<1	<1

Parameter	Units	LOR	Sample Number: SE103363.001 Sample Matrix: Water Sample Date: 16 Nov 2011 Sample Name: G/W MW1-1	Sample Number: SE103363.002 Sample Matrix: Water Sample Date: 16 Nov 2011 Sample Name: G/W MW2-1
PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: AN420 (continued)				
Surrogates				
d5-nitrobenzene (Surrogate)	%	-	**81**	**86**
2-fluorobiphenyl (Surrogate)	%	-	**77**	**88**
d14-p-terphenyl (Surrogate)	%	-	**88**	**85**
Total Phenolics in Water Method: AN289				
Total Phenols	mg/L	0.01	**0.03**	**0.02**
Ammonia Nitrogen by Discrete Analyser (Aquakem) Method: AN291				
Ammonia Nitrogen, NH_3 as N	mg/L	0.01	**0.63**	**0.07**
Nitrite & NOX in Water Method: AN277				
Nitrite Nitrogen, NO_2 as N	mg/L	0.005	<0.005	<0.005
Anions by Ion Chromatography in Water Method: AN245				
Nitrate Nitrogen, NO3-N	mg/L	0.005	<0.25↑	<0.10↑
TKN Kjeldahl Digestion by Discrete Analyser Method: AN281/AN292				
Total Kjeldahl Nitrogen	mg/L	0.05	**3.0**	**0.82**
Total Nitrogen (calc)	mg/L	0.05	**3.0**	**0.83**
Total Phosphorus by Kjeldahl Digestion DA in Water Method: AN279/AN293				
Total Phosphorus (Kjeldahl Digestion)	mg/L	0.05	**1.6**	**0.23**
Trace Metals (Dissolved) in Water by ICPMS Method: AN318				
Arsenic, As	µg/L	1	<2↑	<2↑
Cadmium, Cd	µg/L	0.1	<1.0↑	<1.0↑
Chromium, Cr	µg/L	1	<10↑	<10↑
Copper, Cu	µg/L	1	<1	<1
Lead, Pb	µg/L	1	<1	<1
Nickel, Ni	µg/L	1	<10↑	<10↑
Zinc, Zn	µg/L	1	**7**	**28**
Mercury (dissolved) in Water Method: AN311/AN312				
Mercury	mg/L	0.0001	**0.00010**	<0.0001

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Ammonia Nitrogen by Discrete Analyser (Aquakem) Method: ME-(AU)-[ENV]AN291

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Ammonia Nitrogen, NH_3 as N	LB009013	mg/L	0.01	<0.01	1%	102%

Anions by Ion Chromatography in Water Method: ME-(AU)-[ENV]AN245

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Nitrate Nitrogen, NO3-N	LB009049	mg/L	0.005	<0.005	95%

Mercury (dissolved) in Water Method: ME-(AU)-[ENV]AN311/AN312

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Mercury	LB009593	mg/L	0.0001	<0.0001	5%	104%

Nitrite & NOX in Water Method: ME-(AU)-[ENV]AN277

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Nitrite Nitrogen, NO_2 as N	LB009012	mg/L	0.005	<0.005	0%	NA

PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Naphthalene	LB009068	µg/L	0.1	<0.1	100%
2-methylnaphthalene	LB009068	µg/L	0.1	<0.1	NA
1-methylnaphthalene	LB009068	µg/L	0.1	<0.1	NA
Acenaphthylene	LB009068	µg/L	0.1	<0.1	95%
Acenaphthene	LB009068	µg/L	0.1	<0.1	100%
Fluorene	LB009068	µg/L	0.1	<0.1	NA
Phenanthrene	LB009068	µg/L	0.1	<0.1	105%
Anthracene	LB009068	µg/L	0.1	<0.1	95%
Fluoranthene	LB009068	µg/L	0.1	<0.1	105%
Pyrene	LB009068	µg/L	0.1	<0.1	105%
Benzo(a)anthracene	LB009068	µg/L	0.1	<0.1	NA
Chrysene	LB009068	µg/L	0.1	<0.1	NA
Benzo(b)fluoranthene	LB009068	µg/L	0.1	<0.1	NA
Benzo(k)fluoranthene	LB009068	µg/L	0.1	<0.1	NA
Benzo(a)pyrene	LB009068	µg/L	0.1	<0.1	93%
Indeno(1,2,3-cd)pyrene	LB009068	µg/L	0.1	<0.1	NA
Dibenzo(a&h)anthracene	LB009068	µg/L	0.1	<0.1	NA
Benzo(ghi)perylene	LB009068	µg/L	0.1	<0.1	NA
Total PAH (18)	LB009068	µg/L	1	<1	

Surrogates

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
d5-nitrobenzene (Surrogate)	LB009068	%	-	107%	102%
2-fluorobiphenyl (Surrogate)	LB009068	%	-	105%	103%
d14-p-terphenyl (Surrogate)	LB009068	%	-	118%	116%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

TKN Kjeldahl Digestion by Discrete Analyser Method: ME-(AU)-[ENV]AN281/AN292

Parameter	QC Reference	Units	LOR	DUP %RPD	LCS %Recovery	MSD %RPD
Total Kjeldahl Nitrogen	LB009011	mg/L	0.05	42%	104%	NA
Total Nitrogen (calc)	LB009011	mg/L	0.05	1%		

Total Phenolics in Water Method: ME-(AU)-[ENV]AN289

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Total Phenols	LB009026	mg/L	0.01	<0.01	102%

Total Phosphorus by Kjeldahl Digestion DA in Water Method: ME-(AU)-[ENV]AN279/AN293

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MSD %RPD
Total Phosphorus (Kjeldahl Digestion)	LB009010	mg/L	0.05	<0.05	0%	NA	NA

TPH (Total Petroleum Hydrocarbons) in Water Method: ME-(AU)-[ENV]AN403

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
TPH C10-C14 Silica Gel	LB009068	µg/L	40	<40	92%
TPH C15-C28 Silica Gel	LB009068	µg/L	100	<100	111%
TPH C29-C36 Silica Gel	LB009068	µg/L	100	<100	115%
TPH C37-C40 Silica Gel	LB009068	µg/L	100	<100	NA

Trace Metals (Dissolved) in Water by ICPMS Method: ME-(AU)-[ENV]AN318

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB009076	µg/L	1	<1	0%	107%	106%
Cadmium, Cd	LB009076	µg/L	0.1	<0.1	0%	104%	104%
Chromium, Cr	LB009076	µg/L	1	<1	0%	109%	102%
Copper, Cu	LB009076	µg/L	1	<1	0%	105%	106%
Lead, Pb	LB009076	µg/L	1	<1	0%	104%	95%
Nickel, Ni	LB009076	µg/L	1	<1	0%	111%	98%
Zinc, Zn	LB009076	µg/L	1	<1	32%	101%	110%

VOCs in Water Method: ME-(AU)-[ENV]AN433/AN434

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Benzene	LB009454	µg/L	0.5	<0.5	104%
Toluene	LB009454	µg/L	0.5	<0.5	99%
Ethylbenzene	LB009454	µg/L	0.5	<0.5	96%
m/p-xylene	LB009454	µg/L	1	<1	93%
o-xylene	LB009454	µg/L	0.5	<0.5	96%

Oxygenated Compounds

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
MtBE (Methyl-tert-butyl ether)	LB009454	µg/L	0.5	<0.5	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Dibromofluoromethane (Surrogate)	LB009454	%	-	104%	101%
d4-1,2-dichloroethane (Surrogate)	LB009454	%	-	104%	102%
d8-toluene (Surrogate)	LB009454	%	-	99%	100%
Bromofluorobenzene (Surrogate)	LB009454	%	-	102%	101%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Volatile Petroleum Hydrocarbons in Water **Method: ME-(AU)-[ENV]AN433/AN434**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
TRH C6-C9	LB009454	µg/L	40	<40	0%	83%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Trifluorotoluene (Surrogate)	LB009454	%	-	99%	0%	100%

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN083	Separatory funnels are used for aqueous samples and extracted by transferring an appropriate volume (mass) of liquid into a separatory funnel and adding 3 serial aliquots of dichloromethane. Samples receive a single extraction at pH 7 to recover base / neutral analytes and two extractions at pH < 2 to recover acidic analytes. QC samples are prepared by spiking organic free water with target analytes and extracting as per samples.
AN245	Anions by Ion Chromatography: A water sample is injected into an eluent stream that passes through the ion chromatographic system where the anions of interest ie Br, Cl, NO2, NO3 and SO4 are separated on their relative affinities for the active sites on the column packing material. Changes to the conductivity and the UV-visible absorbance of the eluent enable identification and quantitation of the anions based on their retention time and peak height or area. APHA 4110 B
AN277	Nitrite ions, when reacted with a reagent containing sulphanilamide and N-(1-naphthyl)-ethylenediamine dihydrochloride produce a highly coloured azo dye that is measured photometrically at 540nm.
AN279/AN293	The sample is digested with Sulphuric acid, K2SO4 and CuSO4. All forms of phosphorus are converted into orthophosphate. The digest is cooled and placed on the Aquakem 250 discrete analyser for colorimetric analysis.
AN281	An unfiltered water or soil sample is first digested in a block digestor with sulphuric acid, K2SO4 and CuSO4. The ammonia produced following digestion is then measured colourimetrically using the Aquakem 250 Discrete Analyser. A portion of the digested sample is buffered to an alkaline pH, and interfering cations are complexed. The ammonia then reacts with salicylate and hypochlorite to give a blue colour whose absorbance is measured at 660nm and compared with calibration standards. This is proportional to the concentration of Total Kjeldahl Nitrogen in the original sample.
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
AN311/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with diffential polarity of the elluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependant on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
*	This analysis is not covered by the scope of accreditation.
^	Performed by outside laboratory.
LOR	Limit of Reporting
↑↓	Raised or Lowered Limit of Reporting
QFH	QC result is above the upper tolerance
QFL	QC result is below the lower tolerance
-	The sample was not analysed for this analyte
NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-09.pdf

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STATEMENT OF QA/QC PERFORMANCE AGAINST DATA QUALITY OBJECTIVES

SE103363 R0

CLIENT DETAILS

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Project	**12576/1-Marsden Park Precinct - Waters**
Order Number	(Not specified)
Samples	2

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SGS Reference	SE103363 R0
Report Number	0000012983
Date Reported	30 Nov 2011

COMMENTS

All the laboratory data for each environmental matrix was compared to the SGS Environmental Services' stated data quality objectives (DQO).
Comments arising from the comparison were made and are reported below.
The data relating to sampling was taken from the chain of custody document and was supplied by the client.
This QA/QC statement must be read in conjunction with the referenced analytical report.
The statement and the analytical report must not be reproduced except in full.

All Data Quality Objectives were met.

SAMPLE SUMMARY

Sample counts by matrix	2 Waters	Type of documentation received	COC
Date documentation received	16/11/2011@3:13pr	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	2.8°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SE103363 R0

HOLDING TIMES

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field sampling guide for containers and holding time" (Ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

The extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and Analysis dates are shown in **Green** when within suggested criteria and in **Bold** with an appended dagger symbol and Red† when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Sample Name	Sample Number	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Ammonia Nitrogen by Discrete Analyser (Aquakem) Method: ME-(AU)-[ENV]AN291								
G/W MW1-1	SE103363.001	LB009013	16 Nov 2011	16 Nov 2011	14 Dec 2011	17 Nov 2011	14 Dec 2011	18 Nov 2011
G/W MW2-1	SE103363.002	LB009013	16 Nov 2011	16 Nov 2011	14 Dec 2011	17 Nov 2011	14 Dec 2011	18 Nov 2011
Anions by Ion Chromatography in Water Method: ME-(AU)-[ENV]AN245								
G/W MW1-1	SE103363.001	LB009049	16 Nov 2011	16 Nov 2011	14 Dec 2011	18 Nov 2011	14 Dec 2011	21 Nov 2011
G/W MW2-1	SE103363.002	LB009049	16 Nov 2011	16 Nov 2011	14 Dec 2011	18 Nov 2011	14 Dec 2011	21 Nov 2011
Mercury (dissolved) in Water Method: ME-(AU)-[ENV]AN311/AN312								
G/W MW1-1	SE103363.001	LB009593	16 Nov 2011	16 Nov 2011	14 Dec 2011	28 Nov 2011	14 Dec 2011	28 Nov 2011
G/W MW2-1	SE103363.002	LB009593	16 Nov 2011	16 Nov 2011	14 Dec 2011	28 Nov 2011	14 Dec 2011	28 Nov 2011
Nitrite & NOX in Water Method: ME-(AU)-[ENV]AN277								
G/W MW1-1	SE103363.001	LB009012	16 Nov 2011	16 Nov 2011	18 Nov 2011	17 Nov 2011	18 Nov 2011	18 Nov 2011
G/W MW2-1	SE103363.002	LB009012	16 Nov 2011	16 Nov 2011	18 Nov 2011	17 Nov 2011	18 Nov 2011	18 Nov 2011
PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: ME-(AU)-[ENV]AN420								
G/W MW1-1	SE103363.001	LB009068	16 Nov 2011	16 Nov 2011	23 Nov 2011	18 Nov 2011	28 Dec 2011	28 Nov 2011
G/W MW2-1	SE103363.002	LB009068	16 Nov 2011	16 Nov 2011	23 Nov 2011	18 Nov 2011	28 Dec 2011	28 Nov 2011
TKN Kjeldahl Digestion by Discrete Analyser Method: ME-(AU)-[ENV]AN281/AN292								
G/W MW1-1	SE103363.001	LB009011	16 Nov 2011	16 Nov 2011	14 Dec 2011	17 Nov 2011	14 Dec 2011	18 Nov 2011
G/W MW2-1	SE103363.002	LB009011	16 Nov 2011	16 Nov 2011	14 Dec 2011	17 Nov 2011	14 Dec 2011	18 Nov 2011
Total Phenolics in Water Method: ME-(AU)-[ENV]AN289								
G/W MW1-1	SE103363.001	LB009026	16 Nov 2011	16 Nov 2011	14 Dec 2011	18 Nov 2011	14 Dec 2011	18 Nov 2011
G/W MW2-1	SE103363.002	LB009026	16 Nov 2011	16 Nov 2011	14 Dec 2011	18 Nov 2011	14 Dec 2011	18 Nov 2011
Total Phosphorus by Kjeldahl Digestion DA in Water Method: ME-(AU)-[ENV]AN279/AN293								
G/W MW1-1	SE103363.001	LB009010	16 Nov 2011	16 Nov 2011	14 Dec 2011	17 Nov 2011	14 Dec 2011	22 Nov 2011
G/W MW2-1	SE103363.002	LB009010	16 Nov 2011	16 Nov 2011	14 Dec 2011	17 Nov 2011	14 Dec 2011	22 Nov 2011
TPH (Total Petroleum Hydrocarbons) in Water Method: ME-(AU)-[ENV]AN403								
G/W MW1-1	SE103363.001	LB009068	16 Nov 2011	16 Nov 2011	23 Nov 2011	18 Nov 2011	28 Dec 2011	28 Nov 2011
G/W MW2-1	SE103363.002	LB009068	16 Nov 2011	16 Nov 2011	23 Nov 2011	18 Nov 2011	28 Dec 2011	28 Nov 2011
Trace Metals (Dissolved) in Water by ICPMS Method: ME-(AU)-[ENV]AN318								
G/W MW1-1	SE103363.001	LB009076	16 Nov 2011	16 Nov 2011	14 May 2012	18 Nov 2011	14 May 2012	22 Nov 2011
G/W MW2-1	SE103363.002	LB009076	16 Nov 2011	16 Nov 2011	14 May 2012	18 Nov 2011	14 May 2012	22 Nov 2011
VOCs in Water Method: ME-(AU)-[ENV]AN433/AN434								
G/W MW1-1	SE103363.001	LB009454	16 Nov 2011	16 Nov 2011	23 Nov 2011	23 Nov 2011	02 Jan 2012	25 Nov 2011
G/W MW2-1	SE103363.002	LB009454	16 Nov 2011	16 Nov 2011	23 Nov 2011	23 Nov 2011	02 Jan 2012	25 Nov 2011
Volatile Petroleum Hydrocarbons in Water Method: ME-(AU)-[ENV]AN433/AN434								
G/W MW1-1	SE103363.001	LB009454	16 Nov 2011	16 Nov 2011	23 Nov 2011	23 Nov 2011	02 Jan 2012	25 Nov 2011
G/W MW2-1	SE103363.002	LB009454	16 Nov 2011	16 Nov 2011	23 Nov 2011	23 Nov 2011	02 Jan 2012	25 Nov 2011

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.
Result is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: ME-(AU)-[ENV]AN420					
2-fluorobiphenyl (Surrogate)	G/W MW1-1	SE103363.001	%	40 - 130%	77
	G/W MW2-1	SE103363.002	%	40 - 130%	88
d14-p-terphenyl (Surrogate)	G/W MW1-1	SE103363.001	%	40 - 130%	88
	G/W MW2-1	SE103363.002	%	40 - 130%	85
d5-nitrobenzene (Surrogate)	G/W MW1-1	SE103363.001	%	40 - 130%	81
	G/W MW2-1	SE103363.002	%	40 - 130%	86
VOCs in Water Method: ME-(AU)-[ENV]AN433/AN434					
Bromofluorobenzene (Surrogate)	G/W MW1-1	SE103363.001	%	60 - 130%	101
	G/W MW2-1	SE103363.002	%	60 - 130%	100
d4-1,2-dichloroethane (Surrogate)	G/W MW1-1	SE103363.001	%	40 - 130%	116
	G/W MW2-1	SE103363.002	%	40 - 130%	114
d8-toluene (Surrogate)	G/W MW1-1	SE103363.001	%	60 - 130%	101
	G/W MW2-1	SE103363.002	%	60 - 130%	102
Dibromofluoromethane (Surrogate)	G/W MW1-1	SE103363.001	%	60 - 130%	108
	G/W MW2-1	SE103363.002	%	60 - 130%	108
Volatile Petroleum Hydrocarbons in Water Method: ME-(AU)-[ENV]AN433/AN434					
Trifluorotoluene (Surrogate)	G/W MW1-1	SE103363.001	%	40 - 130%	101
	G/W MW2-1	SE103363.002	%	40 - 130%	102

