

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

81295



- Adelaide: Tel (08) 7221 3500 Fax (08) 8172 1968
- Brisbane: Tel (07) 3608 2500 Fax (07) 3852 2805
- Perth: Tel (08) 9355 7100 Fax (08) 9355 7197
- Sydney: Tel: (02) 8083 1600 Fax (02) 8765 0762
- Lane Cove: Tel: (02) 9911 1000 Fax (02) 9911 1002
- Brisbane: Tel (07) 3608 2500 Fax (07) 3852 2805
- Perth: Tel (08) 9355 7100 Fax (08) 9355 7197
- ACT: Tel: (02) 6248 7966 Fax (02) 6248 7157
- Dilhonn House: Tel: (08) 9328 3488 Fax (08) 9328 3588

Task No:

Laboratory: **SGS**

Project Manager: **Matthew Locke / Sara**

Analysis Request Section

BTEX / TPH	Co-C6
METALS (Specify)	Asbestos
PAHs / PCBs	VOC
OCs / OPs	SVOC
Other	

NOTES

Lab. No.	Sample ID	Sample Location	Sample Depth	Sample Date	Time	Matrix (Soil... etc)	Container Type & Preservative*	T-A-T (Specify)
1	BH23-01-0.15	BH23	0.1-0.15	17-04-12	12:30	Soil	1 bag + 1 bag + 1 ice	5 days
2	BH29-09-1.0	BH29	0.9-1.0					
3	BH29-20-2.1	BH29	2.0-2.1					
4	BH29-35-3.7	BH29	3.5-3.7					
5	BH29-4.5		4.5					
6	BH25-0.4-0.5	BH25		18-02-12				
7	BH25-0.5-0.6							
8	BH25-1.5-1.7							
9	BH25-3.0-3.4							

RELINQUISHED BY:

RECEIVED BY:

Signature: *[Signature]* Date: **18-02-12**

Company: **Coffey Environmental** Time: **14:37**

Signature: *[Signature]* Date: **18/4**

Company: *[Signature]* Time: **2:35**

Sample Receipt Advice: (Lab Use Only)

- All Samples Received in Good Condition
- All Documentation is in Proper Order
- Samples Received Properly Chilled

\* Container Type & Preservation Codes: P - Plastic, G - Solvent Washed Acid Rinsed Glass Bottle, V - Vial, N - Nitric Acid Preserved  
 C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice

Lab. Ref/Batch No. **SE 107335**

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

81296



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 Dilhonn House 2 Bulwer Street, Perth, WA 6000

Task No:

Analysis Request Section

Laboratory: **SGS**

Project Manager: **Matthew Locke / Sana Bowersundran**

Project Name: **SICEEP**

Samplers Name: **Adriana Corona Moth**

Special Instructions: **As coc 81295**

Project No: **GEOTLCOV 29 303AC**

Lab. No.	Sample ID	Sample Location	Sample Depth	Sample Date	Time	Matrix (Soil... etc)	Container Type & Preservative*	T-A-T (Specify)	ANALYSIS REQUESTED	NOTES
10	DUP2	-	-	18-04-12	-	Soil	1 jar + ice	5 days	BTEX / TPH METALS (Specify) PAHs / PHENOLS OCs / OPs BTEX TPA Co-C36	
11	TS1	-	-	"	-	"	1 jar + ice			
12	TS1	-	-	"	-	"	1 jar + ice			

RELINQUISHED BY:

RECEIVED BY:

Signature: **[Signature]**  
 Date: **18-04-12**  
 Company: **Coffey Environments**  
 Time: **14:37**

Signature: **[Signature]**  
 Date: **18/4/12**  
 Company: **[Signature]**  
 Time: **2:75**

Sample Receipt Advice: (Lab Use Only)

All Samples Received in Good Condition...   
 All Documentation is in Proper Order...   
 Samples Received Properly Chilled...

Lab. Ref/Batch No.

**SE 107335**

## CLIENT DETAILS

Contact **Matthew Locke**  
 Client **Coffey Geotechnics Pty Ltd**  
 Address **Unit 8, 12 Mars Road  
 NSW 2066**

Telephone **02 9911 1099**  
 Facsimile **02 9911 1002**  
 Email **matthew\_locke@coffey.com**

Project **GEOTLCOV24303AC - SICEEP**  
 Order Number **81295-6**  
 Samples **11**

## 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 **SE107335 R0**  
 Report Number **0000026523**  
 Date Reported **01 May 2012**  
 Date Received **18 Apr 2012**

## COMMENTS

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

No respirable fibres detected using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

## SIGNATORIES



Andy Sutton  
Organics Chemist



Dong Liang  
Inorganics Metals Team Leader



Huong Crawford  
Laboratory Manager



Ravee Sivasubramaniam  
Hygienist

	Sample Number	SE107335.001	SE107335.002	SE107335.003	SE107335.004	SE107335.005
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	17 Apr 2012	17 Apr 2012	17 Apr 2012	17 Apr 2012	18 Apr 2012	17 Apr 2012
Sample Name	BH29_0.4-0.5	BH29_0.9-1.0	BH29_2.0-2.1	BH25_1.5-1.7		Dup 1

Parameter Units LOR

### VOC's in Soil Method: AN433/AN434

Monocyclic Aromatic Hydrocarbons

Parameter	Units	LOR	SE107335.001	SE107335.002	SE107335.003	SE107335.004	SE107335.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

#### Surrogates

Parameter	Units	LOR	SE107335.001	SE107335.002	SE107335.003	SE107335.004	SE107335.005
Dibromofluoromethane (Surrogate)	%	-	94	94	93	93	93
d4-1,2-dichloroethane (Surrogate)	%	-	102	102	100	100	102
d8-toluene (Surrogate)	%	-	102	101	101	101	101
Bromofluorobenzene (Surrogate)	%	-	92	94	93	91	89

#### Totals

Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	-	0	0	0	0	0

### Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434

TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
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#### Surrogates

Trifluorotoluene (Surrogate)	%	-	86	79	78	74	76
Dibromofluoromethane (Surrogate)	%	-	-	-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-	-	-	-	-
d8-toluene (Surrogate)	%	-	-	-	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-	-	-	-

### TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	50	2500	840	<50	190	<50
TRH C29-C36	mg/kg	50	1700	380	<50	55	<50