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, which is typically 2.5 times the statistically determined method detection limit (MDL).
Result is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

Parameter	Units	Control LOR	BLK MB
Mercury (dissolved) in Water Method: ME-(AU)-[ENV]AN311/AN312			
LB009593.001			
Mercury	mg/L	0.0001	<0.0001
PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: ME-(AU)-[ENV]AN420			
LB009068.001			
Naphthalene	µg/L	0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1
Fluorene	µg/L	0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1
Anthracene	µg/L	0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1
Pyrene	µg/L	0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1
Chrysene	µg/L	0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
Dibenzo(a&h)anthracene	µg/L	0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1
Surrogates			
d5-nitrobenzene (Surrogate)	%	-	107
2-fluorobiphenyl (Surrogate)	%	-	105
d14-p-terphenyl (Surrogate)	%	-	118
TPH (Total Petroleum Hydrocarbons) in Water Method: ME-(AU)-[ENV]AN403			
LB009068.001			
TPH C10-C14 Silica Gel	µg/L	40	<40
TPH C15-C28 Silica Gel	µg/L	100	<100
TPH C29-C36 Silica Gel	µg/L	100	<100
TPH C37-C40 Silica Gel	µg/L	100	<100
Trace Metals (Dissolved) in Water by ICPMS Method: ME-(AU)-[ENV]AN318			
LB009076.001			
Arsenic, As	µg/L	1	<1
Cadmium, Cd	µg/L	0.1	<0.1
Chromium, Cr	µg/L	1	<1
Copper, Cu	µg/L	1	<1
Lead, Pb	µg/L	1	<1
Nickel, Ni	µg/L	1	<1
Zinc, Zn	µg/L	1	<1
Volatile Petroleum Hydrocarbons in Water Method: ME-(AU)-[ENV]AN433/AN434			
LB009454.001			
TRH C6-C9	µg/L	40	<40
Surrogates			
Trifluorotoluene (Surrogate)	%	-	99

Duplicates are calculated as relative percent difference (RPD) using the formula RPD = | OriginalResult - ReplicateResult | x 100 / Mean
The RPD is evaluated against the maximum allowable RPD criteria and can be graphically represented by a curve calculated from the statistical detection limit and limiting repeatability using the formula: MaxAllowableDifference = 100 x StatisticalDetectionLimit / Mean + LimitingRepeatability
Where the MaxAllowableDifference evaluates to a number larger than 200 it is displayed as 200.
RPD is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

	Sample Name		SE103332.001-DUP			
Parameter	**Units**	**LOR**	**Original Result**	**Duplicate Result**	**Criteria %**	**RPD %**
TKN Kjeldahl Digestion by Discrete Analyser Method: ME-(AU)-[ENV]AN281/AN292						
LB009011.005						
Total Kjeldahl Nitrogen	mg/L	0.05	0.0591	0.09	82	42
Total Nitrogen (calc)	mg/L	0.05	2.3674	2.4	12	1
Total Phosphorus by Kjeldahl Digestion DA in Water Method: ME-(AU)-[ENV]AN279/AN293						
LB009010.005						
Total Phosphorus (Kjeldahl Digestion)	mg/L	0.05	0	<0.05	200	0

	Sample Name		SE103363.001-DUP			
Parameter	**Units**	**LOR**	**Original Result**	**Duplicate Result**	**Criteria %**	**RPD %**
Ammonia Nitrogen by Discrete Analyser (Aquakem) Method: ME-(AU)-[ENV]AN291						
LB009013.005						
Ammonia Nitrogen, NH_3 as N	mg/L	0.01	0.63	0.64	17	1
Nitrite & NOX in Water Method: ME-(AU)-[ENV]AN277						
LB009012.007						
Nitrite Nitrogen, NO_2 as N	mg/L	0.005	<0.005	<0.005	135	0
Trace Metals (Dissolved) in Water by ICPMS Method: ME-(AU)-[ENV]AN318						
LB009076.014						
Cadmium, Cd	µg/L	0.1	<1.0	<1.0	200	0
Lead, Pb	µg/L	1	<1	<1	200	0
Zinc, Zn	µg/L	1	7	5	32	32

Results less than 5 times LOR preclude acceptance criteria for RPD.

	Sample Name		SE103365.008-DUP			
Parameter	**Units**	**LOR**	**Original Result**	**Duplicate Result**	**Criteria %**	**RPD %**
Trace Metals (Dissolved) in Water by ICPMS Method: ME-(AU)-[ENV]AN318						
LB009076.024						
Lead, Pb	µg/L	1	<1	<1	200	0

	Sample Name		SE103421.001-DUP			
Parameter	**Units**	**LOR**	**Original Result**	**Duplicate Result**	**Criteria %**	**RPD %**
Mercury (dissolved) in Water Method: ME-(AU)-[ENV]AN311/AN312						
LB009593.014						
Mercury	µg/L	0.0001	<0.0001	0.00010	66	5

Duplicates are calculated as relative percent difference (RPD) using the formula RPD = | OriginalResult - ReplicateResult | x 100 / Mean
The RPD is evaluated against the maximum allowable RPD criteria and can be graphically represented by a curve calculated from the statistical detection limit and limiting repeatability using the formula: MaxAllowableDifference = 100 x StatisticalDetectionLimit / Mean + LimitingRepeatability
Where the MaxAllowableDifference evaluates to a number larger than 200 it is displayed as 200.
RPD is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Sample Name	SE103462.015-DUP			
Parameter	Units	LOR	Original Result	Duplicate Result	Criteria %	RPD %
Volatile Petroleum Hydrocarbons in Water Method: ME-(AU)-[ENV]AN433/AN434						
LB009454.006						
TRH C6-C9	µg/L	40	<40	<40	200	0
Surrogates						
Trifluorotoluene (Surrogate)	%	-	100.0	100.0	30	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022).
For more information refer to the footnotes in the concluding page of the report.
Recovery is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Control	LCS STD			
Parameter	Units	LOR	Result	Expected Result	Criteria %	Recovery %
Ammonia Nitrogen by Discrete Analyser (Aquakem) Method: ME-(AU)-[ENV]AN291						
LB009013.002						
Ammonia Nitrogen, NH_3 as N	mg/L	0.01	2.5	2.5	80 - 120	102
Anions by Ion Chromatography in Water Method: ME-(AU)-[ENV]AN245						
LB009049.002						
Nitrate Nitrogen, NO3-N	mg/L	0.005	1.9	2	80 - 120	95
Mercury (dissolved) in Water Method: ME-(AU)-[ENV]AN311/AN312						
LB009593.002						
Mercury	mg/L	0.0001	0.0083	0.008	80 - 120	104
PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: ME-(AU)-[ENV]AN420						
LB009068.002						
Naphthalene	µg/L	0.1	40	40	60 - 140	100
Acenaphthylene	µg/L	0.1	38	40	60 - 140	95
Acenaphthene	µg/L	0.1	40	40	60 - 140	100
Phenanthrene	µg/L	0.1	42	40	60 - 140	105
Anthracene	µg/L	0.1	38	40	60 - 140	95
Fluoranthene	µg/L	0.1	42	40	60 - 140	105
Pyrene	µg/L	0.1	42	40	60 - 140	105
Benzo(a)pyrene	µg/L	0.1	37	40	60 - 140	93
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	102.0	100	60 - 140	102
2-fluorobiphenyl (Surrogate)	%	-	103.0	100	60 - 140	103
d14-p-terphenyl (Surrogate)	%	-	116.0	100	60 - 140	116
TKN Kjeldahl Digestion by Discrete Analyser Method: ME-(AU)-[ENV]AN281/AN292						
LB009011.002						
Total Kjeldahl Nitrogen	mg/L	0.05	2.6	2.5	80 - 120	104
Total Phenolics in Water Method: ME-(AU)-[ENV]AN289						
LB009026.002						
Total Phenols	mg/L	0.01	0.25	0.25	80 - 120	102
TPH (Total Petroleum Hydrocarbons) in Water Method: ME-(AU)-[ENV]AN403						
LB009068.002						
TPH C10-C14 Silica Gel	µg/L	40	1100	1200	60 - 140	92
TPH C15-C28 Silica Gel	µg/L	100	1300	1200	60 - 140	111
TPH C29-C36 Silica Gel	µg/L	100	1400	1200	60 - 140	115
Trace Metals (Dissolved) in Water by ICPMS Method: ME-(AU)-[ENV]AN318						
LB009076.002						
Arsenic, As	µg/L	1	21	20	80 - 120	107
Cadmium, Cd	µg/L	0.1	21	20	80 - 120	104
Chromium, Cr	µg/L	1	22	20	80 - 120	109
Copper, Cu	µg/L	1	21	20	80 - 120	105
Lead, Pb	µg/L	1	21	20	80 - 120	104
Nickel, Ni	µg/L	1	22	20	80 - 120	111
Zinc, Zn	µg/L	1	20	20	80 - 120	101

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022).
For more information refer to the footnotes in the concluding page of the report.
Recovery is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Control	LCS STD			
Parameter	Units	LOR	Result	Expected Result	Criteria %	Recovery %
VOCs in Water Method: ME-(AU)-[ENV]AN433/AN434						
LB009454.002						
Monocyclic Aromatic Hydrocarbons						
Benzene	µg/L	0.5	47	45.45	60 - 140	104
Toluene	µg/L	0.5	45	45.45	60 - 140	99
Ethylbenzene	µg/L	0.5	44	45.45	60 - 140	96
m/p-xylene	µg/L	1	84	90.9	60 - 140	93
o-xylene	µg/L	0.5	43	45.45	60 - 140	96
Volatile Petroleum Hydrocarbons in Water Method: ME-(AU)-[ENV]AN433/AN434						
LB009454.002						
TRH C6-C9	µg/L	40	690	827	60 - 140	83

Matrix spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub-sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of the report. Recovery is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Control	MS			
Parameter	Units	LOR	Result	Original Result	Spike Added	Recovery %
Trace Metals (Dissolved) in Water by ICPMS **Method: ME-(AU)-[ENV]AN318**						
LB009076.004						
Arsenic, As	µg/L	1	21	<1	20	106
Cadmium, Cd	µg/L	0.1	21	<0.1	20	104
Chromium, Cr	µg/L	1	20	<1	20	102
Copper, Cu	µg/L	1	23	2	20	106
Lead, Pb	µg/L	1	19	<1	20	95
Nickel, Ni	µg/L	1	21	1	20	98
Zinc, Zn	µg/L	1	39	17	20	110

Matrix spike duplicates are calculated as relative percent difference using the formula RPD = | OriginalResult - ReplicateResult | x 100 / Mean
The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.
The RPD is evaluated against the maximum allowable RPD criteria and can be graphically represented by a curve calculated from the statistical detection limit and limiting repeatability using the formula: MaxAllowableDifference = 100 x StatisticalDetectionLimit / Mean + LimitingRepeatability
Where the MaxAllowableDifference evaluates to a number larger than 200 it is displayed as 200.
RPD is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

Parameter	Units	Control Matrix LOR	MSD Liquid MS Duplicate Result
TKN Kjeldahl Digestion by Discrete Analyser Method: ME-(AU)-[ENV]AN281/AN292			
LB009011.010			
Total Kjeldahl Nitrogen	mg/L	0.05	3.8
Total Phosphorus by Kjeldahl Digestion DA in Water Method: ME-(AU)-[ENV]AN279/AN293			
LB009010.010			
Total Phosphorus (Kjeldahl Digestion)	mg/L	0.05	1.3

FOOTNOTES

IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
*	NATA Accreditation does not cover this analysis.
^	Performed by outside laboratory.
LOR	Limit of Reporting
QFH	QC result is above the upper tolerance
QFL	QC result is below the lower tolerance
NA	The sample was not analysed for this analyte

Samples analysed as received.
Solid samples expressed on a dry weight basis.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-09.pdf

This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

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This test report shall not be reproduced, except in full.

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Anwar Barbhuyia	Manager	Said Hirad
Client	Geotechnique	Laboratory	SGS Newburn Environmental
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Facsimile	02 4722 6161	Facsimile	(08) 9373 3556
Email	edward.ibrahim@sgs.com	Email	au.environmental.perth@sgs.com
Project	**SE103363 12576_1 Marsden Park Precinct**	SGS Reference	PE062788 R2
Order Number	(Not specified)	Report Number	0000031797
Samples	2	Date Reported	06 Dec 2011
		Date Received	18 Nov 2011

COMMENTS

The document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(898/20210).

The LOR for DDT was raised to the achievable detection limit of 2 ng/L

This report cancels and supersedes the report No. PE062788 R1 dated 5.12.2011 issued by SGS Environmental Services due to the inclusion of methoxychlor.

SIGNATORIES

Agnes Szilagyi
Organics Instrumentation Team Leader

Dale Lang
Senior Organics Chemist

David Viner
Organic Chemist

Ros Ma
Quality Manager

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	PE062788.001 Water 16 Nov 2011 Groundwater MW1-1	PE062788.002 Water 16 Nov 2011 Groundwater MW2-1
Ultra Low Level OC Pesticides in Water Method: AN400/AN420					
Heptachlor	µg/L	0.002		<0.002	<0.002
Heptachlor Epoxide	µg/L	0.002		<0.002	<0.002
Hexachlorobenzene	µg/L	0.002		<0.002	<0.002
Gamma Chlordane	µg/L	0.002		<0.002	<0.002
Alpha Chlordane	µg/L	0.002		<0.002	<0.002
Alpha Endosulfan	µg/L	0.005		<0.005	<0.005
Oxychlordane	µg/L	0.002		<0.002	<0.002
Dieldrin	µg/L	0.002		<0.002	<0.002
Lindane	µg/L	0.002		<0.002	<0.002
Aldrin	µg/L	0.002		<0.002	<0.002
Endrin	µg/L	0.004		<0.004	<0.004
Beta Endosulfan	µg/L	0.005		<0.005	<0.005
Endosulfan Sulphate	µg/L	0.005		<0.005	<0.005
p,p'-DDD	µg/L	0.002		<0.002	<0.002
p,p'-DDE	µg/L	0.002		<0.002	<0.002
p,p'-DDT	µg/L	0.001		<0.001	<0.001
p-Terphenyl*	%	-		**90**	**110**
Surrogates					
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-		-	-
Low Level OC Pesticides in Water Method: AN400/AN420					
Methoxychlor	µg/L	0.1		<0.1	<0.1
Surrogates					
d14-p-terphenyl (Surrogate)	%	-		**90**	**108**
Low Level PCBs in Water Method: AN400/AN420					
PCB Congener C28	µg/L	0.02		<0.02	<0.02
PCB Congener C52	µg/L	0.01		<0.01	<0.01
PCB Congener C101	µg/L	0.004		<0.004	<0.004
PCB Congener C118	µg/L	0.004		<0.004	<0.004
PCB Congener C138	µg/L	0.004		<0.004	<0.004
PCB Congener C153	µg/L	0.004		<0.004	<0.004
PCB Congener C180	µg/L	0.004		<0.004	<0.004
Surrogates					
d14-p-terphenyl (Surrogate)	%	-		**90**	**108**
PCBs in Water Method: AN400/AN420					
Arochlor 1016	µg/L	1		<1	<1
Arochlor 1221	µg/L	1		<1	<1
Arochlor 1232	µg/L	1		<1	<1
Arochlor 1242	µg/L	1		<1	<1
Arochlor 1248	µg/L	1		<1	<1
Arochlor 1254	µg/L	1		<1	<1
Arochlor 1260	µg/L	1		<1	<1
Arochlor 1262	µg/L	1		<1	<1
Arochlor 1268	µg/L	1		<1	<1

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	PE062788.001 Water 16 Nov 2011 Groundwater MW1-1	PE062788.002 Water 16 Nov 2011 Groundwater MW2-1
PCBs in Water **Method: AN400/AN420 (continued)**					
Surrogates					
d14-p-terphenyl (Surrogate)	%	-		**90**	**108**

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Low Level OC Pesticides in Water **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB
Methoxychlor	LB032153	µg/L	0.1	<0.1

Surrogates

Parameter	QC Reference	Units	LOR	MB
d14-p-terphenyl (Surrogate)	LB032153	%	-	96%

Low Level PCBs in Water **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
PCB Congener C28	LB031446	µg/L	0.02	<0.02	
PCB Congener C52	LB031446	µg/L	0.01	<0.01	
PCB Congener C101	LB031446	µg/L	0.004	<0.004	
PCB Congener C118	LB031446	µg/L	0.004	<0.004	
PCB Congener C138	LB031446	µg/L	0.004	<0.004	
PCB Congener C153	LB031446	µg/L	0.004	<0.004	
PCB Congener C180	LB031446	µg/L	0.004	<0.004	59%

Surrogates

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
d14-p-terphenyl (Surrogate)	LB031446	%	-	96%	95%

PCBs in Water **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Arochlor 1016	LB032055	µg/L	1	<1	
Arochlor 1221	LB032055	µg/L	1	<1	
Arochlor 1232	LB032055	µg/L	1	<1	
Arochlor 1242	LB032055	µg/L	1	<1	
Arochlor 1248	LB032055	µg/L	1	<1	
Arochlor 1254	LB032055	µg/L	1	<1	
Arochlor 1260	LB032055	µg/L	1	<1	58%
Arochlor 1262	LB032055	µg/L	1	<1	
Arochlor 1268	LB032055	µg/L	1	<1	

Surrogates

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
d14-p-terphenyl (Surrogate)	LB032055	%	-	96%	95%

Ultra Low Level OC Pesticides in Water **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Heptachlor	LB031446	µg/L	0.002	<0.002	61%
Heptachlor Epoxide	LB031446	µg/L	0.002	<0.002	
Hexachlorobenzene	LB031446	µg/L	0.002	<0.002	NA
Gamma Chlordane	LB031446	µg/L	0.002	<0.002	73%
Alpha Chlordane	LB031446	µg/L	0.002	<0.002	
Alpha Endosulfan	LB031446	µg/L	0.005	<0.005	
Oxychlordane	LB031446	µg/L	0.002	<0.002	
Dieldrin	LB031446	µg/L	0.002	<0.002	78%
Lindane	LB031446	µg/L	0.002	<0.002	83%
Aldrin	LB031446	µg/L	0.002	<0.002	75%
Endrin	LB031446	µg/L	0.004	<0.004	86%
Beta Endosulfan	LB031446	µg/L	0.005	<0.005	
Endosulfan Sulphate	LB031446	µg/L	0.005	<0.005	

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Ultra Low Level OC Pesticides in Water **Method: ME-(AU)-[ENV]AN400/AN420 (continued)**

				MB	LCS %Recovery
p,p'-DDD	LB031446	µg/L	0.002	<0.002	
p,p'-DDE	LB031446	µg/L	0.002	<0.002	71%
p,p'-DDT	LB031446	µg/L	0.001	<0.001	
p-Terphenyl*	LB031446	%	-	96	NA

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN083	Separatory funnels are used for aqueous samples and extracted by transferring an appropriate volume (mass) of liquid into a separatory funnel and adding 3 serial aliquots of dichloromethane. Samples receive a single extraction at pH 7 to recover base / neutral analytes and two extractions at pH < 2 to recover acidic analytes. QC samples are prepared by spiking organic free water with target analytes and extracting as per samples.
AN400	OC and OP Pesticides by GC-ECD: The determination of organochlorine (OC) and organophosphorus (OP) pesticides and polychlorinated biphenyls (PCBs) in soils, sludges and groundwater. (Based on USEPA methods 3510, 3550, 8140 and 8080.)
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).

FOOTNOTES

IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
*	This analysis is not covered by the scope of accreditation.
^	Performed by outside laboratory.
LOR	Limit of Reporting
↑↓	Raised or Lowered Limit of Reporting
QFH	QC result is above the upper tolerance
QFL	QC result is below the lower tolerance
-	The sample was not analysed for this analyte
NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-09.pdf

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COC received 16/11/11 @ 3:13 pm

SGS
Received By SG 16/11/11
Time 5.19 PM
Samples intact
Ice/Cooler Pack
Temperature on Recei 2.8
Storage Locatio W112-3
SE103363

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS ANGELA MAMALICOS

Sampling By: JK
Job No: 12576/1
Project:
Project Manager: AB
Location: Marsden Park Precinct

Results required by: Normal Turnaround Time

	Sampling details				Sample type												
	Location	Depth (m)	Date	Time	Soil	Water	Metals (Low levels to meet ANZECC 2000 Guidelines, where possible) As, Cd, Cr, Cu, Pb, Hg, Ni & Zn	TPH* (With Silica gel clean up) & BTEX	PAH (Low levels to meet ANZECC 2000 Guidelines, where possible)	OCP (Low levels to meet ANZECC 2000 Guidelines, where possible)	PCB (Low levels to meet ANZECC 2000 Guidelines, where possible)	Total Phenols	Ammonia (Low Level)	NITRITE (NO_2- N) (Low Level)	NITRATE (NO_3-N)	KEEP SAMPLE
1	GroundWater MW1-1		16/11/2011	-		WP/WG/Vial	✓	✓	✓	✓	✓	✓	✓	✓	✓	YES
2	GroundWater MW2-1		16/11/2011	-		WP/WG/Vial	✓	✓	✓	✓	✓	✓	✓	✓	✓	YES

Name	Signature	Date	Received by Name	Signature	Date
ANWAR BARBHUYIA	AB	16/11/2010	Subg		16/11/11

Legend:

WG	Water sample, glass bottle	USG	Undisturbed soil sample (glass jar)	DSP	Disturbed soil sample (small plastic bag)	* Purge & Trap	@ mole H^+/tonne
WP	Water sample, plastic bottle	DSG	Disturbed soil sample (glass jar)	✓	Test required	# Geotechnique Screen	

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS ANGELA MAMALICOS

Sampling By: JK

Job No: 12576/1

Project:

Project Manager: AB

Location: Marsden Park Precinct

Results required by: Normal Turnaround Time

Sampling details				Sample type											
Location	Depth (m)	Date	Time	Soil	Water	TKN	TOTAL NITROGEN	TOTAL PHOSPHOROUS							KEEP SAMPLE
GroundWater MW1-1		16/11/2011	-		WP/WG/Vial	✓	✓	✓							YES
GroundWater MW2-1		16/11/2011	-		WP/WG/Vial	✓	✓	✓							YES

Name	Signature	Date
ANWAR BARBHUYIA	AB	16/11/2010

Received by

Name	Signature	Date

Legend:

WG	Water sample, glass bottle	USG	Undisturbed soil sample (glass jar)	DSP	Disturbed soil sample (small plastic bag)
WP	Water sample, plastic bottle	DSG	Disturbed soil sample (glass jar)	✓	Test required

* Purge & Trap

@ mole H^+/tonne

Geotechnique Screen

SAMPLE RECEIPT ADVICE

SE103363

CLIENT DETAILS

Contact	Anwar Barbhuyia
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	anwar.barbhuyia@geotech.com.au
Project	**12576/1-Marsden Park Precinct - Waters**
Order Number	(Not specified)
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Wed 16/11/2011
Report Due	Mon 28/11/2011
SGS Reference	**SE103363**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Wednesday 16/11/2011. Results are expected to be ready by Monday 28/11/2011. Please quote SGS reference SE103363 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	2 Waters	Type of documentation received	COC
Date documentation received	16/11/2011@3:13pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	2.8°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Samples will be held for one month for water samples and two months for soil samples from date of report, unless otherwise instructed.

COMMENTS

Samples received at SGS on 16/11/2011@5:19pm. Samples were not registered until the next working day.

PAH = Allocated for LOR 0.1µg/L.Analysis performed at SGS Sydney.

OCP (LOR 0.01-0.05µg/L) and PCB Congeners (LOR 0.004-0.01µg/L) subcontracted to SGS Perth Environmental, 10 Reid Rd Newburn WA, NATA Accreditation Number 2562, Site Number 898,
PCB Aurochlors will be reported if PCB Congeners are positive.

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm as at the date of this document. Attention is drawn to the limitations of liability and to the clauses of indemnification.

SAMPLE RECEIPT ADVICE

SE103363

CLIENT DETAILS

Client	Geotechnique	Project	12576/1-Marsden Park Precinct - Waters

SUMMARY OF ANALYSIS

No.	Sample ID	Ammonia Nitrogen by Discrete Analyser	Anions by Ion Chromatography in Water	Low Level OC Pesticides in Water	Low Level PCBs in Water	Nitrite & NOX in Water	PAH (Polynuclear Aromatic Hydrocarbons) in	Total Phenolics in Water	TPH (Total Petroleum Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	G/W MW1-1	1	1	23	8	1	22	1	4	12	6
002	G/W MW2-1	1	1	23	8	1	22	1	4	12	6

CONTINUED OVERLEAF

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction.

SAMPLE RECEIPT ADVICE

SE103363

CLIENT DETAILS

Client	Geotechnique	Project	12576/1-Marsden Park Precinct - Waters

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	TKN Kjeldahl Digestion by Discrete Analyser	Total Phosphorus by Kjeldahl Digestion DA in	Trace Metals (Dissolved) in Water by ICPMS
001	G/W MW1-1	1	2	1	7
002	G/W MW2-1	1	2	1	7

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction.

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS

Contact	Anwar Barbhuyia
Client	Geotechnique
Address	P.O. Box 880 NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	anwar.barbhuyia@geotech.com.au
Project	**12576/1-Marsden Park Precinct - Waters**
Order Number	(Not specified)
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	SE103363A R0
Report Number	0000013286
Date Reported	06 Dec 2011
Date Received	16 Nov 2011

COMMENTS

The document is issued in accordance with NATA's accreditation requirements.
Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

SIGNATORIES

Dong Liang
Inorganics Metals Team Leader

Edward Ibrahim
Business Manager

Parameter	Units	LOR	Sample Number: SE103363A.001 Sample Matrix: Water Sample Date: 16 Nov 2011 Sample Name: G/W MW1-1	Sample Number: SE103363A.002 Sample Matrix: Water Sample Date: 16 Nov 2011 Sample Name: G/W MW2-1
Metals in Water (Dissolved) by ICPOES Method: AN320/AN321				
Calcium Hardness by Calculation	mg CaCO3/L	0.2	**540**	**510**

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula: *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Metals in Water (Dissolved) by ICPOES **Method: ME-(AU)-[ENV]AN320/AN321**

Parameter	QC Reference	Units	LOR	MB
Calcium Hardness by Calculation	LB010024	mg	0.2	<0

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN320/AN321	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components.
AN320/AN321	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements. Reference APHA 3120 B.

FOOTNOTES

IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
*	This analysis is not covered by the scope of accreditation.
^	Performed by outside laboratory.
LOR	Limit of Reporting
↑↓	Raised or Lowered Limit of Reporting
QFH	QC result is above the upper tolerance
QFL	QC result is below the lower tolerance
-	The sample was not analysed for this analyte
NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-09.pdf

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Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

This report must not be reproduced, except in full.

STATEMENT OF QA/QC PERFORMANCE AGAINST DATA QUALITY OBJECTIVES

SE103363A R0

CLIENT DETAILS

Contact	Anwar Barbhuyia
Client	Geotechnique
Address	P.O. Box 880 NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	anwar.barbhuyia@geotech.com.au
Project	**12576/1-Marsden Park Precinct - Waters**
Order Number	(Not specified)
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	SE103363A R0
Report Number	0000013287
Date Reported	06 Dec 2011

COMMENTS

All the laboratory data for each environmental matrix was compared to the SGS Environmental Services' stated data quality objectives (DQO).
Comments arising from the comparison were made and are reported below.
The data relating to sampling was taken from the chain of custody document and was supplied by the client.
This QA/QC statement must be read in conjunction with the referenced analytical report.
The statement and the analytical report must not be reproduced except in full.

All Data Quality Objectives were met.

SAMPLE SUMMARY

Sample counts by matrix	2 Waters	Type of documentation received	COC
Date documentation received	2/12/2011	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	2.8°C
Sample container provider	SGS	Turnaround time requested	Next Day
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SE103363A R0

HOLDING TIMES

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field sampling guide for containers and holding time” (Ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

The extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and Analysis dates are shown in **Green** when within suggested criteria and in **Bold** with an appended dagger symbol and Red† when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Sample Name	Sample Number	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Metals in Water (Dissolved) by ICPOES **Method: ME-(AU)-[ENV]AN320/AN321**								
G/W MW1-1	SE103363A.001	LB010024	16 Nov 2011	16 Nov 2011	14 May 2012	05 Dec 2011	14 May 2012	05 Dec 2011
G/W MW2-1	SE103363A.002	LB010024	16 Nov 2011	16 Nov 2011	14 May 2012	05 Dec 2011	14 May 2012	05 Dec 2011

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.
Result is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

No Surrogates were required for this job.

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, which is typically 2.5 times the statistically determined method detection limit (MDL).
Result is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

Parameter	Units	Control LOR

Duplicates are calculated as relative percent difference (RPD) using the formula RPD = | OriginalResult - ReplicateResult | x 100 / Mean
The RPD is evaluated against the maximum allowable RPD criteria and can be graphically represented by a curve calculated from the statistical detection limit and limiting repeatability using the formula: MaxAllowableDifference = 100 x StatisticalDetectionLimit / Mean + LimitingRepeatability
Where the MaxAllowableDifference evaluates to a number larger than 200 it is displayed as 200.
RPD is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

		Sample Name
Parameter	**Units**	**LOR**

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022).
For more information refer to the footnotes in the concluding page of the report.
Recovery is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

Parameter	Units	Control LOR

Matrix spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub-sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of the report. Recovery is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

No Matrix Spikes were required for this job.

Matrix spike duplicates are calculated as relative percent difference using the formula RPD = | OriginalResult - ReplicateResult | x 100 / Mean
The original result is the analyte concentration of the matrix spike and the replicate result is the analyte concentration of the matrix spike duplicate.
The RPD is evaluated against the maximum allowable RPD criteria and can be graphically represented by a curve calculated from the statistical detection limit and limiting repeatability using the formula: MaxAllowableDifference = 100 x StatisticalDetectionLimit / Mean + LimitingRepeatability
RPD is shown in **Green** when within suggested criteria or **Bold** with an appended dagger symbol and Red† when outside suggested criteria.

No Matrix Spike Duplicates were required for this job.

FOOTNOTES

IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
*	NATA Accreditation does not cover this analysis.
^	Performed by outside laboratory.
LOR	Limit of Reporting
QFH	QC result is above the upper tolerance
QFL	QC result is below the lower tolerance
NA	The sample was not analysed for this analyte

Samples analysed as received.
Solid samples expressed on a dry weight basis.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-09.pdf

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Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

This test report shall not be reproduced, except in full.

SGS Ref: SE103363A
Due Date: 05/12/2011
TAT: 1 DAY

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

Page 1 of 1

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS ANGELA MAMALICOS

Sampling By: JK
Job No: 12576/1
Project:
Project Manager: AB
Location: Marsden Park Precinct

Results required by: Monday 05 December 2011

	Sampling details				Sample type										
	Location	Depth (m)	Date	Time	Soil	Water	Hardness as CaCO3							SGS REF:	KEEP SAMPLE
1	GroundWater MW1-1		16/11/2011	-		WP	✓							SE103363-1	YES
2	GroundWater MW2-1		16/11/2011	-		WP	✓							SE103363-2	YES

Name	Signature	Date	Received by: Name	Signature	Date
ANWAR BARBHUYIA	AB	2/12/2011	KARLA		02/12/11

Legend:

WG	Water sample, glass bottle	USG	Undisturbed soil sample (glass jar)	DSP	Disturbed soil sample (small plastic bag)	* Purge & Trap	@ mole H+/tonne
WP	Water sample, plastic bottle	DSG	Disturbed soil sample (glass jar)	✓	Test required	# Geotechnique Screen	

Form No 4.7F3-11 SGS

GEOTECHNIQUE 0247 02/12/2011 14:57

SAMPLE RECEIPT ADVICE

SE103363A

CLIENT DETAILS

Contact	Anwar Barbhuyia
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	anwar.barbhuyia@geotech.com.au
Project	**12576/1-Marsden Park Precinct - Waters**
Order Number	(Not specified)
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Wed 16/11/2011
Report Due	Mon 5/12/2011
SGS Reference	**SE103363A**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Wednesday 16/11/2011. Results are expected to be ready by Monday 5/12/2011. Please quote SGS reference SE103363A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	2 Waters	Type of documentation received	COC
Date documentation received	2/12/2011	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	2.8°C
Sample container provider	SGS	Turnaround time requested	Next Day
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Samples will be held for one month for water samples and two months for soil samples from date of report, unless otherwise instructed.

COMMENTS

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at http://www.sgs.com/terms_and_conditions.htm as at the date of this document. Attention is drawn to the limitations of liability and to the clauses of indemnification.

SAMPLE RECEIPT ADVICE

SE103363A

CLIENT DETAILS

Client	Geotechnique	Project	12576/1-Marsden Park Precinct - Waters

SUMMARY OF ANALYSIS

No.	Sample ID	Metals in Water (Dissolved) by ICPOES
001	G/W MW1-1	1
002	G/W MW2-1	1

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction.

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 64171

Client:
Geotechnique Pty Ltd
PO Box 880
Penrith
NSW 2751

Attention: Anwar Barbhuyia

Sample log in details:

Your Reference:	**12576/1, Marsden Park Precinct**		
No. of samples:	3 Soils		
Date samples received / completed instructions received	31/10/11	/	31/10/11

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

Report Details:

Date results requested by: / Issue Date:	7/11/11	/	4/11/11
Date of Preliminary Report:	Not issued		

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

Results Approved By:

Nancy Zhang
Chemist

Rhian Morgan
Reporting Supervisor

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

Organochlorine Pesticides		
Our Reference:	UNITS	64171-4
Your Reference	----------	Split SS1
Composite Reference	----------	1+2+3
Date Sampled		28/10/11
Type of sample		Soil
Date extracted	-	01/11/2011
Date analysed	-	03/11/2011
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
DDE	mg/kg	<0.2
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
DDD	mg/kg	<0.2
Endosulfan II	mg/kg	<0.1
DDT	mg/kg	<0.2
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Surrogate TCLMX	%	105

Acid Extractable metals in soil		
Our Reference:	UNITS	64171-4
Your Reference	----------	Split SS1
Composite Reference	----------	1+2+3
Date Sampled		28/10/11
Type of sample		Soil
Arsenic	mg/kg	7
Cadmium	mg/kg	0.5
Chromium	mg/kg	28
Copper	mg/kg	3
Lead	mg/kg	17
Mercury	mg/kg	<0.1
Nickel	mg/kg	3
Zinc	mg/kg	7

Moisture		
Our Reference:	UNITS	64171-4
Your Reference	----------	Split SS1
Composite Reference	----------	1+2+3
Date Sampled		28/10/11
Type of sample		Soil
Date prepared	-	1/11/2011
Date analysed	-	2/11/2011
Moisture	%	8.5

Method ID	Methodology Summary
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.