#### Surrogates

TRH (Surrogate)	%	-	-	-	-	-	-
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### PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	0.1	2.6	<0.1	0.2	<0.1
Acenaphthylene	mg/kg	0.1	0.1	4.7	<0.1	0.5	0.1
Acenaphthene	mg/kg	0.1	0.2	2.5	<0.1	0.2	<0.1
Fluorene	mg/kg	0.1	0.3	5.5	<0.1	0.5	0.2
Phenanthrene	mg/kg	0.1	3.2	69	0.6	3.1	1.9
Anthracene	mg/kg	0.1	0.7	13	0.2	1.2	0.5
Fluoranthene	mg/kg	0.1	1.5	53	0.5	3.9	1.6
Pyrene	mg/kg	0.1	1.3	51	0.5	3.7	1.6
Benzo(a)anthracene	mg/kg	0.1	0.8	26	0.2	2.2	0.6
Chrysene	mg/kg	0.1	0.8	14	0.2	1.4	0.5
Benzo(b)fluoranthene	mg/kg	0.1	0.7	21	0.2	1.9	0.6
Benzo(k)fluoranthene	mg/kg	0.1	0.4	5.6	0.1	0.7	0.2
Benzo(a)pyrene	mg/kg	0.1	0.5	16	0.1	1.6	0.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.3	8.1	<0.1	0.7	0.2
Dibenzo(a,h)anthracene	mg/kg	0.1	<0.1	2.5	<0.1	0.2	<0.1
Benzo(ghi)perylene	mg/kg	0.1	0.5	9.3	<0.1	0.8	0.3
Total PAH (Vic EPA)	mg/kg	0.8	11	300	2.3	23	8.5

#### Surrogates

d5-nitrobenzene (Surrogate)	%	-	116	102	104	124	113
2-fluorobiphenyl (Surrogate)	%	-	100	125	116	118	112



	Sample Number	SE107335.006	SE107335.007	SE107335.008	SE107335.009	SE107335.010
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	18 Apr 2012	18 Apr 2012	18 Apr 2012	18 Apr 2012	18 Apr 2012	18 Apr 2012
Sample Name	BH25_0.4-0.5	BH25_0.5-0.6	BH25_4.5-4.9	Dup 2		TB1

Parameter Units LOR

### Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434 (continued)

Bromofluorobenzene (Surrogate)	%	-	-	-	-	-	-
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### TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	-	<20	<20	<20	-
TRH C15-C28	mg/kg	50	-	<50	<50	<50	-
TRH C29-C36	mg/kg	50	-	<50	<50	<50	-

Surrogates

TRH (Surrogate)	%	-	-	-	-	-	-
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### PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	-	<0.1	<0.1	<0.1	-
Acenaphthylene	mg/kg	0.1	-	<0.1	<b>0.1</b>	<0.1	-
Acenaphthene	mg/kg	0.1	-	<0.1	<0.1	<0.1	-
Fluorene	mg/kg	0.1	-	<0.1	<b>0.1</b>	<0.1	-
Phenanthrene	mg/kg	0.1	-	<0.1	<b>0.8</b>	<0.1	-
Anthracene	mg/kg	0.1	-	<0.1	<b>0.3</b>	<0.1	-
Fluoranthene	mg/kg	0.1	-	<0.1	<b>1.0</b>	<0.1	-
Pyrene	mg/kg	0.1	-	<0.1	<b>1.0</b>	<0.1	-
Benzo(a)anthracene	mg/kg	0.1	-	<0.1	<b>0.6</b>	<0.1	-
Chrysene	mg/kg	0.1	-	<0.1	<b>0.4</b>	<0.1	-
Benzo(b)fluoranthene	mg/kg	0.1	-	<0.1	<b>0.6</b>	<0.1	-
Benzo(k)fluoranthene	mg/kg	0.1	-	<0.1	<b>0.3</b>	<0.1	-
Benzo(a)pyrene	mg/kg	0.1	-	<0.1	<b>0.5</b>	<0.1	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-	<0.1	<b>0.2</b>	<0.1	-
Dibenzo(a,h)anthracene	mg/kg	0.1	-	<0.1	<0.1	<0.1	-
Benzo(ghi)perylene	mg/kg	0.1	-	<0.1	<b>0.3</b>	<0.1	-
Total PAH (Vic EPA)	mg/kg	0.8	-	<0.8	<b>6.0</b>	<0.8	-

Surrogates

d5-nitrobenzene (Surrogate)	%	-	-	<b>117</b>	<b>126</b>	<b>109</b>	-
2-fluorobiphenyl (Surrogate)	%	-	-	<b>111</b>	<b>104</b>	<b>104</b>	-
d14-p-terphenyl (Surrogate)	%	-	-	<b>119</b>	<b>118</b>	<b>122</b>	-

### Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320

Arsenic, As	mg/kg	3	-	<b>4</b>	<b>12</b>	<b>5</b>	-
Cadmium, Cd	mg/kg	0.3	-	<0.3	<b>0.3</b>	<0.3	-
Chromium, Cr	mg/kg	0.3	-	<b>7.3</b>	<b>21</b>	<b>8.7</b>	-
Copper, Cu	mg/kg	0.5	-	<b>23</b>	<b>63</b>	<b>36</b>	-
Lead, Pb	mg/kg	1	-	<b>13</b>	<b>91</b>	<b>14</b>	-
Nickel, Ni	mg/kg	0.5	-	<b>5.0</b>	<b>4.8</b>	<b>9.8</b>	-
Zinc, Zn	mg/kg	0.5	-	<b>33</b>	<b>95</b>	<b>39</b>	-

### Mercury in Soil Method: AN312

Mercury	mg/kg	0.05	-	<b>0.07</b>	<b>0.18</b>	<0.05	-
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### Fibre Identification in soil Method: AN602

FibreID

Asbestos Detected	No unit	-	No	No	-	-	-
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SemiQuant

Estimated Fibres	%w/w	0.01	<0.01	<0.01	-	-	-
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### Moisture Content Method: AN002

% Moisture	%	0.5	-	<b>18</b>	<b>13</b>	<b>20</b>	<0.5
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Sample Number SE107335.011  
 Sample Matrix Soil  
 Sample Date 18 Apr 2012  
 Sample Name TS1

Parameter	Units	LOR
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**VOC's in Soil Method: AN433/AN434**

Monocyclic Aromatic Hydrocarbons

Benzene	mg/kg	0.1	[94%]
Toluene	mg/kg	0.1	[94%]
Ethylbenzene	mg/kg	0.1	[92%]
m/p-xylene	mg/kg	0.2	[93%]
o-xylene	mg/kg	0.1	[91%]

Surrogates

Dibromofluoromethane (Surrogate)	%	-	<b>99</b>
d4-1,2-dichloroethane (Surrogate)	%	-	<b>102</b>
d8-toluene (Surrogate)	%	-	<b>101</b>
Bromofluorobenzene (Surrogate)	%	-	<b>81</b>

Totals

Total Xylenes*	mg/kg	0.3	-
Total BTEX*	mg/kg	-	-

**Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434**

TRH C6-C9	mg/kg	20	-
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Surrogates

Trifluorotoluene (Surrogate)	%	-	-
Dibromofluoromethane (Surrogate)	%	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-
d8-toluene (Surrogate)	%	-	-
Bromofluorobenzene (Surrogate)	%	-	-

**TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403**

TRH C10-C14	mg/kg	20	-
TRH C15-C28	mg/kg	50	-
TRH C29-C36	mg/kg	50	-

Surrogates

TRH (Surrogate)	%	-	-
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**PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420**

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)fluoranthene	mg/kg	0.1	-
Benzo(k)fluoranthene	mg/kg	0.1	-
Benzo(a)pyrene	mg/kg	0.1	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-
Dibenzo(a&h)anthracene	mg/kg	0.1	-
Benzo(ghi)perylene	mg/kg	0.1	-
Total PAH (Vic EPA)	mg/kg	0.8	-

Sample Number SE107335.011  
 Sample Matrix Soil  
 Sample Date 18 Apr 2012  
 Sample Name TS1

Parameter	Units	LOR
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**PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)**

Surrogates

Parameter	Units	LOR
d5-nitrobenzene (Surrogate)	%	-
2-fluorobiphenyl (Surrogate)	%	-
d14-p-terphenyl (Surrogate)	%	-

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320**

Parameter	Units	LOR
Arsenic, As	mg/kg	3
Cadmium, Cd	mg/kg	0.3
Chromium, Cr	mg/kg	0.3
Copper, Cu	mg/kg	0.5
Lead, Pb	mg/kg	1
Nickel, Ni	mg/kg	0.5
Zinc, Zn	mg/kg	0.5

**Mercury in Soil Method: AN312**

Parameter	Units	LOR
Mercury	mg/kg	0.05

**Fibre Identification in soil Method: AN602**

FibreID

Parameter	Units	LOR
Asbestos Detected	No unit	-

SemiQuant

Parameter	Units	LOR
Estimated Fibres	%w/w	0.01

**Moisture Content Method: AN002**

Parameter	Units	LOR
% Moisture	%	0.5

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.

**Mercury in Soil Method: ME-(AU)-[ENV]AN312**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Mercury	LB018680	mg/kg	0.05	<0.05	0%	98%

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB018626	mg/kg	0.1	<0.1	104%	98%	92%
Acenaphthylene	LB018626	mg/kg	0.1	<0.1	29%	106%	102%
Acenaphthene	LB018626	mg/kg	0.1	<0.1	24%	99%	95%
Fluorene	LB018626	mg/kg	0.1	<0.1	55%	NA	NA
Phenanthrene	LB018626	mg/kg	0.1	<0.1	20%	106%	109%
Anthracene	LB018626	mg/kg	0.1	<0.1	31%	105%	98%
Fluoranthene	LB018626	mg/kg	0.1	<0.1	14%	108%	111%
Pyrene	LB018626	mg/kg	0.1	<0.1	14%	110%	110%
Benzo(a)anthracene	LB018626	mg/kg	0.1	<0.1	38%	NA	NA
Chrysene	LB018626	mg/kg	0.1	<0.1	5%	NA	NA
Benzo(b)fluoranthene	LB018626	mg/kg	0.1	<0.1	23%	NA	NA
Benzo(k)fluoranthene	LB018626	mg/kg	0.1	<0.1	21%	NA	NA
Benzo(a)pyrene	LB018626	mg/kg	0.1	<0.1	9%	118%	109%
Indeno(1,2,3-cd)pyrene	LB018626	mg/kg	0.1	<0.1	18%	NA	NA
Dibenzo(a&h)anthracene	LB018626	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(ghi)perylene	LB018626	mg/kg	0.1	<0.1	6%	NA	NA
Total PAH (Vic EPA)	LB018626	mg/kg	0.8	<0.8	18%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d5-nitrobenzene (Surrogate)	LB018626	%	-	103%	6%	106%	116%
2-fluorobiphenyl (Surrogate)	LB018626	%	-	98%	17%	103%	105%
d14-p-terphenyl (Surrogate)	LB018626	%	-	112%	1%	117%	113%

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: ME-(AU)-[ENV]AN040/AN320**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB018677	mg/kg	3	<3	27%	100%	90%
Cadmium, Cd	LB018677	mg/kg	0.3	<0.3	0%	98%	89%
Chromium, Cr	LB018677	mg/kg	0.3	<0.3	16%	98%	
Copper, Cu	LB018677	mg/kg	0.5	<0.5	36%	100%	80%
Lead, Pb	LB018677	mg/kg	1	<1	3 - 5%	99%	93%
Nickel, Ni	LB018677	mg/kg	0.5	<0.5	4%	100%	88%
Zinc, Zn	LB018677	mg/kg	0.5	<0.5	7%	100%	90%

**TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C10-C14	LB018626	mg/kg	20	<20	0 - 22%	105%	115%
TRH C15-C28	LB018626	mg/kg	50	<50	0 - 16%	98%	420%
TRH C29-C36	LB018626	mg/kg	50	<50	0 - 24%	93%	105%

**VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434**

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Benzene	LB018544	mg/kg	0.1	<0.1	0%	110%
Toluene	LB018544	mg/kg	0.1	<0.1	0%	114%
Ethylbenzene	LB018544	mg/kg	0.1	<0.1	0%	101%
m/p-xylene	LB018544	mg/kg	0.2	<0.2	0%	109%
o-xylene	LB018544	mg/kg	0.1	<0.1	0%	111%

Surrogates

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.

**VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434 (continued)**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Dibromofluoromethane (Surrogate)	LB018544	%	-	96%	1%	93%
d4-1,2-dichloroethane (Surrogate)	LB018544	%	-	101%	1%	99%
d8-toluene (Surrogate)	LB018544	%	-	102%	1%	103%
Bromofluorobenzene (Surrogate)	LB018544	%	-	85%	1%	94%

Totals

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Total Xylenes*	LB018544	mg/kg	0.3	<0.3	0%	NA
Total BTEX*	LB018544	mg/kg	-	0	NA	NA

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
TRH C6-C9	LB018544	mg/kg	20	<20	0%	115%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Trifluorotoluene (Surrogate)	LB018544	%	-	78%	8%	82%

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, 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
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 differential 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.
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.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic 'clues', which provide a reasonable degree of certainty, dispersion staining is a mandatory 'clue' for positive identification. If sufficient 'clues' are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria. Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

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

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-11.pdf>

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Project **GEOTLCOV24303AC - SICEEP**  
 Order Number **81295-6**  
 Samples 11

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SGS Reference SE107335 R0  
 Report Number 0000026525  
 Date Reported 01/05/2012 18:36:35  
 Date Received 18 Apr 2012

COMMENTS

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

No respirable fibres detected using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES



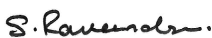
Andy Sutton  
Organics Chemist



Dong Liang  
Inorganics Metals Team Leader



Huong Crawford  
Laboratory Manager



Ravee Sivasubramaniam  
Hygienist

RESULTS

Fibre Identification in soil

Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w
SE107335.001	BH29_0.4-0.5	Soil	74g Soil,clay,rocks	17 Apr 2012	No Asbestos Found Organic Fibres Detected	<0.01
SE107335.006	BH25_0.4-0.5	Soil	45g Soil,clay,rocks	18 Apr 2012	No Asbestos Found Organic Fibres Detected	<0.01
SE107335.007	BH25_0.5-0.6	Soil	30g Soil,clay,rocks	18 Apr 2012	No Asbestos Found Organic Fibres Detected	<0.01

METHOD

METHODOLOGY SUMMARY

AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	Not Accredited
Amphiboles	-	Amosite and/or Crocidolite			

This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Sampled by the client.

Where reported: 'Asbestos Detected': Asbestos detected by polarized light microscopy, including dispersion staining.

Where reported: 'No Asbestos Found': No Asbestos Found by polarized light microscopy, including dispersion staining.

Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarized light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos-containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

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-11.pdf>

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## STATEMENT OF QA/QC PERFORMANCE

SE107335 R0

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Project **GEOTLCOV24303AC - SICEEP**  
Order Number **81295-6**  
Samples **11**

### LABORATORY DETAILS

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Email **au.environmental.sydney@sgs.com**

SGS Reference **SE107335 R0**  
Report Number **0000026524**  
Date Reported **01 May 2012**

### COMMENTS

All the laboratory data for each environmental matrix was compared to 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 with the exception of the following:

Duplicate	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	2 items
	Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest	1 item
Matrix Spike	TRH (Total Recoverable Hydrocarbons) in Soil	1 item

### SAMPLE SUMMARY

Sample counts by matrix	11 Soils	Type of documentation received	COC
Date documentation received	19/4/12@10:50am	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.6°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		

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.

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 or **Red** with an appended dagger symbol (†) 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.

### Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH29_0.4-0.5	SE107335.001	LB018942	17 Apr 2012	18 Apr 2012	17 Apr 2013	27 Apr 2012	17 Apr 2013	27 Apr 2012
BH25_0.4-0.5	SE107335.006	LB018942	18 Apr 2012	18 Apr 2012	18 Apr 2013	27 Apr 2012	18 Apr 2013	27 Apr 2012
BH25_0.5-0.6	SE107335.007	LB018942	18 Apr 2012	18 Apr 2012	18 Apr 2013	27 Apr 2012	18 Apr 2013	27 Apr 2012

### Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH29_0.4-0.5	SE107335.001	LB018680	17 Apr 2012	18 Apr 2012	15 May 2012	24 Apr 2012	15 May 2012	27 Apr 2012
BH29_0.9-1.0	SE107335.002	LB018680	17 Apr 2012	18 Apr 2012	15 May 2012	24 Apr 2012	15 May 2012	27 Apr 2012
BH29_2.0-2.1	SE107335.003	LB018680	17 Apr 2012	18 Apr 2012	15 May 2012	24 Apr 2012	15 May 2012	27 Apr 2012
BH25_1.5-1.7	SE107335.004	LB018680	18 Apr 2012	18 Apr 2012	16 May 2012	24 Apr 2012	16 May 2012	27 Apr 2012
Dup 1	SE107335.005	LB018680	17 Apr 2012	18 Apr 2012	15 May 2012	24 Apr 2012	15 May 2012	27 Apr 2012
BH25_0.5-0.6	SE107335.007	LB018680	18 Apr 2012	18 Apr 2012	16 May 2012	24 Apr 2012	16 May 2012	27 Apr 2012
BH25_4.5-4.9	SE107335.008	LB018680	18 Apr 2012	18 Apr 2012	16 May 2012	24 Apr 2012	16 May 2012	27 Apr 2012
Dup 2	SE107335.009	LB018680	18 Apr 2012	18 Apr 2012	16 May 2012	24 Apr 2012	16 May 2012	27 Apr 2012

### Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH29_0.4-0.5	SE107335.001	LB018588	17 Apr 2012	18 Apr 2012	01 May 2012	23 Apr 2012	28 Apr 2012	24 Apr 2012
BH29_0.9-1.0	SE107335.002	LB018588	17 Apr 2012	18 Apr 2012	01 May 2012	23 Apr 2012	28 Apr 2012	24 Apr 2012
BH29_2.0-2.1	SE107335.003	LB018588	17 Apr 2012	18 Apr 2012	01 May 2012	23 Apr 2012	28 Apr 2012	24 Apr 2012
BH25_1.5-1.7	SE107335.004	LB018588	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	28 Apr 2012	24 Apr 2012
Dup 1	SE107335.005	LB018588	17 Apr 2012	18 Apr 2012	01 May 2012	23 Apr 2012	28 Apr 2012	24 Apr 2012
BH25_0.5-0.6	SE107335.007	LB018588	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	28 Apr 2012	24 Apr 2012
BH25_4.5-4.9	SE107335.008	LB018588	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	28 Apr 2012	24 Apr 2012
Dup 2	SE107335.009	LB018588	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	28 Apr 2012	24 Apr 2012
TB1	SE107335.010	LB018588	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	28 Apr 2012	24 Apr 2012

### PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH29_0.4-0.5	SE107335.001	LB018626	17 Apr 2012	18 Apr 2012	01 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
BH29_0.9-1.0	SE107335.002	LB018626	17 Apr 2012	18 Apr 2012	01 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
BH29_2.0-2.1	SE107335.003	LB018626	17 Apr 2012	18 Apr 2012	01 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
BH25_1.5-1.7	SE107335.004	LB018626	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
Dup 1	SE107335.005	LB018626	17 Apr 2012	18 Apr 2012	01 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
BH25_0.5-0.6	SE107335.007	LB018626	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
BH25_4.5-4.9	SE107335.008	LB018626	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
Dup 2	SE107335.009	LB018626	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012

### Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH29_0.4-0.5	SE107335.001	LB018677	17 Apr 2012	18 Apr 2012	14 Oct 2012	24 Apr 2012	14 Oct 2012	26 Apr 2012
BH29_0.9-1.0	SE107335.002	LB018677	17 Apr 2012	18 Apr 2012	14 Oct 2012	24 Apr 2012	14 Oct 2012	26 Apr 2012
BH29_2.0-2.1	SE107335.003	LB018677	17 Apr 2012	18 Apr 2012	14 Oct 2012	24 Apr 2012	14 Oct 2012	26 Apr 2012
BH25_1.5-1.7	SE107335.004	LB018677	18 Apr 2012	18 Apr 2012	15 Oct 2012	24 Apr 2012	15 Oct 2012	26 Apr 2012
Dup 1	SE107335.005	LB018677	17 Apr 2012	18 Apr 2012	14 Oct 2012	24 Apr 2012	14 Oct 2012	26 Apr 2012
BH25_0.5-0.6	SE107335.007	LB018677	18 Apr 2012	18 Apr 2012	15 Oct 2012	24 Apr 2012	15 Oct 2012	26 Apr 2012
BH25_4.5-4.9	SE107335.008	LB018677	18 Apr 2012	18 Apr 2012	15 Oct 2012	24 Apr 2012	15 Oct 2012	26 Apr 2012
Dup 2	SE107335.009	LB018677	18 Apr 2012	18 Apr 2012	15 Oct 2012	24 Apr 2012	15 Oct 2012	26 Apr 2012

### TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH29_0.4-0.5	SE107335.001	LB018626	17 Apr 2012	18 Apr 2012	01 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
BH29_0.9-1.0	SE107335.002	LB018626	17 Apr 2012	18 Apr 2012	01 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
BH29_2.0-2.1	SE107335.003	LB018626	17 Apr 2012	18 Apr 2012	01 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
BH25_1.5-1.7	SE107335.004	LB018626	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
Dup 1	SE107335.005	LB018626	17 Apr 2012	18 Apr 2012	01 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
BH25_0.5-0.6	SE107335.007	LB018626	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
BH25_4.5-4.9	SE107335.008	LB018626	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012
Dup 2	SE107335.009	LB018626	18 Apr 2012	18 Apr 2012	02 May 2012	23 Apr 2012	02 Jun 2012	27 Apr 2012

### VOC's in Soil

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

Sample Name	Sample No.	QC Ref
-------------	------------	--------

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.

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 or **Red** with an appended dagger symbol (†) 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.

### VOC's in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH29_0.4-0.5	SE107335.001	LB018544	17 Apr 2012	18 Apr 2012	01 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
BH29_0.9-1.0	SE107335.002	LB018544	17 Apr 2012	18 Apr 2012	01 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
BH29_2.0-2.1	SE107335.003	LB018544	17 Apr 2012	18 Apr 2012	01 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
BH25_1.5-1.7	SE107335.004	LB018544	18 Apr 2012	18 Apr 2012	02 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
Dup 1	SE107335.005	LB018544	17 Apr 2012	18 Apr 2012	01 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
BH25_0.5-0.6	SE107335.007	LB018544	18 Apr 2012	18 Apr 2012	02 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
BH25_4.5-4.9	SE107335.008	LB018544	18 Apr 2012	18 Apr 2012	02 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
Dup 2	SE107335.009	LB018544	18 Apr 2012	18 Apr 2012	02 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
TB1	SE107335.010	LB018544	18 Apr 2012	18 Apr 2012	02 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
TS1	SE107335.011	LB018544	18 Apr 2012	18 Apr 2012	02 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012

### Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH29_0.4-0.5	SE107335.001	LB018544	17 Apr 2012	18 Apr 2012	01 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
BH29_0.9-1.0	SE107335.002	LB018544	17 Apr 2012	18 Apr 2012	01 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
BH29_2.0-2.1	SE107335.003	LB018544	17 Apr 2012	18 Apr 2012	01 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
BH25_1.5-1.7	SE107335.004	LB018544	18 Apr 2012	18 Apr 2012	02 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
Dup 1	SE107335.005	LB018544	17 Apr 2012	18 Apr 2012	01 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
BH25_0.5-0.6	SE107335.007	LB018544	18 Apr 2012	18 Apr 2012	02 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
BH25_4.5-4.9	SE107335.008	LB018544	18 Apr 2012	18 Apr 2012	02 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
Dup 2	SE107335.009	LB018544	18 Apr 2012	18 Apr 2012	02 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
TB1	SE107335.010	LB018544	18 Apr 2012	18 Apr 2012	02 May 2012	20 Apr 2012	30 May 2012	26 Apr 2012
TS1	SE107335.011	LB018544	18 Apr 2012	18 Apr 2012	02 May 2012	20 Apr 2012	30 May 2012	27 Apr 2012