QUALITY CONTROL Organochlorine Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			01/11/2011	[NT]	[NT]	LCS-2	01/11/2011
Date analysed	-			03/11/2011	[NT]	[NT]	LCS-2	03/11/2011
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	101%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	108%
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	97%
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	96%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	99%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
DDE	mg/kg	0.2	Org-005	<0.2	[NT]	[NT]	LCS-2	104%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	101%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	98%
DDD	mg/kg	0.2	Org-005	<0.2	[NT]	[NT]	LCS-2	115%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
DDT	mg/kg	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	99%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-005	104	[NT]	[NT]	LCS-2	103%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-1	99%
Cadmium	mg/kg	0.5	Metals-020 ICP-AES	<0.5	[NT]	[NT]	LCS-1	103%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	101%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	101%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	98%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-1	109%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	100%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	99%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			01/11/2011
Date analysed	-			02/11/2011
Moisture	%	0.1	Inorg-008	[NT]

Report Comments:

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

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

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the 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.

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO: **ENVIROLAB SERVICES PTY LD**
12 ASHLEY STREET
CHATSWOOD NSW 2067

PH: **02 9910 6200** **FAX:** **02 9910 6201**

ATTN: TANIA NOTARAS

Sampling By: AN

Project Manager: AB

Job No: 12576/1

Project:

Location: Marsden Park Precinct

Results required by: Normal Turnaround Time

	Sampling details			Sample type									
	Location	Depth (m)	Date	Time	Soil	Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB		KEEP SAMPLE
1	S1		28/10/2011	-	SG								YES
2	S2		28/10/2011	-	SG								YES
3	S3		28/10/2011	-	SG								YES

ENVIROLAB

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

Job No: 64171

Date Received: 31-10-11
Time Received: 1605
Received by: WO
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
ANWAR BARBHUYIA	AB	31/10/2011	Morgan Philp	WO	31-10-11 1605

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece	✓	Test required

* Purge & Trap

GEOTECHNIQUE PTY LTD

ENVIROLAB SERVICES PTY LTD

Sampling Date:	28/10/2011	Job No:	12576/1
Sampled by:	AN		
Project Manager:	AB	Location:	Marsden Park Precinct

Results Required by: Normal Turnaround Time

	Composite Sample	Sub-Samples	Analyte	
			Metals	OCP
4	Split SS1	S1 + S2 +S3	✔	✔

✔ Test required

Metals include arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni) and zinc (Zn)
OCP = Organochlorine Pesticides

AB
31/10/2011
(ANWAR BARBHUYIA)
Geotechnique Pty Ltd

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

SAMPLE RECEIPT ADVICE

Client:

Geotechnique Pty Ltd
PO Box 880
Penrith NSW 2751

ph: 02 4722 2700
Fax: 02 4722 6161

Attention: Anwar Barbhuyia

Sample log in details:

Your reference:	**12576/1, Marsden Park Precinct**
Envirolab Reference:	**64171**
Date received:	31/10/11
Date results expected to be reported:	**7/11/11**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	3 Soils
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice

Comments:

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

Contact details:

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

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 64416

Client:
Geotechnique Pty Ltd
PO Box 880
Penrith
NSW 2751

Attention: Anwar Barbhuyia

Sample log in details:

Your Reference:	**12576/1, Marsden Park Precinct**
No. of samples:	5 Soils
Date samples received / completed instructions received	04/11/11 / 04/11/11

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

Report Details:

Date results requested by: / Issue Date:	11/11/11 / 8/11/11
Date of Preliminary Report:	Not issued

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

Results Approved By:

Nancy Zhang
Chemist

Rhian Morgan
Reporting Supervisor

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

vTRH & BTEX in Soil		
Our Reference:	UNITS	64416-1
Your Reference	----------	Split SS3
Date Sampled	----------	01/11/11
Type of sample		Soil
Date extracted	-	05/11/2011
Date analysed	-	06/11/2011
vTRH C_6 - C_9	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	115

sTRH in Soil (C10-C36)		
Our Reference:	UNITS	64416-1
Your Reference	----------	Split SS3
Date Sampled	----------	01/11/11
Type of sample		Soil
Date extracted	-	05/11/2011
Date analysed	-	06/11/2011
$TRHC_{10}$ - C_{14}	mg/kg	<50
$TRHC_{15}$ - C_{28}	mg/kg	<100
$TRHC_{29}$ - C_{36}	mg/kg	<100
Surrogate o-Terphenyl	%	100

PAHs in Soil		
Our Reference:	UNITS	64416-1
Your Reference	----------	Split SS3
Date Sampled	----------	01/11/11
Type of sample		Soil
Date extracted	-	05/11/2011
Date analysed	-	06/11/2011
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	0.6
Anthracene	mg/kg	0.2
Fluoranthene	mg/kg	1.5
Pyrene	mg/kg	1.5
Benzo(a)anthracene	mg/kg	0.7
Chrysene	mg/kg	0.6
Benzo(b+k)fluoranthene	mg/kg	1.1
Benzo(a)pyrene	mg/kg	0.81
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	0.5
Surrogate p-Terphenyl-d_{14}	%	104

Organochlorine Pesticides Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	64416-1 Split SS3 01/11/11 Soil	64416-2 Split SS4 01/11/11 Soil
Date extracted	-	05/11/2011	05/11/2011
Date analysed	-	07/11/2011	07/11/2011
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
DDE	mg/kg	<0.2	<0.2
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
DDD	mg/kg	<0.2	<0.2
Endosulfan II	mg/kg	<0.1	<0.1
DDT	mg/kg	<0.2	<0.2
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	%	110	107

PCBs in Soil		
Our Reference:	UNITS	64416-1
Your Reference	----------	Split SS3
Date Sampled	----------	01/11/11
Type of sample		Soil
Date extracted	-	05/11/2011
Date analysed	-	07/11/2011
Arochlor 1016	mg/kg	<0.1
Arochlor 1221*	mg/kg	<0.1
Arochlor 1232	mg/kg	<0.1
Arochlor 1242	mg/kg	<0.1
Arochlor 1248	mg/kg	<0.1
Arochlor 1254	mg/kg	<0.1
Arochlor 1260	mg/kg	<0.1
Surrogate TCLMX	%	110

Acid Extractable metals in soil			
Our Reference:	UNITS	64416-1	64416-2
Your Reference	----------	Split SS3	Split SS4
Date Sampled	----------	01/11/11	01/11/11
Type of sample		Soil	Soil
Arsenic	mg/kg	6	7
Cadmium	mg/kg	<0.5	<0.5
Chromium	mg/kg	16	14
Copper	mg/kg	24	20
Lead	mg/kg	49	18
Mercury	mg/kg	0.4	<0.1
Nickel	mg/kg	18	4
Zinc	mg/kg	110	19

Moisture			
Our Reference:	UNITS	64416-1	64416-2
Your Reference	----------	Split SS3	Split SS4
Date Sampled	----------	01/11/11	01/11/11
Type of sample		Soil	Soil
Date prepared	-	5/11/2011	5/11/2011
Date analysed	-	7/11/2011	7/11/2011
Moisture	%	13	12

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/11/2011	[NT]	[NT]	LCS-4	05/11/2011
Date analysed	-			06/11/2011	[NT]	[NT]	LCS-4	06/11/2011
vTRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-4	97%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-4	103%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-4	95%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-4	93%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-4	96%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-4	95%
Surrogate aaa-Trifluorotoluene	%		Org-016	119	[NT]	[NT]	LCS-4	113%
QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/11/2011	[NT]	[NT]	LCS-4	05/11/2011
Date analysed	-			06/11/2011	[NT]	[NT]	LCS-4	06/11/2011
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-4	79%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-4	84%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-4	84%
Surrogate o-Terphenyl	%		Org-003	96	[NT]	[NT]	LCS-4	76%
QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/11/2011	[NT]	[NT]	LCS-4	05/11/2011
Date analysed	-			06/11/2011	[NT]	[NT]	LCS-4	06/11/2011
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-4	99%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-4	94%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-4	96%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-4	96%
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-4	97%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-4	100%

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	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	[NT]	[NT]	LCS-4	104%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		Org-012 subset	99	[NT]	[NT]	LCS-4	104%
QUALITY CONTROL Organochlorine Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/11/2011	[NT]	[NT]	LCS-4	05/11/2011
Date analysed	-			07/11/2011	[NT]	[NT]	LCS-4	07/11/2011
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	102%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	107%
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	92%
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	98%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	100%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
DDE	mg/kg	0.2	Org-005	<0.2	[NT]	[NT]	LCS-4	103%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	102%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	95%
DDD	mg/kg	0.2	Org-005	<0.2	[NT]	[NT]	LCS-4	112%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
DDT	mg/kg	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	95%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-005	109	[NT]	[NT]	LCS-4	103%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			05/11/2011	[NT]	[NT]	LCS-4	05/11/2011
Date analysed	-			07/11/2011	[NT]	[NT]	LCS-4	07/11/2011
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1221*	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	LCS-4	101%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	109	[NT]	[NT]	LCS-4	114%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-1	92%
Cadmium	mg/kg	0.5	Metals-020 ICP-AES	<0.5	[NT]	[NT]	LCS-1	89%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	91%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	92%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	91%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-1	118%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	92%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	92%

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

Report Comments:

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

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

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the 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.

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

Job No: 64416

Date Received: 3/11/11 (samples received)

Time Received: 16:30

Received by: AW

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken/None

roc 4/11 - 10 pm

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO: ENVIROLAB SERVICES PTY LD
12 ASHLEY STREET
CHATSWOOD NSW 2067

PH: 02 9910 6200 **FAX:** 02 9910 6201

ATTN: TANIA NOTARAS

Sampling By: AN

Job No: 12576/1

Project:

Project Manager: AB

Location: Marsden Park Precinct

Results required by: Normal Turnaround Time

	Sampling details			Sample type										
	Location	Depth (m)	Date	Time	Soil	Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB				KEEP SAMPLE
1 -	Split SS3		1/11/2011	-	SG		✓	✓	✓	✓	✓	Combo 5			YES
2 -	Split SS4		1/11/2011	-	SG		✓			✓					YES
3 -	Split SS5		2/11/2011	-	SG										YES
4 -	SS1											↓ added samples after			
5 -	SS2														

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
ANWAR BARBHUYIA	AB	4/11/2011	Alex Weir		4/11/11 (roc)

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece	✓	Test required

* Purge & Trap

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

SAMPLE RECEIPT ADVICE

Client:

Geotechnique Pty Ltd
PO Box 880
Penrith NSW 2751

ph: 02 4722 2700
Fax: 02 4722 6161

Attention: Anwar Barbhuyia

Sample log in details:

Your reference:	**12576/1, Marsden Park Precinct**
Envirolab Reference:	**64416**
Date received:	04/11/11
Date results expected to be reported:	**11/11/11**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	5 Soils
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice

Comments:

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

Contact details:

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

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 64522

Client:
Geotechnique Pty Ltd
PO Box 880
Penrith
NSW 2751

Attention: Anwar Barbhuyia

Sample log in details:

Your Reference:	**12576/1, Marsden Park Precinct**
No. of samples:	1 Soil
Date samples received / completed instructions received	07/11/11 / 07/11/11

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

Report Details:

Date results requested by: / Issue Date:	14/11/11 / 11/11/11
Date of Preliminary Report:	Not Issued

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

Results Approved By:

Jacinta Hurst
Laboratory Manager

Nancy Zhang
Chemist

Rhian Morgan
Reporting Supervisor

Hinoko Miyazaki
Chemist

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

vTRH & BTEX in Soil		
Our Reference:	UNITS	64522-1
Your Reference	----------	Split SS6
Date Sampled	----------	04/11/11
Type of sample		Soil
Date extracted	-	08/11/2011
Date analysed	-	09/11/2011
vTRH C_6 - C_9	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	91

sTRH in Soil (C10-C36)		
Our Reference:	UNITS	64522-1
Your Reference	----------	Split SS6
Date Sampled	----------	04/11/11
Type of sample		Soil
Date extracted	-	08/11/2011
Date analysed	-	10/11/20111
$TRHC_{10}$ - C_{14}	mg/kg	<50
$TRHC_{15}$ - C_{28}	mg/kg	<100
$TRHC_{29}$ - C_{36}	mg/kg	<100
Surrogate o-Terphenyl	%	91

PAHs in Soil		
Our Reference:	UNITS	64522-1
Your Reference	----------	Split SS6
Date Sampled	----------	04/11/11
Type of sample		Soil
Date extracted	-	09/11/2011
Date analysed	-	10/11/2011
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Surrogate p-Terphenyl-d_{14}	%	121

Organochlorine Pesticides		
Our Reference:	UNITS	64522-1
Your Reference	----------	Split SS6
Date Sampled	----------	04/11/11
Type of sample		Soil
Date extracted	-	08/11/2011
Date analysed	-	10/111/2011
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
DDE	mg/kg	<0.2
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
DDD	mg/kg	<0.2
Endosulfan II	mg/kg	<0.1
DDT	mg/kg	<0.2
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Surrogate TCLMX	%	84

PCBs in Soil		
Our Reference:	UNITS	64522-1
Your Reference	----------	Split SS6
Date Sampled	----------	04/11/11
Type of sample		Soil
Date extracted	-	08/11/2011
Date analysed	-	10/11/2011
Arochlor 1016	mg/kg	<0.1
Arochlor 1221*	mg/kg	<0.1
Arochlor 1232	mg/kg	<0.1
Arochlor 1242	mg/kg	<0.1
Arochlor 1248	mg/kg	<0.1
Arochlor 1254	mg/kg	<0.1
Arochlor 1260	mg/kg	<0.1
Surrogate TCLMX	%	84

Acid Extractable metals in soil		
Our Reference:	UNITS	64522-1
Your Reference	----------	Split SS6
Date Sampled	----------	04/11/11
Type of sample		Soil
Arsenic	mg/kg	18
Cadmium	mg/kg	<0.5
Chromium	mg/kg	9
Copper	mg/kg	18
Lead	mg/kg	8
Mercury	mg/kg	<0.1
Nickel	mg/kg	2
Zinc	mg/kg	15

Moisture		
Our Reference:	UNITS	64522-1
Your Reference	----------	Split SS6
Date Sampled	----------	04/11/11
Type of sample		Soil
Date prepared	-	09/11/2011
Date analysed	-	10/11/2011
Moisture	%	14

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 4 hours.

QUALITY CONTROL vTRH & BTEX in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/11/2011	[NT]	[NT]	LCS-4	08/11/2011
Date analysed	-			09/11/2011	[NT]	[NT]	LCS-4	09/11/2011
vTRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-4	81%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-4	84%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-4	83%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-4	77%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-4	79%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-4	81%
Surrogate aaa-Trifluorotoluene	%		Org-016	93	[NT]	[NT]	LCS-4	95%
QUALITY CONTROL sTRH in Soil (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/11/2011	[NT]	[NT]	LCS-4	08/11/2011
Date analysed	-			10/11/2011	[NT]	[NT]	LCS-4	10/11/2011
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-4	92%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-4	101%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-4	102%
Surrogate o-Terphenyl	%		Org-003	91	[NT]	[NT]	LCS-4	87%
QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			09/11/2011	[NT]	[NT]	LCS-4	09/11/2011
Date analysed	-			10/11/2011	[NT]	[NT]	LCS-4	10/11/2011
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-4	105%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-4	107%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-4	106%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-4	107%
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-4	108%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-4	111%

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	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	[NT]	[NT]	LCS-4	111%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		Org-012 subset	121	[NT]	[NT]	LCS-4	113%
QUALITY CONTROL Organochlorine Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/11/2011	[NT]	[NT]	LCS-4	08/11/2011
Date analysed	-			10/11/2011	[NT]	[NT]	LCS-4	10/11/2011
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	85%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	100%
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	79%
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	89%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	92%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
DDE	mg/kg	0.2	Org-005	<0.2	[NT]	[NT]	LCS-4	95%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	98%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	85%
DDD	mg/kg	0.2	Org-005	<0.2	[NT]	[NT]	LCS-4	104%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
DDT	mg/kg	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-4	91%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-005	82	[NT]	[NT]	LCS-4	78%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			08/11/2011	[NT]	[NT]	LCS-4	08/11/2011
Date analysed	-			10/11/2011	[NT]	[NT]	LCS-4	10/11/2011
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1221*	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	LCS-4	93%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	82	[NT]	[NT]	LCS-4	83%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-1	97%
Cadmium	mg/kg	0.5	Metals-020 ICP-AES	<0.5	[NT]	[NT]	LCS-1	99%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	98%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	98%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	99%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-1	117%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	100%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-1	77%

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

Report Comments:

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

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

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the 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.

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

Job No: 64522

Date Received: 7-11-11
Time Received: 1545
Received by: MP
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO: ENVIROLAB SERVICES PTY LD
12 ASHLEY STREET
CHATSWOOD NSW 2067

PH: 02 9910 6200 **FAX:** 02 9910 6201

ATTN: TANIA NOTARAS

Sampling By: JK **Job No:** 12576/1

Project:

Project Manager: AB **Location:** Marsden Park Precinct

Results required by: Normal Turnaround Time

Sampling details				Sample type											
Location	Depth (m)	Date	Time	Soil	Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB					KEEP SAMPLE
Split SS6		4/11/2011	-	SG		✓	✓	✓	✓	✓					YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
ANWAR BARBHUYIA	AB	4/11/2011	Morgan Philp	MP	7-11-11 1545

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)	* Purge & Trap
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece	✓	Test required	

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

SAMPLE RECEIPT ADVICE

Client:

Geotechnique Pty Ltd
PO Box 880
Penrith NSW 2751

ph: 02 4722 2700
Fax: 02 4722 6161

Attention: Anwar Barbhuyia

Sample log in details:

Your reference:	**12576/1, Marsden Park Precinct**
Envirolab Reference:	**64522**
Date received:	07/11/11
Date results expected to be reported:	**14/11/11**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 Soil
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice Pack

Comments:

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

Contact details:

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

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 65082

Client:
Geotechnique Pty Ltd
PO Box 880
Penrith
NSW 2751

Attention: Anwar Barbhuyia

Sample log in details:

Your Reference:	**12576/1, Marsden Park Precinct**		
No. of samples:	1 water		
Date samples received / completed instructions received	16/11/11	/	16/11/11

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

Report Details:

Date results requested by: / Issue Date:	23/11/11	/	25/11/11
Date of Preliminary Report:	Not Issued		

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Results Approved By:

Jacinta Hurst
Laboratory Manager

Nancy Zhang
Chemist

Rhian Morgan
Reporting Supervisor

Nick Sarlamis
Inorganics Supervisor

Giovanni Agosti
Technical Manager

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

vTRH & BTEX in Water		
Our Reference:	UNITS	65082-1
Your Reference	----------	Split Sample 1
Date Sampled	----------	16/11/2011
Type of sample		water
Date extracted	-	16/11/2011
Date analysed	-	17/11/2011
TRHC$_6$ - C$_9$	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Surrogate Dibromofluoromethane	%	107
Surrogate toluene-d8	%	80
Surrogate 4-BFB	%	99

sTRH in Water (C10-C36)		
Our Reference:	UNITS	65082-1
Your Reference	----------	Split Sample 1
Date Sampled	----------	16/11/2011
Type of sample		water
Date extracted	-	17/11/2011
Date analysed	-	17/11/2011
TRHC$_{10}$ - C$_{14}$	µg/L	<50
TRHC$_{15}$ - C$_{28}$	µg/L	<100
TRHC$_{29}$ - C$_{36}$	µg/L	<100
Surrogate o-Terphenyl	%	69

PAHs in Water - Low Level Our Reference: Your Reference Date Sampled Type of sample	UNITS ---------- ----------	 65082-1 Split Sample 1 16/11/2011 water
Date extracted	-	17/11/2011
Date analysed	-	18/11/2011
Naphthalene	µg/L	<0.1
Acenaphthylene	µg/L	<0.1
Acenaphthene	µg/L	<0.1
Fluorene	µg/L	<0.1
Phenanthrene	µg/L	<0.1
Anthracene	µg/L	<0.1
Fluoranthene	µg/L	<0.1
Pyrene	µg/L	<0.1
Benzo(a)anthracene	µg/L	<0.1
Chrysene	µg/L	<0.1
Benzo(b+k)fluoranthene	µg/L	<0.2
Benzo(a)pyrene	µg/L	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1
Surrogate p-Terphenyl-d_{14}	%	113

OCP in water - trace level		
Our Reference:	UNITS	65082-1
Your Reference	----------	Split Sample 1
Date Sampled	----------	16/11/2011
Type of sample		water
Date extracted	-	22/11/2011
Date analysed	-	22/11/2011
HCB	µg/L	<0.001
Heptachlor	µg/L	<0.001
Heptachlor Epoxide	µg/L	<0.001
Aldrin	µg/L	<0.001
gamma-BHC (Lindane)	µg/L	<0.001
alpha-BHC	µg/L	<0.001
beta-BHC	µg/L	<0.001
delta-BHC	µg/L	<0.001
trans-Chlordane	µg/L	<0.001
cis-Chlordane	µg/L	<0.001
Oxychlordane	µg/L	<0.001
Dieldrin	µg/L	<0.001
p,p-DDE	µg/L	<0.001
p,p-DDD	µg/L	<0.001
p,p-DDT	µg/L	<0.001
Endrin	µg/L	<0.001
Endrin Aldehyde	µg/L	<0.001
Endrin Ketone	µg/L	<0.001
alpha-Endosulfan	µg/L	<0.001
beta-Endosulfan	µg/L	<0.001
Endosulfan Sulfate	µg/L	<0.001
Methoxychlor	µg/L	<0.001
Surrogate OC Recovery	%	95

PCB in water - trace level		
Our Reference:	UNITS	65082-1
Your Reference	----------	Split Sample 1
Date Sampled	----------	16/11/2011
Type of sample		water
Date extracted	-	22/11/2011
Date analysed	-	22/11/2011
Aroclor 1016	µg/L	<0.01
Aroclor 1221	µg/L	<0.01
Aroclor 1232	µg/L	<0.01
Aroclor 1242	µg/L	<0.01
Aroclor 1248	µg/L	<0.01
Aroclor 1254	µg/L	<0.01
Aroclor 1260	µg/L	<0.01
Total PCB's (as above)	µg/L	<0.01

Total Phenolics in Water		
Our Reference:	UNITS	65082-1
Your Reference	----------	Split Sample 1
Date Sampled	----------	16/11/2011
Type of sample		water
Date extracted	-	17/11/2011
Date analysed	-	18/11/2011
Total Phenolics (as Phenol)	mg/L	<0.05

HM in water - dissolved		
Our Reference:	UNITS	65082-1
Your Reference	----------	Split Sample 1
Date Sampled	----------	16/11/2011
Type of sample		water
Date prepared	-	17/11/2011
Date analysed	-	18/11/2011
Arsenic-Dissolved	µg/L	3
Cadmium-Dissolved	µg/L	0.3
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.1
Nickel-Dissolved	µg/L	3
Zinc-Dissolved	µg/L	4

Metals in Waters - Acid extractable		
Our Reference:	UNITS	65082-1
Your Reference	----------	Split Sample 1
Date Sampled	----------	16/11/2011
Type of sample		water
Date prepared	-	17/11/2011
Date analysed	-	22/11/2011
Phosphorus - Total	mg/L	0.8

Miscellaneous Inorganics		
Our Reference:	UNITS	65082-1
Your Reference	----------	Split Sample 1
Date Sampled	----------	16/11/2011
Type of sample		water
Date prepared	-	17/11/2011
Date analysed	-	17/11/2011
Ammonia as N in water	mg/L	0.67
Nitrate as N in water	mg/L	<0.005
Nitrite as N in water	mg/L	<0.005
Total Nitrogen in water	mg/L	4.0
TKN in water	mg/L	4.0

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Ext-020	Analysis subcontracted to Australian Government - National Measurement Institute. NATA Accreditation No: 198
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 21st ED 5530 D.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Inorg-057	Ammonia - determined colourimetrically based on EPA350.1 and APHA 21st ED 4500-NH3 F, Soils are analysed following a KCl extraction.
Inorg-055	Nitrate - determined colourimetrically based on EPA353.2 and APHA 21st ED NO3- F. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on EPA353.2 and APHA 21st ED NO2- B. Soils are analysed following a water extraction.
Inorg-055/062	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen.
Inorg-062	TKN - determined colourimetrically based on APHA 21st ED 4500 Norg.

QUALITY CONTROL vTRH & BTEX in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/11/2011	[NT]	[NT]	LCS-W1	16/11/2011
Date analysed	-			17/11/2011	[NT]	[NT]	LCS-W1	17/11/2011
$TRHC_6$ - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	110%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	120%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	106%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	108%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	108%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	105%
Surrogate Dibromofluoromethane	%		Org-016	94	[NT]	[NT]	LCS-W1	99%
Surrogate toluene-d8	%		Org-016	91	[NT]	[NT]	LCS-W1	96%
Surrogate 4-BFB	%		Org-016	102	[NT]	[NT]	LCS-W1	97%

QUALITY CONTROL sTRH in Water (C10-C36)	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/11/2011	[NT]	[NT]	LCS-W2	17/11/2011
Date analysed	-			17/11/2011	[NT]	[NT]	LCS-W2	17/11/2011
$TRHC_{10}$ - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W2	66%
$TRHC_{15}$ - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W2	78%
$TRHC_{29}$ - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W2	68%
Surrogate o-Terphenyl	%		Org-003	83	[NT]	[NT]	LCS-W2	88%

QUALITY CONTROL PAHs in Water - Low Level	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/11/2011	[NT]	[NT]	LCS-W1	17/11/2011
Date analysed	-			18/11/2011	[NT]	[NT]	LCS-W1	18/11/2011
Naphthalene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	83%
Acenaphthylene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	97%
Phenanthrene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	101%
Anthracene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	91%
Pyrene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	91%

QUALITY CONTROL PAHs in Water - Low Level	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo(a)anthracene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	114%
Benzo(b+k)fluoranthene	µg/L	0.2	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-W1	96%
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d_{14}	%		Org-012 subset	122	[NT]	[NT]	LCS-W1	115%

QUALITY CONTROL OCP in water - trace level	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			22/11/2011	[NT]	[NT]	LCS-1	22/11/2011
Date analysed	-			22/11/2011	[NT]	[NT]	LCS-1	22/11/2011
HCB	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Heptachlor	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	LCS-1	113%
Heptachlor Epoxide	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Aldrin	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	LCS-1	107%
gamma-BHC (Lindane)	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	LCS-1	113%
alpha-BHC	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
beta-BHC	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
delta-BHC	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
trans-Chlordane	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
cis-Chlordane	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Oxychlordane	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Dieldrin	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	LCS-1	118%
p,p-DDE	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
p,p-DDD	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
p,p-DDT	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	LCS-1	105%
Endrin	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	LCS-1	107%
Endrin Aldehyde	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Endrin Ketone	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
alpha-Endosulfan	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
beta-Endosulfan	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulfate	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Methoxychlor	µg/L	0.001	Ext-020	<0.001	[NT]	[NT]	[NR]	[NR]
Surrogate OC Recovery	%		Ext-020	[NT]	[NT]	[NT]	LCS-1	112%

QUALITY CONTROL PCB in water - trace level	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			22/11/2011	[NT]	[NT]	LCS-1	22/11/2011
Date analysed	-			22/11/2011	[NT]	[NT]	LCS-1	22/11/2011
Aroclor 1016	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Aroclor 1221	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Aroclor 1232	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Aroclor 1242	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Aroclor 1248	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Aroclor 1254	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Aroclor 1260	µg/L	0.01	Ext-020	<0.01	[NT]	[NT]	[NR]	[NR]
Total PCB's (as above)	µg/L	0.010	Ext-020	<0.01	[NT]	[NT]	LCS-1	108%
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	-			17/11/2011	[NT]	[NT]	LCS-1	17/11/2011
Date analysed	-			18/11/2011	[NT]	[NT]	LCS-1	18/11/2011
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-030	<0.05	[NT]	[NT]	LCS-1	94%
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	-			17/11/2011	[NT]	[NT]	LCS-W1	17/11/2011
Date analysed	-			18/11/2011	[NT]	[NT]	LCS-W1	18/11/2011
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	99%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W1	90%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	86%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	87%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	88%
Mercury-Dissolved	µg/L	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-W1	104%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	85%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W1	85%

QUALITY CONTROL Metals in Waters - Acid extractable	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			17/11/2011	[NT]	[NT]	LCS-W1	17/11/2011
Date analysed	-			22/11/2011	[NT]	[NT]	LCS-W1	22/11/2011
Phosphorus - Total	mg/L	0.05	Metals-020 ICP-AES	<0.05	[NT]	[NT]	LCS-W1	95%
QUALITY CONTROL Miscellaneous Inorganics	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			17/11/2011	[NT]	[NT]	LCS-W1	17/11/2011
Date analysed	-			17/11/2011	[NT]	[NT]	LCS-W1	17/11/2011
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	[NT]	[NT]	LCS-W1	110%
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	LCS-W1	90%
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	LCS-W1	95%
Total Nitrogen in water	mg/L	0.1	Inorg-055/062	<0.1	[NT]	[NT]	LCS-W1	95%
TKN in water	mg/L	0.1	Inorg-062	<0.1	[NT]	[NT]	LCS-W1	95%

Report Comments:

OC/PCB analysed by NMI report number RN888013

TRH silica gel clean up is not performed as sample is negative.

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

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

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batched of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the 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.

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO: **ENVIROLAB SERVICES PTY LTD**
12 ASHLEY STREET
CHATSWOOD NSW 2067

PH: **02 9910 6200** **FAX:** **02 9910 6201**
ATTN: TANIA NOTARAS

Sampling By: JK
Project Manager: AB

Job No: 12576/1
Project:
Location: Marsden Park Precinct

Results required by: Normal Turnaround Time

Sampling details				Sample type												
Location	Depth (m)	Date	Time	Soil	Water	Metals (Low levels to meet ANZECC 2000 Guidelines, where possible) As, Cd, Cr, Cu, Pb, Hg, Ni & Zn	TPH* (With Silica gel clean up) & BTEX	PAH (Low levels to meet ANZECC 2000 Guidelines, where possible)	OCP (Low levels to meet ANZECC 2000 Guidelines, where possible)	PCB (Low levels to meet ANZECC 2000 Guidelines, where possible)	Total Phenols	Ammonia (Low Level)	NITRITE (NO_2-N) (Low Level)	NITRATE (NO_3-N)	KEEP SAMPLE
Split Sample 1		16/11/2011	-		WP/WG/Vial	✓	✓	✓	✓	✓	✓	✓	✓	✓	YES

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

Job No: 65082

Date Received: 16.11.11
Time Received: 17:40
Received by: DL
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
ANWAR BARBHUYIA	AB	16/11/2011	D. Kandawasa	DL	16.11.11

Legend:
WG Water sample, glass bottle
WP Water sample, plastic bottle
USG Undistu Undisturbed soil sample (glass jar)
DSG Disturbe Disturbed soil sample (glass jar)
DSP Disturbed soil sample (small plastic bag)
✓ Test required
* Purge & Trap
# Geotechnique Screen
@ mole H^+/tonne

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO: **ENVIROLAB SERVICES PTY LTD**
12 ASHLEY STREET
CHATSWOOD NSW 2067

PH: **02 9910 6200** **FAX:** **02 9910 6201**
ATTN: TANIA NOTARAS

Sampling By: JK
Job No: 12576/1
Project:
Project Manager: AB
Location: Marsden Park Precinct

Results required by: Normal Turnaround Time

Sampling details				Sample type											
Location	Depth (m)	Date	Time	Soil	Water	TKN	TOTAL NITROGEN	TOTAL PHOSPHORUS							KEEP SAMPLE
Split Sample 1		16/11/2011	-		WP/WG/Vial	✓	✓	✓							YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
ANWAR BARBHUYIA	AB	16/11/2011	D. Kandowska		16.11.11

Legend:
WG Water sample, glass bottle
WP Water sample, plastic bottle
USG Undistu Undisturbed soil sample (glass jar)
DSG Disturbe Disturbed soil sample (glass jar)
DSP Disturbed soil sample (small plastic bag)
✓ Test required
* Purge & Trap
# Geotechnique Screen
@ mole H^+/tonne

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

SAMPLE RECEIPT ADVICE

Client:

Geotechnique Pty Ltd
PO Box 880
Penrith NSW 2751

ph: 02 4722 2700
Fax: 02 4722 6161

Attention: Anwar Barbhuyia

Sample log in details:

Your reference:	**12576/1, Marsden Park Precinct**
Envirolab Reference:	**65082**
Date received:	16/11/11
Date results expected to be reported:	**23/11/11**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 water
Turnaround time requested:	Standard
Temperature on receipt	Cool
Cooling Method:	Ice

Comments:

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

Contact details:

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

APPENDIX J

SCHEDULE OF LABORATORY TESTING AND SUMMARY TABLES

Chemicals and Asbestos

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TABLE A
SCHEDULE OF LABORATORY TESTING
(Ref No: 12576/1-AA)

Analyte / Analyte Group / Sample	Depth (m)	TYPE	SAMPLING DATE	DUPLICATE	SPLIT	METALS	TPH	BTEX	PAH	OCP	PCB	PHENOLS	NITROGEN AND PHOSPHORUS	ASBESTOS
DISCRETE SAMPLES														
TP10	0-0.3	F	28/10/2011			✔	✔	✔	✔	✔	✔			✔
TP10	0-0.3	FCP	28/10/2011											✔
TP10	0.5-0.8	F	28/10/2011											✔
TP23	0-0.15	N	27/10/2011			✔								
TP24	0-0.15	N	27/10/2011			✔								
TP41	0-0.15	N	1/11/2011			✔				✔				
TP47	0-0.2	F	1/11/2011	D3	SS3	✔	✔	✔	✔	✔	✔			
TP50	0-0.15	T	1/11/2011	D4	SS4	✔				✔				
TP53	0-0.3	F	2/11/2011			✔	✔	✔	✔	✔	✔			
TP55	0-0.3	F	2/11/2011											✔
TP55	0-0.3	FCP	2/11/2011											✔
TP59	0-0.3	F	2/11/2011			✔			✔	✔				
TP60	0-0.1	T	3/11/2011			✔				✔				
TP61	0-0.15	T	3/11/2011			✔				✔				
TP62	0-0.1	T	3/11/2011			✔				✔				
TP63	0-0.1	T	3/11/2011			✔				✔				
TP64	0-0.3	F	3/11/2011			✔	✔	✔	✔	✔	✔			
TP65	0-0.3	F	3/11/2011			✔	✔	✔	✔	✔	✔			
TP66	0-0.15	F	3/11/2011			✔	✔	✔	✔	✔	✔			
TP67	0-0.1	T	3/11/2011			✔				✔				
TP68	0-0.1	T	3/11/2011			✔				✔				
TP69	0-0.1	T	3/11/2011			✔				✔				
TP70	0-0.1	T	4/11/2011			✔				✔				
TP70	0.1-0.4	F	4/11/2011			✔	✔	✔	✔	✔	✔			
TP71	0-0.1	T	4/11/2011			✔				✔				
TP72	0-0.1	T	4/11/2011			✔				✔				
TP72	0.1-0.4	F	4/11/2011			✔	✔	✔	✔	✔	✔			
TP73	0-0.1	T	4/11/2011			✔				✔				
TP74	0-0.1	T	4/11/2011			✔				✔				
TP75	0-0.15	T	4/11/2011			✔				✔				
TP76	0-0.3	F	4/11/2011	D6		✔	✔	✔	✔	✔	✔			
TP77	0-0.3	F	4/11/2011		SS6	✔	✔	✔	✔	✔	✔			
TP78	0-0.3	F	4/11/2011			✔	✔	✔	✔	✔	✔			
TP79	0-0.1	N	4/11/2011			✔				✔				
TP80	0-0.15	T	4/11/2011			✔				✔				
SP1	-	SP	2/11/2011			✔	✔	✔	✔	✔	✔			✔
SP1	-	FCP	2/11/2011											✔
SP2	-	SP	4/11/2011			✔	✔	✔	✔	✔	✔			
SD4	0-0.1	SD	1/11/2011			✔				✔				
SD5	0-0.1	SD	1/11/2011			✔				✔				
SD6	0-0.1	SD	4/11/2011			✔				✔				
AST1	0-0.2	F	31/10/2011			✔	✔	✔	✔	✔	✔	✔		
UST1	0-0.3	F	31/10/2011			✔	✔	✔	✔	✔	✔	✔		
MW1-1		GW	16/11/2011		Sample 1	✔	✔	✔	✔	✔	✔	✔	✔	
MW2-1		GW	16/11/2011			✔	✔	✔	✔	✔	✔	✔	✔	
COMPOSITE SAMPLES														
C1		T	27/10/2011	DD1		✔				✔				
C2		T	28/10/2011			✔				✔				
C3		N	28/10/2011			✔				✔				
C4		N	27-28/10/2011			✔								
C5		T	28/10/2011			✔								
C6		T	27-28/10/2011			✔				✔				
C7		N	27/10/2011			✔								
C8		N	27/10/2011			✔				✔				
C9		T	28/10/2011		SS1	✔				✔				
C10		T/N	27-28/10/2011			✔				✔				
C11		SD	27-28/10/2011			✔				✔				
C12		T/N	31/10/2011			✔				✔				
C13		N	1/11/2011			✔				✔				
C14		T/N	1/11/2011			✔				✔				
C15		T	1/11/2011			✔				✔				
C16		F	1-2/11/2011			✔			✔	✔	✔			
C17		T	1/11/2011			✔				✔				
C18		T	1-2/11/2011			✔				✔				
C19		**F**	**2/11/2011**			✔			✔	✔	✔			