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 **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) In Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH29_0.4-0.5	SE107335.001	%	60 - 130%	100
	BH29_0.9-1.0	SE107335.002	%	60 - 130%	125
	BH29_2.0-2.1	SE107335.003	%	60 - 130%	116
	BH25_1.5-1.7	SE107335.004	%	60 - 130%	118
	Dup 1	SE107335.005	%	60 - 130%	112
	BH25_0.5-0.6	SE107335.007	%	60 - 130%	111
	BH25_4.5-4.9	SE107335.008	%	60 - 130%	104
	Dup 2	SE107335.009	%	60 - 130%	104
	d14-p-terphenyl (Surrogate)	BH29_0.4-0.5	SE107335.001	%	60 - 130%
BH29_0.9-1.0		SE107335.002	%	60 - 130%	117
BH29_2.0-2.1		SE107335.003	%	60 - 130%	121
BH25_1.5-1.7		SE107335.004	%	60 - 130%	125
Dup 1		SE107335.005	%	60 - 130%	113
BH25_0.5-0.6		SE107335.007	%	60 - 130%	119
BH25_4.5-4.9		SE107335.008	%	60 - 130%	118
Dup 2		SE107335.009	%	60 - 130%	122
d5-nitrobenzene (Surrogate)	BH29_0.4-0.5	SE107335.001	%	60 - 130%	116
	BH29_0.9-1.0	SE107335.002	%	60 - 130%	102
	BH29_2.0-2.1	SE107335.003	%	60 - 130%	104
	BH25_1.5-1.7	SE107335.004	%	60 - 130%	124
	Dup 1	SE107335.005	%	60 - 130%	113
	BH25_0.5-0.6	SE107335.007	%	60 - 130%	117
	BH25_4.5-4.9	SE107335.008	%	60 - 130%	126
	Dup 2	SE107335.009	%	60 - 130%	109

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH29_0.4-0.5	SE107335.001	%	60 - 130%	92
	BH29_0.9-1.0	SE107335.002	%	60 - 130%	94
	BH29_2.0-2.1	SE107335.003	%	60 - 130%	93
	BH25_1.5-1.7	SE107335.004	%	60 - 130%	91
	Dup 1	SE107335.005	%	60 - 130%	89
	BH25_0.5-0.6	SE107335.007	%	60 - 130%	92
	BH25_4.5-4.9	SE107335.008	%	60 - 130%	85
	Dup 2	SE107335.009	%	60 - 130%	81
	TB1	SE107335.010	%	60 - 130%	86
	TS1	SE107335.011	%	60 - 130%	81
	d4-1,2-dichloroethane (Surrogate)	BH29_0.4-0.5	SE107335.001	%	60 - 130%
BH29_0.9-1.0		SE107335.002	%	60 - 130%	102
BH29_2.0-2.1		SE107335.003	%	60 - 130%	100
BH25_1.5-1.7		SE107335.004	%	60 - 130%	100
Dup 1		SE107335.005	%	60 - 130%	102
BH25_0.5-0.6		SE107335.007	%	60 - 130%	101
BH25_4.5-4.9		SE107335.008	%	60 - 130%	100
Dup 2		SE107335.009	%	60 - 130%	100
TB1		SE107335.010	%	60 - 130%	101
TS1		SE107335.011	%	60 - 130%	102
d8-toluene (Surrogate)		BH29_0.4-0.5	SE107335.001	%	60 - 130%
	BH29_0.9-1.0	SE107335.002	%	60 - 130%	101
	BH29_2.0-2.1	SE107335.003	%	60 - 130%	101
	BH25_1.5-1.7	SE107335.004	%	60 - 130%	101
	Dup 1	SE107335.005	%	60 - 130%	101
	BH25_0.5-0.6	SE107335.007	%	60 - 130%	103
	BH25_4.5-4.9	SE107335.008	%	60 - 130%	101
	Dup 2	SE107335.009	%	60 - 130%	100
	TB1	SE107335.010	%	60 - 130%	102
	TS1	SE107335.011	%	60 - 130%	101
	Dibromofluoromethane (Surrogate)	BH29_0.4-0.5	SE107335.001	%	60 - 130%
BH29_0.9-1.0		SE107335.002	%	60 - 130%	94
BH29_2.0-2.1		SE107335.003	%	60 - 130%	93
BH25_1.5-1.7		SE107335.004	%	60 - 130%	93

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 **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	Dup 1	SE107335.005	%	60 - 130%	93
	BH25_0.5-0.6	SE107335.007	%	60 - 130%	93
	BH25_4.5-4.9	SE107335.008	%	60 - 130%	95
	Dup 2	SE107335.009	%	60 - 130%	91
	TB1	SE107335.010	%	60 - 130%	92
	TS1	SE107335.011	%	60 - 130%	99

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Trifluorotoluene (Surrogate)	BH29_0.4-0.5	SE107335.001	%	60 - 130%	86
	BH29_0.9-1.0	SE107335.002	%	60 - 130%	79
	BH29_2.0-2.1	SE107335.003	%	60 - 130%	78
	BH25_1.5-1.7	SE107335.004	%	60 - 130%	74
	Dup 1	SE107335.005	%	60 - 130%	76
	BH25_0.5-0.6	SE107335.007	%	60 - 130%	79
	BH25_4.5-4.9	SE107335.008	%	60 - 130%	76
	Dup 2	SE107335.009	%	60 - 130%	100
	TB1	SE107335.010	%	60 - 130%	98

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

**Mercury in Soil**

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB018680.001	Mercury	mg/kg	0.05	<0.05

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB018626.001	Naphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	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
Surrogates	d5-nitrobenzene (Surrogate)	%	-	103
	2-fluorobiphenyl (Surrogate)	%	-	98
	d14-p-terphenyl (Surrogate)	%	-	112

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest**

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB018677.001	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

Sample Number	Parameter	Units	LOR	Result
LB018626.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	50	<50
	TRH C29-C36	mg/kg	50	<50

**VOC's in Soil**

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

Sample Number	Parameter	Units	LOR	Result	
LB018544.001	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
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	96
		d4-1,2-dichloroethane (Surrogate)	%	-	101
		d8-toluene (Surrogate)	%	-	102
		Bromofluorobenzene (Surrogate)	%	-	85
	Totals	Total BTEX*	mg/kg	-	0

**Volatile Petroleum Hydrocarbons in Soil**

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

Sample Number	Parameter	Units	LOR	Result
LB018544.001	TRH C6-C9	mg/kg	20	<20
	Surrogates	Trifluorotoluene (Surrogate)	%	-

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula:  $RPD = |OriginalResult - ReplicateResult| \times 100 / Mean$

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times SDL / Mean + LR$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107335.009	LB018680.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE107464.004	LB018680.024	Mercury	mg/kg	0.05	0.01812713600.0183199778		200	0