Notes

METALS : arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc
TPH: Total Petroleum Hydrcarbons
BTEX: Benzene, Toluene, Ethyl Benzene, Xylenes
F,T, N, SD, SP: Fill, Topsoil, Natural Soil, , Sediment, Soil Stockpile
GW: Groundwater
PAH: Polycyclic Aromatic Hydrocarbons
OCP : Organochlorine Pesticides
PCB : Polychlorinated Biphenyls
FCP: Fibro-cement Piece

TABLE B
RINSATE SAMPLES
(Ref No: 12576/1-AA)

ANALYTE	RINSATE R1 27/10/2011 (mg/L)	RINSATE R2 28/10/2011 (mg/L)	RINSATE R3 31/10/2011 (mg/L)	RINSATE R4 1/11/2011 (mg/L)	RINSATE R5 2/11/2011 (mg/L)	RINSATE R6 3/11/2011 (mg/L)	RINSATE R7 4/11/2011 (mg/L)	CLEAN DISTILLED WATER (mg/L)
METALS								
Arsenic	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Lead	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Mercury	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0005
Nickel	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.011
Zinc	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010

TABLE C
TRIP SPIKE SAMPLES
(Ref No: 12576/1-AA)

ANALYTE	TRIP SPIKE TS1	TRIP SPIKE TS2
BTEX		
Benzene	96%	99%
Toluene	98%	99%
Ethyl Benzene	96%	101%
Total Xylenes	97%	98%

Note : results are reported as percentage recovery of known spike concentration

TABLE D1
DUPLICATE SAMPLES
(Ref No: 12576/1-AA)

ANALYTE	ORIGINAL SAMPLE mg/kg	DUPLICATE SAMPLE mg/kg	RELATIVE PERCENTAGE DIFFERENCE %
	COMPOSITE	**DUPLICATE**	
METALS	**C1**	**DD1**	
Arsenic	7	8	13
Cadmium	0.6	0.6	0
Chromium	17	18	6
Copper	17	17	0
Lead	22	24	9
Mercury	<0.05	<0.05	-
Nickel	9.1	11	19
Zinc	33	34	3
ORGANOCHLORINE PESTICIDES (OCP)			
Heptachlor	<0.1	<0.1	-
Aldrin	<0.1	<0.1	-
Dieldrin	<0.05	<0.05	-
DDD	<0.2	<0.2	-
DDE	<0.2	<0.2	-
DDT	<0.2	<0.2	-
Chlordane (trans & cis)	<0.2	<0.2	-
	TP50	**DUPLICATE**	
METALS	**0-0.15m**	**D4**	
Arsenic	8	7	13
Cadmium	0.4	0.3	29
Chromium	16	16	0
Copper	24	26	8
Lead	21	21	0
Mercury	<0.05	<0.05	-
Nickel	5.4	5	8
Zinc	26	27	4
ORGANOCHLORINE PESTICIDES (OCP)			
Heptachlor	<0.1	<0.1	-
Aldrin	<0.1	<0.1	-
Dieldrin	<0.1	<0.1	-
DDD	<0.2	<0.2	-
DDE	<0.2	<0.2	-
DDT	<0.2	<0.2	-
Chlordane (trans & cis)	<0.2	<0.2	-

TABLE D2
DUPLICATE SAMPLE
(Ref No: 12576/1-AA)

ANALYTE	TP47 0-0.2m mg/kg	DUPLICATE D3 mg/kg	RELATIVE PERCENTAGE DIFFERENCE %
METALS			
Arsenic	7	9	25
Cadmium	0.4	0.6	40
Chromium	16	24	40
Copper	22	25	13
Lead	46	61	28
Mercury	0.06	0.27	127
Nickel	12	16	29
Zinc	79	130	49
TOTAL PETROLEUM HYDROCARBONS (TPH)			
C6 - C9	<20	<20	-
C10 - C14	<20	<20	-
C15 - C28	<50	<50	-
C29 - C40	<150	<150	-
BTEX			
Benzene	<0.1	<0.1	-
Toluene	<0.1	<0.1	-
Ethyl Benzene	<0.1	<0.1	-
Total Xylenes	<0.3	<0.3	-
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Benzo(a)Pyrene	0.2	0.2	0
Total PAH	<3.1	<3.2	-
ORGANOCHLORINE PESTICIDES (OCP)			
Heptachlor	<0.1	<0.1	-
Aldrin	<0.1	<0.1	-
Dieldrin	<0.1	<0.1	-
DDD	<0.2	<0.2	-
DDE	<0.2	<0.2	-
DDT	<0.2	<0.2	-
Chlordane (trans & cis)	<0.2	<0.2	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<1	<1	-

TABLE D3
DUPLICATE SAMPLE
(Ref No: 12576/1-AA)

ANALYTE	TP76 0-0.3m mg/kg	DUPLICATE D6 mg/kg	RELATIVE PERCENTAGE DIFFERENCE %
METALS			
Arsenic	12	6	67
Cadmium	0.5	<0.3	-
Chromium	19	15	24
Copper	19	17	11
Lead	15	12	22
Mercury	<0.05	<0.05	-
Nickel	2	3.1	43
Zinc	36	24	40
TOTAL PETROLEUM HYDROCARBONS (TPH)			
C6 - C9	<20	<20	-
C10 - C14	<20	<20	-
C15 - C28	120	<50	-
C29 - C40	420	<150	-
BTEX			
Benzene	<0.1	<0.1	-
Toluene	<0.1	<0.1	-
Ethyl Benzene	<0.1	<0.1	-
Total Xylenes	<0.3	<0.3	-
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Benzo(a)Pyrene	<0.1	<0.1	-
Total PAH	<1.8	<1.8	-
ORGANOCHLORINE PESTICIDES (OCP)			
Heptachlor	<0.1	<0.1	-
Aldrin	<0.1	<0.1	-
Dieldrin	<0.1	<0.1	-
DDD	<0.2	<0.2	-
DDE	<0.2	<0.2	-
DDT	<0.2	<0.2	-
Chlordane (trans & cis)	<0.2	<0.2	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<1	<1	-

TABLE E1
SPLIT SAMPLES
(Ref No: 12576/1-AA)

ANALYTE	ORIGINAL SAMPLE mg/kg (SGS)	SPLIT SAMPLE mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCE %
	COMOSITE C9	SPLIT SAMPLE SS1	
METALS			
Arsenic	6	7	15
Cadmium	0.5	0.5	0
Chromium	27	28	4
Copper	4.6	3	42
Lead	20	17	16
Mercury	<0.05	<0.1	-
Nickel	5.3	3	55
Zinc	14	7	67
ORGANOCHLORINE PESTICIDES (OCP)			
Heptachlor	<0.1	<0.1	-
Aldrin	<0.1	<0.1	-
Dieldrin	<0.05	<0.1	-
DDD	<0.2	<0.2	-
DDE	<0.2	<0.2	-
DDT	<0.2	<0.2	-
Chlordane (trans & cis)	<0.2	<0.2	-
	TP50 0-0.15m	SPLIT SAMPLE SS4	
METALS			
Arsenic	8	7	13
Cadmium	0.4	<0.5	-
Chromium	16	14	13
Copper	24	20	18
Lead	21	18	15
Mercury	<0.05	<0.1	-
Nickel	5.4	4	30
Zinc	26	19	31
ORGANOCHLORINE PESTICIDES (OCP)			
Heptachlor	<0.1	<0.1	-
Aldrin	<0.1	<0.1	-
Dieldrin	<0.1	<0.1	-
DDD	<0.2	<0.2	-
DDE	<0.2	<0.2	-
DDT	<0.2	<0.2	-
Chlordane (trans & cis)	<0.2	<0.2	-

TABLE E2
SPLIT SAMPLE
(Ref No: 12576/1-AA)

ANALYTE	TP47 0-0.2m mg/kg (SGS)	SPLIT SAMPLE SS3 mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCE %
METALS			
Arsenic	7	6	15
Cadmium	0.4	<0.5	-
Chromium	16	16	0
Copper	22	24	9
Lead	46	49	6
Mercury	0.06	0.4	148
Nickel	12	18	40
Zinc	79	110	33
TOTAL PETROLEUM HYDROCARBONS (TPH)			
C6 - C9	<20	<25	-
C10 - C14	<20	<50	-
C15 - C28	<50	<100	-
C29 - C40 or *** C29-C36 for Envirolab***	<150	<100	-
BTEX			
Benzene	<0.1	<0.2	-
Toluene	<0.1	<0.5	-
Ethyl Benzene	<0.1	<1.0	-
Total Xylenes	<0.3	<3.0	-
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Benzo(a)Pyrene	0.2	0.81	121
Total PAH	<3.1	<8.51	-
ORGANOCHLORINE PESTICIDES (OCP)			
Heptachlor	<0.1	<0.1	-
Aldrin	<0.1	<0.1	-
Dieldrin	<0.1	<0.1	-
DDD	<0.2	<0.2	-
DDE	<0.2	<0.2	-
DDT	<0.2	<0.2	-
Chlordane (trans & cis)	<0.2	<0.2	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<1	<0.6	-

TABLE E3
SPLIT SAMPLE
(Ref No: 12576/1-AA)

ANALYTE	TP77 0-0.3m mg/kg (SGS)	SPLIT SAMPLE SS6 mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCE %
METALS			
Arsenic	8	18	77
Cadmium	0.4	<0.5	-
Chromium	14	9	43
Copper	19	18	5
Lead	15	8	61
Mercury	<0.05	<0.1	-
Nickel	3.4	2	52
Zinc	26	15	54
TOTAL PETROLEUM HYDROCARBONS (TPH)			
C6 - C9	<20	<25	-
C10 - C14	<20	<50	-
C15 - C28	<50	<100	-
C29 - C40 or *** C29-C36 for Envirolab***	<150	<100	-
BTEX			
Benzene	<0.1	<0.2	-
Toluene	<0.1	<0.5	-
Ethyl Benzene	<0.1	<1.0	-
Total Xylenes	<0.3	<3.0	-
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Benzo(a)Pyrene	<0.1	<0.05	-
Total PAH	<1.8	<1.6	-
ORGANOCHLORINE PESTICIDES (OCP)			
Heptachlor	<0.1	<0.1	-
Aldrin	<0.1	<0.1	-
Dieldrin	<0.1	<0.1	-
DDD	<0.2	<0.2	-
DDE	<0.2	<0.2	-
DDT	<0.2	<0.2	-
Chlordane (trans & cis)	<0.2	<0.2	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<1	<0.6	-

TABLE E4
SPLIT SAMPLE
(Ref No: 12576/1-AA)

ANALYTE	GROUNDWATER MW1-1 (SGS)	SPLIT SAMPLE 1 (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCE %
METALS (mg/L)			
Arsenic	<0.002	0.003	-
Cadmium	<0.001	0.0003	-
Chromium	<0.010	<0.001	-
Copper	<0.001	<0.001	-
Lead	<0.001	<0.001	-
Mercury	0.00010	<0.0001	-
Nickel	<0.010	0.003	-
Zinc	0.007	0.004	55
TOTAL PETROLEUM HYDROCARBONS (µg/L)			
C6 - C9	<40	<10	-
C10 - C14	55	<50	-
C15 - C28	<100	<100	-
C29 - C36	<100	<100	-
C37 - C40	<100	-	-
BTEX (µg/L)			
Benzene	<0.5	<1	-
Toluene	<0.5	<1	-
Ethyl Benzene	<0.5	<1	-
Total Xylenes	<1.5	<3	-
POLYCYCLIC AROMATIC HYDROCARBONS (µg/L)			
Napthalene	<0.1	<0.1	-
Anthracene	<0.1	<0.1	-
Phenanthrene	<0.1	<0.1	-
Flouranthene	<0.1	<0.1	-
Benzo(a)Pyrene	<0.1	<0.1	-
ORGANOCHLORINE PESTICIDES (OCP) (µg/L)			
HCB	<0.002	<0.001	-
Lindane (gamma-BHC)	<0.002	<0.001	-
Heptachlor	<0.002	<0.001	-
Methoxychlor	<0.1	<0.001	-
Aldrin	<0.002	<0.001	-
Dieldrin	<0.002	<0.001	-
Endrin	<0.004	<0.001	-
Endosulfan alpha	<0.005	<0.001	-
Endosulfan beta	<0.005	<0.001	-
Endosulfan Sulfate	<0.005	<0.001	-
p-p' DDE	<0.002	<0.001	-
p-p' DDT	<0.001	<0.001	-
Chlordane (trans & cis)	<0.004	<0.002	-
POLYCHLORINATED BIPHENYLS (PCB) (ug/L)			
Arochlor 1016	<1	<0.01	-
Arochlor 1221	<1	<0.01	-
Arochlor 1232	<1	<0.01	-
Arochlor 1242	<1	<0.01	-
Arochlor 1248	<1	<0.01	-
Arochlor 1254	<1	<0.01	-
Arochlor 1260	<1	<0.01	-
PHENOLS (ug/L)			
Total Phenols	0.00003	<0.00005	-
PHOSPHORUS AND NITROGEN (mg/L)			
Total Phosphorus	1.6	0.8	67
Nitrate (NO3 - N)	<0.25	<0.005	-
Nitrite (NO2 - N)	<0.005	<0.005	-
Ammonia (NH3-N)	0.63	0.67	6
Total Kjeldahl Nitrogen (TKN)	3.0	4.0	29
Total Nitrogen	3.0	4.0	29

TABLE F
METALS TEST RESULTS
DISCRETE SAMPLES
(Ref No: 12576/1-AA)

Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM	COPPER	LEAD	MERCURY	NICKEL	ZINC
	Analyte	METALS (mg/kg)							
TP10	0-0.3	9	0.4	12	22	97	0.12	4.5	130
TP23	0-0.15	10	0.5	25	2.9	18	<0.05	1.9	7.9
TP24	0-0.15	5	<0.3	13	6.1	17	<0.05	2.4	7.3
TP41	0-0.15	<3	<0.3	8.9	9.5	11	<0.05	6.6	20
TP47	0-0.2	7	0.4	16	22	46	0.06	12	79
TP50	0-0.15	8	0.4	16	24	21	<0.05	5.4	26
TP53	0-0.3	10	0.5	23	13	22	<0.05	11	33
TP59	0-0.3	3	<0.3	7.4	12	59	<0.05	4.4	63
TP60	0-0.1	5	<0.3	12	10	20	<0.05	7.2	26
TP61	0-0.15	8	0.4	14	13	22	<0.05	6.5	51
TP62	0-0.1	11	0.5	18	11	23	<0.05	6.5	30
TP63	0-0.1	11	0.5	21	8.2	21	<0.05	5.7	22
TP64	0-0.3	7	0.4	15	36	30	<0.05	10	120
TP65	0-0.3	11	0.4	12	17	15	<0.05	5.4	36
TP66	0-0.15	6	0.4	16	12	24	<0.05	6	42
TP67	0-0.1	17	0.9	40	80	44	0.05	11	**250**
TP68	0-0.1	14	0.5	14	22	25	<0.05	9	44
TP69	0-0.1	12	0.7	36	8.4	30	<0.05	3.7	15
TP70	0-0.1	11	0.5	23	19	170	0.06	7.4	84
TP70	0.1-0.4	8	0.5	15	68	58	0.06	17	88
TP71	0-0.1	6	0.3	19	3.6	17	<0.05	2	9.4
TP72	0-0.1	8	0.6	21	12	23	<0.05	4.7	60
TP72	0.1-0.4	11	1	27	24	67	0.06	6.9	160
TP73	0-0.1	9	0.8	28	11	27	<0.05	6	26
TP74	0-0.1	7	0.5	24	8.6	32	<0.05	5.3	17
TP75	0-0.15	9	0.5	17	23	19	<0.05	4.9	55
TP76	0-0.3	12	0.5	19	19	15	<0.05	2	36
TP77	0-0.3	8	0.4	14	19	15	<0.05	3.4	26
TP78	0-0.3	9	0.4	14	26	23	<0.05	6.8	66
TP79	0-0.1	9	0.4	16	13	18	<0.05	6.5	26
TP80	0-0.15	10	<0.3	13	11	14	<0.05	6	20
SP1	-	17	2.8	21	**180**	**1400**	0.31	25	**980**
SP2	-	5	0.4	14	29	17	<0.05	23	67
SD4	0-0.1	13	0.7	27	15	26	<0.05	5.6	30
SD5	0-0.1	8	0.3	11	25	17	<0.05	11	60
SD6	0-0.1	<3	<0.3	9.5	26	18	<0.05	8.3	42
AST1	0-0.2	<3	<0.3	14	39	9	<0.05	23	53
UST1	0-0.3	9	3	28	19	83	<0.05	7.6	100
Limits of Reporting (LOR)		3	0.3	0.3	0.5	1	0.05	0.5	0.5
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)									
Provisional Phytotoxity-Based									
Total Nitroge	0.51	0.4	24						
NATIONAL ENVIRONMENT PROTECTION MEASURE (1999)									
Health Investigation Levels (HIL) [a] (HIL 'A')		100	20	12%/100 [c]	1000	300	10/15 [d]	600	7000

Notes
a: Residential with gardens and accessible soil including children's day-care centres, preschools, primary schools, townhouses and villas.
b: 400mg/kg for Chromium (+3) and 1mg/kg for Chromium (+6). Chromium (Cr) may exist in a number of states. Cr (+6) is easily reduced to form the most stable Cr (+3) whenever exposed to the atmosphere. Therefore Cr (+3) is adopted for this assessment.
c: 12% (120000mg/kg) for Chromium (+3) and 100mg/kg for Chromium (+6).
d: 10mg/kg for Methyl Mercury and 15mg/kg for Inorganic Mercury.

TABLE G
METALS TEST RESULTS
COMPOSITED SAMPLES
(Ref No: 12576/1-AA)

Analyte / Composite Number	METALS (mg/kg)							
	ARSENIC	CADMIUM	CHROMIUM	COPPER	LEAD	MERCURY	NICKEL	ZINC
C1	**7**	0.6	17	17	22	<0.05	9.1	33
C2	**9**	0.6	26	6.9	30	<0.05	4.9	13
C3	**8**	0.4	19	9.3	18	<0.05	4.2	16
C4	5	0.4	15	9.8	29	<0.05	5.6	34
C5	**10**	0.5	31	4.4	20	<0.05	3.4	12
C6	5	0.4	15	7.7	16	<0.05	3.8	13
C7	5	0.6	15	6.5	15	<0.05	4	**98**
C8	**7**	0.3	15	5	17	<0.05	3.6	18
C9	6	0.5	27	4.6	20	<0.05	5.3	14
C10	**8**	0.8	27	9	22	<0.05	7.3	64
C11	**11**	0.6	23	11	23	<0.05	8.2	51
C12	6	**2.6**	20	7.6	17	<0.05	4.5	**310**
C13	<3	<0.3	8.4	7.1	14	<0.05	4.4	17
C14	4	<0.3	16	11	18	<0.05	8.5	30
C15	**8**	0.5	26	7.8	22	<0.05	4.1	23
C16	**10**	0.5	16	17	22	<0.05	4.1	20
C17	**9**	0.4	16	31	25	<0.05	8.6	61
C18	**11**	0.4	18	14	24	<0.05	7.2	40
C19	**7**	0.5	17	21	27	<0.05	13	**76**
Limits of Reporting (LOR)	3	0.3	0.3	0.5	1	0.05	0.5	0.5
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)								
Provisional Phytotoxity-Based Investigation Levels (PPBIL)	20	3	400/1[d]	100	600	1	60	200
Adjusted PPBIL [a]	6.7	1	133/0.33	33	200	0.33	20	67
NATIONAL ENVIRONMENT PROTECTION MEASURE (1999)								
Health Investigation Levels [b] (HIL 'A')	100	20	12%/100 [e]	1000	300	10/15 [f]	600	7000
Adjusted HIL 'A' [c]	33	6.7	4%/33	333	100	3.3/5	200	2333

Notes
a: Adjusted PPBIL=PPBIL/3
b: Residential with gardens and accessible soil including children's day-care centres, preschools, primary schools, townhouses and villas.
c: Adjusted HIL 'A' = HIL 'A'/3
d: 400mg/kg for Chromium (+3) and 1mg/kg for Chromium (+6). Chromium (Cr) may exist in a number of states. Cr (+6) is easily reduced to form the most stable Cr (+3) whenever exposed to the atmosphere. Therefore Cr (+3) is adopted for this assessment.
e: 12% (120000mg/kg) for Chromium (+3) and 100mg/kg for Chromium (+6).
f: 10mg/kg for Methyl Mercury and 15mg/kg for Inorganic Mercury.

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TABLE G1
ARSENIC TEST RESULTS
SUB-SAMPLES
(Ref No: 12576/1-AA)

Analyte			ARSENIC (mg/kg)		
			Concentration of	Sub-Sample	
Composite Number	Sub-Samples	Depth (m)	Composite Sample	Concentration	Mean
	TP1	0-0.1		7	
	TP14	0-0.1		8	
	TP15	0-0.1		5	
C1			7		7
	TP2	0-0.1		11	
	TP4	0-0.1		<3	
	TP5	0-0.1		3	
C2			9		6
	TP6	0-0.15		7	
	TP8	0-0.15		<3	
	TP13	0-0.15		9	
C3			8		6
	TP9	0-0.1		8	
	TP18	0-0.1		<3	
	TP19	0-0.1		4	
C5			10		5
	TP27	0-0.15		<3	
	TP33	0-0.15		4	
	TP34	0-0.1		9	
C8			7		5
	TP28	0-0.1		5	
	TP29	0-0.1		5	
	TP36	0-0.1		7	
C9			6		6
	TP30	0-0.1		9	
	TP32	0-0.15		<3	
	TP35	0-0.1		8	
C10			8		7
	SD1	0-0.1		8	
	SD2	0-0.1		<3	
	SD3	0-0.1		13	
C11			11		8
Limits of Reporting (LOR)			3	3	NA
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)					
Provisional Phytotoxity-Based Investigation Level				20	
NATIONAL ENVIRONMENT PROTECTION MEASURE (1999)					
Health Investigation Levels (HIL) [a] (HIL 'A')				100	

Notes
a: Residential with gardens and accessible soil including children's day-care centres, preschools, primary schools, townhouses and villas.
NA: Not Applicable

TABLE G1
ARSENIC TEST RESULTS
SUB-SAMPLES
(Ref No: 12576/1-AA)

Analyte			ARSENIC (mg/kg)		
			Concentration of	Sub-Sample	
Composite Number	Sub-Samples	Depth (m)	Composite Sample	Concentration	Mean
	TP44	0-0.1		6	
	TP45	0-0.1		6	
	TP46	0-0.1		8	
C15			8		7
	TP47	0.5-0.8		8	
	TP50	0.3-0.6		5	
	TP55	0.5-0.8		14	
C16			10		9
	TP48	0-0.1		9	
	TP49	0-0.15		8	
	TP51	0-0.15		10	
C17			9		9
	TP52	0-0.15		10	
	TP56	0-0.1		8	
	TP57	0-0.1		11	
C18			11		10
	TP54	0-0.3		8	
	TP55	0-0.3		6	
	TP58	0-0.15		5	
C19			7		6
Limits of Reporting (LOR)			3	3	NA
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)					
Provisional Phytotoxity-Based Investigation Level				20	
NATIONAL ENVIRONMENT PROTECTION MEASURE (1999)					
Health Investigation Levels (HIL) [a] (HIL 'A')				100	

Notes
a: Residential with gardens and accessible soil including children's day-care centres, preschools, primary schools, townhouses and villas.
NA: Not Applicable

TABLE G2
CADMIUM TEST RESULTS
SUB-SAMPLES
(Ref No: 12576/1-AA)

Analyte			CADMIUM (mg/kg)		
			Concentration of	Sub-Sample	
Composite Number	Sub-Samples	Depth (m)	Composite Sample	Concentration	Mean
	TP3	0-0.1		0.9	
	TP17	0-0.1		0.3	
	TP20	0-0.15		6.7	
C12			2.6		2.6
Limits of Reporting (LOR)			0.5	0.5	NA
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)					
Provisional Phytotoxity-Based Investigation Level				3	
NATIONAL ENVIRONMENT PROTECTION MEASURE (1999)					
Health Investigation Levels (HIL) [a] (HIL 'A')				20	

Notes
a: Residential with gardens and accessible soil including children's day-care centres, preschools, primary schools, townhouses and villas.
NA: Not Applicable

TABLE G3
ZINC TEST RESULTS
SUB-SAMPLES
(Ref No: 12576/1-AA)

Analyte			ZINC (mg/kg)		
			Concentration of	Sub-Sample	
Composite Number	Sub-Samples	Depth (m)	Composite Sample	Concentration	Mean
	TP25	0-0.15		9.9	
	TP26	0-0.15		11	
	TP31	0-0.15		**350**	
C7			98		124
	TP3	0-0.1		24	
	TP17	0-0.1		6.9	
	TP20	0-0.15		**1000**	
C12			310		344
	TP54	0-0.3		39	
	TP55	0-0.3		**220**	
	TP58	0-0.15		51	
C19			76		103
Limits of Reporting (LOR)			0.5	0.5	NA
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)					
Provisional Phytotoxity-Based Investigation Level				200	
NATIONAL ENVIRONMENT PROTECTION MEASURE (1999)					
Health Investigation Levels (HIL) [a] (HIL 'A')				7000	

Notes
a: Residential with gardens and accessible soil including children's day-care centres, preschools, primary schools, townhouses and villas.
NA: Not Applicable

TABLE H
TOTAL PETROLEUM HYDROCARBONS (TPH) AND BTEX TEST RESULTS
DISCRETE SAMPLES
(Ref No: 12576/1-AA)

Analyte / Sample Location	Depth (m)	TPH (mg/kg) C6-C9	C10-C14	C15-C28	C29-C40	C10-C40 [a]	BTEX (mg/kg) BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES
TP10	0-0.3	<20	<20	<50	<150	220	<0.1	<0.1	<0.1	<0.3
TP47	0-0.2	<20	<20	<50	<150	220	<0.1	<0.1	<0.1	<0.3
TP53	0-0.3	<20	<20	<50	<150	220	<0.1	<0.1	<0.1	<0.3
TP64	0-0.3	<20	<20	<50	<150	220	<0.1	<0.1	<0.1	<0.3
TP65	0-0.3	<20	<20	<50	<150	220	<0.1	<0.1	<0.1	<0.3
TP66	0-0.15	<20	<20	<50	<150	220	<0.1	<0.1	<0.1	<0.3
TP70	0.1-0.4	<20	<20	140	<150	310	<0.1	<0.1	<0.1	<0.3
TP72	0.1-0.4	<20	<20	<50	<150	220	<0.1	<0.1	<0.1	<0.3
TP76	0-0.3	<20	<20	120	420	560	<0.1	<0.1	<0.1	<0.3
TP77	0-0.3	<20	<20	<50	<150	220	<0.1	<0.1	<0.1	<0.3
TP78	0-0.3	<20	<20	<50	<150	220	<0.1	<0.1	<0.1	<0.3
SP1	-	<20	<20	510	480	1010	<0.1	<0.1	<0.1	<0.3
SP1	-	-	<20	290	<100	410 [c]	-	-	-	-
SP2	-	<20	<20	<50	<150	220	<0.1	<0.1	<0.1	<0.3
AST1	0-0.2	<20	910	12000	7800	**20710**	<0.1	<0.1	<0.1	<0.3
AST1	0.25-0.4	<20	<20	580	<150	750	<0.1	<0.1	<0.1	<0.3
UST1	0-0.3	<20	<20	<50	<150	220	<0.1	<0.1	<0.1	<0.3
Limits of Reporting (LOR)		20	20	50	150	NA	0.1	0.1	0.1	0.3
EPA Levels [b]		65	C10-C40 =1000				1	1.4	3.1	14

Notes
a: C10-C40 = (C10-C14) + (C15-C28) + (C29-C40); concentrations less than LOR are assumed equal to LOR.
b: Contaminated Sites: "Guidelines for Assessing Service Station Sites", 1994, EPA
c: TPH result with silica gel clean-up
NA: Not Applicable

TABLE I
POLYCYCLIC AROMATIC HYDROCARBONS (PAH), ORGANOCHLORINE PESTICIDES (OCP), POLYCHLORINATED BIPHENYLS (PCB) AND PHENOLS TEST RESULTS
DISCRETE SAMPLES
(Ref No: 12576/1-AA)

Analyte / Sample Location	Depth (m)	PAH (mg/kg)		Organochlorine Pesticides (mg/kg)							TOTAL PCB (mg/kg)	TOTAL PHENOLS (mg/kg)
		BENZO(a)PYRENE (mg/kg)	TOTAL PAH (mg/kg)	HEPTACHLOR	ALDRIN	DIELDRIN	DDD	DDE	DDT	CHLORDANE (trans & cis)		
TP10	0-0.3	**1.2**	18	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	<0.9	-
TP41	0-0.15	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-	-
TP47	0-0.2	0.2	<3.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1	-
TP50	0-0.15	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-	-
TP53	0-0.3	<0.1	<1.8	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1	-
TP59	0-0.3	1	12	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-	-
TP60	0-0.1	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-	-
TP61	0-0.15	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-	-
TP62	0-0.1	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-	-
TP63	0-0.1	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-	-
TP64	0-0.3	<0.1	<1.8	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	<1	-
TP65	0-0.3	<0.1	<1.8	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	<1	-
TP66	0-0.15	<0.1	<2.0	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	<1	-
TP67	0-0.1	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-	-
TP68	0-0.1	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-	-
TP69	0-0.1	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-	-
TP70	0-0.1	-	-	<0.1	<0.1	0.2	<0.2	<0.2	<0.2	<0.2	-	-
TP70	0.1-0.4	**1.8**	**34**	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1	-
TP71	0-0.1	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-	-
TP72	0-0.1	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-	-
TP72	0.1-0.4	<0.1	<1.8	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1	-
TP73	0-0.1	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-	-
TP74	0-0.1	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-	-
TP75	0-0.15	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-	-
TP76	0-0.3	<0.1	<1.8	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1	-
TP77	0-0.3	<0.1	<1.8	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1	-
TP78	0-0.3	<0.1	<1.8	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1	-
TP79	0-0.1	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-	-
TP80	0-0.15	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-	-
SP1	-	**14**	**154**	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1	-
SP2	-	<0.1	<1.8	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1	-
SD4	0-0.1	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-	-
SD5	0-0.1	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-	-
SD6	0-0.1	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-	-
AST1	0-0.2	**3.5**	**42**	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1	0.6
AST1	0.25-0.4	<0.1	<2.0	-	-	-	-	-	-	-	-	-
UST1	0-0.3	<0.1	<1.8	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1	1.2
Limits of Reporting (LOR)		0.1	NA	0.1	0.1	0.05	0.2	0.2	0.2	0.2	1	0.1
NATIONAL ENVIRONMENT PROTECTION MEASURE (1999)												
Health Investigation Levels (HIL) [a] (HIL 'A')		1	20	10	10 [b]	10 [b]		200 [c]		50	10	8500

Notes
a: Residential with gardens and accessible soil including children's day-care centres, preschools, primary schools, townhouses and villas.
b: Aldrin + Dieldrin
c: Total of DDD + DDE + DDT
NA: Not Applicable

TABLE J
POLYCYCLIC AROMATIC HYDROCARBONS (PAH), ORGANOCHLORINE PESTICIDES (OCP) AND POLYCHLORINATED BIPHENYLS (PCB) TEST RESULTS
COMPOSITED SAMPLES
(Ref No: 12576/1-AA)

Analyte / Composite Number	PAH (mg/kg)		Organochlorine Pesticides (mg/kg)							
	BENZO(a)PYRENE (mg/kg)	TOTAL PAH (mg/kg)	HEPTACHLOR	ALDRIN	DIELDRIN	DDD	DDE	DDT	CHLORDANE (trans & cis)	TOTAL PCB (mg/kg)
C1	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-
C2	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-
C3	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-
C6	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-
C8	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-
C9	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-
C10	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-
C11	-	-	<0.1	<0.1	<0.05	<0.2	<0.2	<0.2	<0.2	-
C12	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-
C13	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-
C14	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-
C15	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-
C16	<0.1	<1.8	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1
C17	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-
C18	-	-	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	-
C19	0.2	<3.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<1
Limits of Reporting (LOR)	0.1	NA	0.1	0.1	0.05	0.2	0.2	0.2	0.2	1
NATIONAL ENVIRONMENT PROTECTION MEASURE (1999)										
Health Investigation Levels [a] (HIL 'A')	1	20	10	10 [c]	10 [c]		200 [d]		50	10
Adjusted HIL 'A' [b]	0.33	6.7	3.3	3.3 [c]	3.3 [c]		67 [d]		17	3.3

Notes
a: Residential with gardens and accessible soil including children's day-care centres, preschools, primary schools, townhouses and villas.
b: Adjusted HIL 'A' = HIL 'A'/3
c: Aldrin + Dieldrin
d: Total of DDD + DDE + DDT
NA: Not Applicable

TABLE K
ASBESTOS TEST RESULTS
DISCRETE SAMPLES
(Ref No: 12576/1-AA)