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107335.001	LB018626.004	Naphthalene	mg/kg	0.1	0.1	0.4	73	104 @
		Acenaphthylene	mg/kg	0.1	0.1	0.2	101	29
		Acenaphthene	mg/kg	0.1	0.2	0.3	70	24
		Fluorene	mg/kg	0.1	0.3	0.6	53	55 @
		Phenanthrene	mg/kg	0.1	3.2	4.0	33	20
		Anthracene	mg/kg	0.1	0.7	0.9	43	31
		Fluoranthene	mg/kg	0.1	1.5	1.3	37	14
		Pyrene	mg/kg	0.1	1.3	1.5	37	14
		Benzo(a)anthracene	mg/kg	0.1	0.8	1.2	40	38
		Chrysene	mg/kg	0.1	0.8	0.9	42	5
		Benzo(b)fluoranthene	mg/kg	0.1	0.7	0.8	43	23
		Benzo(k)fluoranthene	mg/kg	0.1	0.4	0.3	60	21
		Benzo(a)pyrene	mg/kg	0.1	0.5	0.6	48	9
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.3	0.3	66	18
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(ghi)perylene	mg/kg	0.1	0.5	0.5	49	6
		Total PAH (Vic EPA)	mg/kg	0.8	11	14	36	18
		Surrogates						
		d5-nitrobenzene (Surrogate)	%	-	116.0	109.0	30	6
		2-fluorobiphenyl (Surrogate)	%	-	100.0	119.0	30	17
		d14-p-terphenyl (Surrogate)	%	-	119.0	118.0	30	1

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN40/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107335.009	LB018677.014	Arsenic, As	mg/kg	3	5	4	92	27
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	8.7	7.4	34	16
		Copper, Cu	mg/kg	0.5	36	25	32	36 @
		Lead, Pb	mg/kg	1	14	15	37	5
		Nickel, Ni	mg/kg	0.5	9.8	9.3	35	4
		Zinc, Zn	mg/kg	0.5	39	36	31	7
SE107375.014	LB018677.024	Lead, Pb	mg/kg	1	460	480	30	3

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107335.001	LB018626.004	TRH C10-C14	mg/kg	20	20	25	119	22
		TRH C15-C28	mg/kg	50	2500	2900	32	16
		TRH C29-C36	mg/kg	50	1700	2100	33	24
SE107350.003	LB018626.016	TRH C10-C14	mg/kg	20	<20	<20	200	0
		TRH C15-C28	mg/kg	50	<50	<50	200	0
		TRH C29-C36	mg/kg	50	<50	<50	200	0

VOC's in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE107350.007	LB018544.022	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	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
		Surrogates	Dibromofluoromethane (Surrogate)	%	-	93.0	92.0	50	1
			d4-1,2-dichloroethane (Surrogate)	%	-	102.0	101.0	50	1
			d8-toluene (Surrogate)	%	-	103.0	102.0	50	1
			Bromofluorobenzene (Surrogate)	%	-	84.0	85.0	50	1
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX*	mg/kg	-	0	0	200	NA

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate	Parameter	Units	LOR
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Duplicates are calculated as Relative Percentage Difference (RPD) using the formula:  $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107350.007	LB018544.021	TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	%	-	91	84	30	8

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 this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

**Mercury in Soil**

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB018680.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	98

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB018626.002	Naphthalene	mg/kg	0.1	3.9	4	60 - 140	98	
	Acenaphthylene	mg/kg	0.1	4.2	4	60 - 140	106	
	Acenaphthene	mg/kg	0.1	3.9	4	60 - 140	99	
	Phenanthrene	mg/kg	0.1	4.3	4	60 - 140	106	
	Anthracene	mg/kg	0.1	4.2	4	60 - 140	105	
	Fluoranthene	mg/kg	0.1	4.3	4	60 - 140	108	
	Pyrene	mg/kg	0.1	4.4	4	60 - 140	110	
	Benzo(a)pyrene	mg/kg	0.1	4.7	4	60 - 140	118	
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	106.0	100	60 - 140	106
		2-fluorobiphenyl (Surrogate)	%	-	103.0	100	60 - 140	103
d14-p-terphenyl (Surrogate)		%	-	117.0	100	60 - 140	117	

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest**

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB018677.002	Arsenic, As	mg/kg	3	50	50	80 - 120	100
	Cadmium, Cd	mg/kg	0.3	49	50	80 - 120	98
	Chromium, Cr	mg/kg	0.3	49	50	80 - 120	98
	Copper, Cu	mg/kg	0.5	50	50	80 - 120	100
	Lead, Pb	mg/kg	1	49	50	80 - 120	99
	Nickel, Ni	mg/kg	0.5	50	50	80 - 120	100
	Zinc, Zn	mg/kg	0.5	50	50	80 - 120	100

**TRH (Total Recoverable Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB018626.002	TRH C10-C14	mg/kg	20	42	40	60 - 140	105
	TRH C15-C28	mg/kg	50	<50	40	60 - 140	98
	TRH C29-C36	mg/kg	50	<50	40	60 - 140	93

**VOC's in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB018544.002	Monocyclic Aromatic	Benzene	mg/kg	0.1	3.3	3	60 - 140	110
		Toluene	mg/kg	0.1	3.4	3	60 - 140	114
		Ethylbenzene	mg/kg	0.1	3.0	3	60 - 140	101
		m/p-xylene	mg/kg	0.2	6.4	5.9	60 - 140	109
		o-xylene	mg/kg	0.1	3.2	2.9	60 - 140	111
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	93.0	100	60 - 140	93
		d4-1,2-dichloroethane (Surrogate)	%	-	99.0	100	60 - 140	99
		d8-toluene (Surrogate)	%	-	103.0	100	60 - 140	103
		Bromofluorobenzene (Surrogate)	%	-	94.0	100	60 - 140	94

**Volatile Petroleum Hydrocarbons in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB018544.002	TRH C6-C9	mg/kg	20	28	24.4	60 - 140	115