Analyte / Sample Location	Depth (m)	Result
Soil Samples		
TP10	0-0.3	No Asbestos Found
TP10	0.5-0.8	No Asbestos Found
TP55	0-0.3	No Asbestos Found
SP1	-	No Asbestos Found
Fibro Cement Pieces		
TP10	0-0.3	**Chrysotile Asbestos Found**
TP55	0-0.3	**Amosite & Chrysotile Asbestos Found**
SP1	-	**Chrysotile Asbestos Found**

TABLE L
METALS AND HARDNESS TEST RESULTS
GROUNDWATER SAMPLES
(Ref No: 12576/1-AA)

Analyte / Sample Location	METALS (mg/L)								
	ARSENIC (As) - Total	CADMIUM (Cd)	CHROMIUM (Cr) - Total	COPPER (Cu)	LEAD (Pb)	MERCURY (Hg) - Total	NICKEL (Ni)	ZINC (Zn)	HARDNESS (mg $CaCO_3$ / L)
Groundwater MW1-1	<0.002	<0.001	<0.010	<0.001	<0.001	0.00010	<0.010	0.007	540
Groundwater MW2-1	<0.002	<0.001	<0.010	<0.001	<0.001	<0.0001	<0.010	0.028	510
Limits of Reporting (LOR)	0.001	0.0001	0.001	0.001	0.001	0.0001	0.001	0.001	0.2
ANZ [a] Guidelines for Fresh and Marine Water Quality (2000)									
Aquatic Ecosystems (Trigger Values)									
Fresh water (95% Protection)	0.024[b] 0.013[c]	0.0002	0.0033[d, h] 0.001[e]	0.0014	0.0034	0.0006[f] ID[g]	0.011	0.008	
Hardness Category- Fresh Water									0-59
Soft									60-119
Moderate									120-179
Hard									180-240
Very Hard									400
Extremely Hard									
{Factor of Hardness (>400mg $CaCO_3$ / L)}		10.0	8.4	9.0	26.7		9.0	9.0	
{Hardness-Modified Trigger Values (HMTV)}		0.002	0.028 [d]	0.0126	0.09078		0.099	0.072	
Irrigation Water (Trigger Values)									60-350
LTV	0.1	0.01	0.1	0.2	2	0.002	0.2	2	
STV	2	0.05	1	5	5	0.002	2	5	
Livestock Drinking water	0.5	0.01	1	0.4-5	0.1	0.002	1	20	
Water for recreational purposes	0.05	0.005	0.05	1	0.05	0.001	0.1	5	500
Australian Drinking Water Guidelines (2004)									
Drinking water (Health Values)	0.007	0.002	0.05 [e]	2	0.01	0.001	0.02	i	Not Necessary
Drinking water (Aesthetic Values)				1				3	200

Notes
a: ANZ = Australia and New Zealands
b: as As (III)
c: as As (V)
d: as Cr (III)
e: as Cr (VI)
f: as Hg (Inorganic)
g: as Hg (methyl)
h: Indicative interim working level due to Insufficient Data (ID) to derive a reliable trigger value
i: Insufficient Data to set a guideline value based on health consideration.
ID: Insufficient Data to derive a reliable trigger value
LTV: Long Term Trigger Value (up to 100 years)
STV: Short Term Trigger Value (up to 20 years)

TABLE M
TOTAL RECOVERABLE HYDROCARBONS(TRH), TOTAL PETROLEUM HYDROCARBONS (TPH) AND BTEX TEST RESULTS
GROUNDWATER SAMPLES
(Ref No: 12576/1-AA)

Analyte / Sample Location	TPH (µg/L) with silica gel clean up						BTEX (µg/L)			
	C6-C9	C10-C14	C15-C28	C29-C36	C37-C40	C10-C40	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES
GROUNDWATER SAMPLES										
Groundwater MW1-1	<40	55	<100	<100	<100	355	<0.5	<0.5	<0.5	<1.5
Groundwater MW2-1	<40	170	<100	<100	<100	470	<0.5	<0.5	<0.5	<1.5
Limit of Reporting (LOR)	40	50	100	100	100	-	0.5	0.5	0.5	1.5
ANZ [a] Guidelines for Fresh and Marine Water Quality (2000)										
Aquatic Ecosystems (Trigger Values)										
Fresh water (95% Protection)							950	180 [e]	80 [e]	350[b] 75[c, e] 200[d]
Livestock Drinking water							1	800	300	600
Water for recreational purposes							10			
Australian Drinking Water Guidelines (2004)										
Drinking water (Health Levels)							1	800	300	600
Drinking water (Aesthetic Values)								25	3	20
Airports (Environment Protection) Regulations (compiled and prepared on 28 May 2004)	150		600[f]							

Notes
a: ANZ = Australia and New Zealand
b: as o-Xylene
c: as m-Xylene
d: as p-Xylene
e: Indicative interim working level due to Insufficient Data (ID) to derive a reliable trigger value
f: >C9

TABLE N
POLYCYCLIC AROMATIC HYDROCARBONS (PAH) AND PHENOLS TEST RESULTS
GROUNDWATER SAMPLES
(Ref No: 12576/1-AA)

Analyte / Sample Location	PAH (µg/L)					TOTAL PHENOLS (µg/L)
	NAPHTHALENE	ANTHRACENE	PHENANTHRENE	FLUORANTHENE	BENZO(a)PYRENE	
GROUNDWATER SAMPLES						
Groundwater MW1-1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00003
Groundwater MW2-1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00002
Limit of Reporting (LOR)	0.1	0.1	0.1	0.1	0.1	0.00001
ANZ [a] Guidelines for Fresh and Marine Water Quality (2000)						
Aquatic Ecosystems (Trigger Values)						
Fresh water (95% Protection)	16	0.01[b]	0.6[b]	1[b]	0.1[b]	320
Livestock Drinking water					0.01	
Water for recreational purposes					0.01	2
Australian Drinking Water Guidelines (2004)						
Drinking water (Health Level)					0.01	

Notes
a: ANZ = Australia and New Zealands
b: Indicative interim working level due to Insufficient Data (ID) to derive a reliable trigger value

TABLE O
ORGANOCHLORINE PESTICIDES (OCP) TEST RESULTS
GROUNDWATER SAMPLES
(Ref No: 12576/1-AA)

Analyte / Sampling Location	Organochlorine Pesticides (µg/L)												
	HCB	LINDANE(gama-BHC)	HEPTACHLOR	METHOXYCHLOR	ALDRIN	DIELDRIN	ENDRIN	ENDOSULFAN alpha	ENDOSULFAN beta	ENDOSULFAN SULFATE	p-p' DDE	p-p' DDT	CHLORDANE (trans & cis)
GROUNDWATER SAMPLES													
Groundwater MW1-1	<0.002	<0.002	<0.002	<0.1	<0.002	<0.002	<0.004	<0.005	<0.005	<0.005	<0.002	<0.001	<0.004
Groundwater MW2-1	<0.002	<0.002	<0.002	<0.1	<0.002	<0.002	<0.004	<0.005	<0.005	<0.005	<0.002	<0.001	<0.004
Limit of Reporting (LOR) - SGS	0.002	0.002	0.002	0.1	0.002	0.002	0.004	0.005	0.005	0.005	0.002	0.001	0.004
ANZ [a] Guidelines for Fresh and Marine Water Quality (2000)													
Aquatic Ecosystems (Trigger Values)													
Fresh water (95% Protection)	0.05[b]	0.2	0.09	0.005[b]	0.001[b]	0.01[b]	0.02	0.2 [c]	0.2 [c]	0.2 [c]	0.03 [b,d]	0.01 [e]	0.08 [f]
Livestock Drinking water		20	0.3 [g]	300	0.3 [h]	0.3 [h]		30 [c]	30 [c]	30 [c]		20	1
Water for recreational purposes		10	3		1	1	1	40 [c]	40 [c]	40 [c]		3 [e]	6
Australian Drinking Water Guidelines (2004)													
Drinking water (Health Levels)		20	0.3 [g]	300	0.3 [h]	0.3 [h]		30 [c]	30 [c]	30 [c]		20 [e]	1

Notes:
a : ANZ = Australia and New Zealands
b : Indicative interim working level due to Insufficient Data (ID) to derive a reliable trigger value
c : Endosulfan
d : DDE
e : DDT
f : Chlordane
g : Including its epoxide
h : Aldrin and Dieldrin

TABLE P
POLYCHLORINATED BIPHENYLS (PCB) TEST RESULTS
GROUNDWATER SAMPLE
(Ref No: 12576/1-AA)

Analyte / Sample Location	POLYCHLORINATED BIPHENYLS (PCB) ug/L								
	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Arochlor 1262	Arochlor 1268
GROUNDWATER SAMPLES									
Groundwater MW1-1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Groundwater MW2-1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Practical Quantitation Limit (PQL)	1	1	1	1	1	1	1	1	1
ANZ [a] Guidelines for Fresh and Marine Water Quality (2000)									
Aquatic Ecosystems (Trigger Values)									
Fresh water (95% Protection)	0.001[b]	1.0[b]	0.3[b]	0.6	0.03[b]	0.03	25[b]	50[b]	50[b]
Water for recreational purposes	0.1[c]	0.1[c]	0.1[c]	0.1[c]	0.1[c]	0.1[c]	0.1[c]	0.1[c]	0.1[c]

Notes
a : ANZ = Australia and New Zealands.
b : Indicative interim working level due to Insufficient Data (ID) to derive a reliable trigger value
c : Polychorinated Biphenyls.

TABLE Q
PHOSPHORUS AND NITROGEN TEST RESULTS
GROUNDWATER SAMPLES
(Ref No: 12576/1-AA)

Analyte / Sample Location	TOTAL PHOSPHORUS (mg/L)	NITROGEN (mg/L)				
		NITRATE (NO_3 - N)	NITRITE (NO_2 - N)	AMMONIA (NH_3-N)	TOTAL KJELDAHL NITROGEN (TKN)	TOTAL NITROGEN
GROUNDWATER SAMPLES						
Groundwater MW1-1	1.6	<0.25	<0.005	0.63	3.0	3.0
Groundwater MW2-1	0.23	<0.10	<0.005	0.07	0.82	0.83
Limits of Reporting (LOR)	0.05	0.005	0.005	0.01	0.05	NA
ANZ [a] Guidelines for Fresh and Marine Water Quality (2000)						
Aquatic Ecosystems (Trigger Values)						
Fresh water (95% Protection)		0.7		0.9		
Irrigation Water (Trigger Values)						
LTV	0.05					5
STV	0.8-12					25-125
Livestock Drinking water		400-1500mg/kg	30			
Water for recreational purposes		10	1	0.01		
Australian Drinking Water Guidelines (2004)						
Drinking water (Health Values)		50	3	b		
Drinking water (Aesthetic Values)				0.5		

Notes : a : ANZ = Australia and New Zealands
b : Insufficient Data to set a guideline value based on health consideration.
NA : Not Applicable

APPENDIX K

SAMPLING PROCEDURE FOR CONTAMINATION ASSESSMENT AND DATA QUALITY INDICATORS

The sampling procedures adopted for contamination assessment were as follows;

- Bulk soil samples from test pits were excavated using a standard excavator, over the depth interval nominated by the Environmental Scientist.
- A representative soil sample was recovered directly from the bulk excavator bucket sample, using a stainless steel trowel, or directly using a stainless steel trowel at sample locations. The stainless steel trowel was decontaminated prior to use in order to prevent cross contamination. Refer to Section **9.2** for details of the procedures for decontamination of the trowel.
- To minimise the potential loss of volatiles, the soil sample was immediately transferred to a labelled, laboratory supplied, 250ml glass jar and sealed with an airtight, Teflon screw top lid. The fully filled jar was then placed in a chilled container.
- The recovered soil sample and fibro-cement pieces for asbestos analysis were transferred into separate small plastic zip-lock bags and placed in a chilled container.

A rinsate water sample was collected and placed in a glass bottle supplied by the laboratory at the end of each day of field work. The fully filled bottle was labelled and placed in a chilled container.

In order to ensure the analytical performance of the primary laboratory, duplicate and split samples were also prepared and placed in a chilled container.

At completion of each day of field sampling, the chilled container was transported to our Penrith office and transferred to a refrigerator where the temperature was maintained below 4°C.

The chilled containers with the trip spike sample, were forwarded to the primary laboratory SGS Environmental Services (SGS) and the secondary laboratory, Envirolab Services Pty Ltd (Envirolab), both NATA accredited. Chains of Custody (COC) were then forwarded to the laboratories.

On receipt of the samples and COC, the laboratories returned the Sample Receipt Confirmation verifying the integrity of all samples received.

In order to maximise the spatial coverage of the analysis, discrete topsoil, natural soil and sediment samples were composited in the laboratory for chemical analysis of non-volatiles. Compositing of soil samples is suggested in "Sampling Design Guidelines for Contaminated Sites"-1995, EPA.

The methodology for compositing samples was generally adapted from "Composite Sampling, National Environmental Health Forum Monographs, Soil Services No 3", 1996-William H Lock, as follows;

- Three (3) equal-mass constituent samples were included in a composite sample.
- Each constituent sample was homogenised before sub-sampling and compositing of material was undertaken.

The following table details the compositing undertaken by the primary laboratory, as specified in the COC prepared by Geotechnique:

COMPOSITE SAMPLE	SUB-SAMPLES
Composite C1	TP1 (0-0.1) + TP14 (0-0.1m) + TP15 (0-0.1m)
Composite C2	TP2 (0-0.1m) + TP4 (0-0.1m) + TP5(0-0.1m)
Composite C3	TP6 (0-0.15m) + TP8 (0-0.15m) + TP13 (0-0.15m)
Composite C4	TP7 (0-0.15m) + TP11 (0-0.15m) + TP22 (0-0.15m)
Composite C5	TP9 (0-0.1m) + TP18 (0-0.1m) + TP19 (0-0.1m)
Composite C6	TP12 (0-0.1m) + TP16 (0-0.1m) + TP21 (0-0.1m)
Composite C7	TP25 (0-0.15m) + TP26 (0-0.15m) + TP31 (0-0.15m)
Composite C8	TP27 (0-0.15m) + TP33 (0-0.15m) + TP34 (0-0.1m)
Composite C9	TP28 (0-0.1m) + TP29 (0-0.1m) + TP36 (0-0.1m)
Composite C10	TP30 (0-0.1m) + TP32 (0-0.15m) + TP35 (0-0.1m)
Composite C11	SD1 (0-0.1m) + SD2 (0-0.1m) + SD3 (0-0.1m)
Composite C12	TP3 (0-0.1m) + TP17 (0-0.1m) + TP20 (0-0.15m)
Composite C13	TP37 (0-0.15m) + TP38 (0-0.15m) + TP40 (0-0.15m)
Composite C14	TP39 (0-0.1m) + TP42 (0-0.1m) + TP43 (0-0.15m)
Composite C15	TP44 (0-0.1m) + TP45 (0-0.1m) + TP46 (0-0.1m)
Composite C16	TP47 (0.5-0.8m) + TP50 (0.3-0.6m) + TP55 (0.5-0.8m)
Composite C17	TP48 (0-0.1m) + TP49 (0-0.15m) + TP51 (0-0.15m)
Composite C18	TP52 (0-0.15m) + TP56 (0-0.1m) + TP57 (0-0.1m)
Composite C19	TP54 (0-0.3m) + TP55 (0-0.3m) + TP58 (0-0.15m)

On the day of water sampling (16 November 2011), monitoring wells MW1 and MW2 were purged using the Super Twister Pump. A calibrated Water Quality Meter (Model: TPS 90FLMV) was used to measure Temperature, Oxidisation Reduction Potential (ORP), Dissolved Oxygen, Conductivity and pH of the groundwater. After purging and reaching stable readings, the sample was collected using the same pump. No petroleum hydrocarbon odour was detected in the groundwater samples.

The glass and plastic bottles were filled to zero headspace and sealed with airtight Teflon screw top lids. In order to ensure the analytical performance of the primary laboratory, a split sample was also prepared. The fully filled glass and plastic bottles were labelled and placed in a chilled container.

The chilled containers were forwarded to SGS and Envirolab. Chains of Custody (COC) were then forwarded to the laboratories. On receipt of the samples and COC, the laboratories returned the Sample Receipt Confirmation, verifying the integrity of all samples received.

The following table provides a list of the data quality indicators for the sampling phase of the assessment and the methods adopted in ensuring that the data quality indicators were met.

DATA QUALITY INDICATOR	METHOD(S) OF ACHIEVEMENT
Data Precision and Accuracy	Use of trained and qualified field staff Appropriate industry standard decontamination procedures adopted Rinsate blank water, trip spike, field duplicate, and inter-laboratory duplicate / split samples recovered or prepared
Data Representativeness	Site sample numbers for salinity testing in accordance with DIPNR guidelines. Site sample numbers for geotechnical parameters testing aimed at assessing the broad soil conditions and properties Limited systematic sampling in the open area and a number of judgemental sampling targeting few selected site features, aimed at providing an indication of the potential for contamination within the site. Salinity indicator analytes based on recommendations in DIPNR guidelines. Geotechnical parameter testing based on industry practice Representative coverage of potential contaminants in the open area and few selected site features Groundwater sampling and testing at two monitoring wells.
Documentation Completeness	Preparation of test pit / sample/monitoring well location plan Preparation of soil profile logs Preparation of chain of custody records
Data Completeness	Samples recovered for salinity indicator testing are from the various topographical features of the site. Geotechnical parameter testing was carried out on samples from all soil types identified in the field Potential contamination testing targeted limited systematic samples in the open area and a number of judgemental samples in few selected site features Potential contamination testing targeted for two groundwater samples
Data Comparability	Using appropriate techniques for sample recovery Experienced samplers used Same sampling personnel and equipment used for each day Using appropriate sample storage and transportation methods