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 this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE107335.003	LB018626.007	Naphthalene	mg/kg	0.1	3.7	<0.1	4	92	
		Acenaphthylene	mg/kg	0.1	4.1	<0.1	4	102	
		Acenaphthene	mg/kg	0.1	3.8	<0.1	4	95	
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-	
		Phenanthrene	mg/kg	0.1	4.9	0.6	4	109	
		Anthracene	mg/kg	0.1	4.1	0.2	4	98	
		Fluoranthene	mg/kg	0.1	4.9	0.5	4	111	
		Pyrene	mg/kg	0.1	4.9	0.5	4	110	
		Benzo(a)anthracene	mg/kg	0.1	<0.1	0.2	-	-	
		Chrysene	mg/kg	0.1	<0.1	0.2	-	-	
		Benzo(b)fluoranthene	mg/kg	0.1	<0.1	0.2	-	-	
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.1	-	-	
		Benzo(a)pyrene	mg/kg	0.1	4.5	0.1	4	109	
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-	
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	-	-	
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-	
		Total PAH (Vic EPA)	mg/kg	0.8	35	2.3	-	-	
		Surrogates	d5-nitrobenzene (Surrogate)	%	-	116.0	104.0	100	116
			2-fluorobiphenyl (Surrogate)	%	-	105.0	116.0	100	105
			d14-p-terphenyl (Surrogate)	%	-	113.0	121.0	100	113

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest**

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE107243.070	LB018677.004	Arsenic, As	mg/kg	3	48	3.25444023569	50	90
		Cadmium, Cd	mg/kg	0.3	45	0.22372718855	50	89
		Copper, Cu	mg/kg	0.5	57	16.67517255892	50	80
		Lead, Pb	mg/kg	1	65	18.13509680134	50	93
		Nickel, Ni	mg/kg	0.5	54	9.73268097643	50	88
		Zinc, Zn	mg/kg	0.5	88	42.7636363636	50	90

**TRH (Total Recoverable Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE107335.002	LB018626.006	TRH C10-C14	mg/kg	20	64	<20	40	115
		TRH C15-C28	mg/kg	50	1000	840	40	420 Ⓢ
		TRH C29-C36	mg/kg	50	420	380	40	105

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula:  $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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 Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC 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-11.pdf>

- \* Non-accredited analysis.
- Sample not analysed for this analyte.
- ^ Analysis performed by external laboratory.

- IS Insufficient sample for analysis.
- LNR Sample listed, but not received.
- LOR Limit of reporting.
- QFH QC result is above the upper tolerance.
- QFL QC result is below the lower tolerance.

- ① At least 2 of 3 surrogates are within acceptance criteria.
- ② RPD failed acceptance criteria due to sample heterogeneity.
- ③ Results less than 5 times LOR preclude acceptance criteria for RPD.
- ④ Recovery failed acceptance criteria due to matrix interference.
- ⑤ Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
- ⑥ LOR was raised due to sample matrix interference.
- ⑦ LOR was raised due to dilution of significantly high concentration of analyte in sample.
- ⑧ Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
- ⑨ Recovery failed acceptance criteria due to sample heterogeneity.
- † Refer to Analytical Report comments for further information.

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## AU.SampleReceipt.Sydney (Sydney)

---

**From:** Matthew Locke [Matthew\_Locke@coffey.com]  
**Sent:** Friday, 27 April 2012 9:40 AM  
**To:** AU.SampleReceipt.Sydney (Sydney)  
**Subject:** RE: SGS Sample Receipt Advice (Ref: GEOTLCOV24303AC-SICEEP, Lab Ref: SE107555)

Emily,  
Can you please include an additional test on this lab report.

The sample reference is DUP8 - Please test Sample DUP8 for BTEX / TPH, Metals (8) and PAH.

Can you please confirm receipt of this notification?

Thanks

Matt

-----Original Message-----

**From:** AU.Samplereceipt.Sydney@SGS.com [mailto:AU.Samplereceipt.Sydney@SGS.com]  
**Sent:** Thursday, 26 April 2012 11:24 AM  
**To:** Matthew Locke  
**Subject:** SGS Sample Receipt Advice (Ref: GEOTLCOV24303AC-SICEEP, Lab Ref: SE107555)

Dear Matthew Locke,

Please be advised we have received samples for analysis as detailed in the attached documentation.

Best regards,

Emily Yin  
Sample Receipt Administrator  
SGS Australia Pty Ltd  
Phone: +61 (0)2 8594 0400  
Fax: +61 (0)2 8594 0499

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CILDISCL0005

SGS REF: - SE107555A

DUE DATE: - 3/5/2012

TAT: - STANDARD

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

92344



Philippines:  3rd Floor, JMT Bldg, ADB Ave, Ortigas Ctr, Pasig City, Metro Manila, Philippines ..... Tel (+63) (2) 638 9686 ..... Fax (+63) (2) 687 3518  
 ACT:  2154 Northbourne Ave, Canberra ACT 2601 ..... Tel (02) 6248 7366 ..... Fax (02) 6248 7157  
 NSW:  Level 1, 3 Rider Blvd, Rhodes NSW 2138 ..... Tel (02) 8083 1600 ..... Fax (02) 8765 0762  
 Lot 101, 19 Warabrook Blvd, Warabrook NSW 2304 ..... Tel (02) 4016 2300 ..... Fax (02) 4016 2380  
 1/222 Berkeley Rd, Unanderra NSW 2526 ..... Tel (02) 4272 6071 ..... Fax (02) 4272 6075

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 SA:  Level 1, 2-3 Greenhill Rd, Wayville SA 5034 ..... Tel (08) 7221 3500 ..... Fax (08) 8172 1868  
 TAS:  Coffey Business Centre, 2 Melville St, Hobart TAS 7000 ..... Tel (03) 6108 0100 ..... Fax (03) 6108 0199  
 VIC:  126 Trenerry Cres, Abbotsford VIC 3067 ..... Tel (03) 9473 1400 ..... Fax (03) 9473 1450  
 Level 1, 23 West Pyans St, Newtown VIC 3220 ..... Tel (03) 5215 4600 ..... Fax (03) 5224 1368  
 WA:  61 Duke St, Albany WA 6330 ..... Tel (08) 9892 6400 ..... Fax (08) 9892 6444  
 Suite 2, 53 Burswood Rd, Burswood WA 6100 ..... Tel (08) 9355 7100 ..... Fax (08) 9355 7111  
 Suite 3 & 4, 236 Naturaliste Tce, Dunsborough WA 6281 ..... Tel (08) 9756 7889 ..... Fax (08) 9756 8878

Project No: GEOTLCOV24303AC

Task No:

Project Name: SICEEP

Laboratory: SGS

Samplers Name: Adriana Corona Molk / Jocelin Wijaya / Matthew Locke

Project Manager: Matthew Locke

Special Instructions: All remaining soil to be stored for 36 months after completion of analyses. Please let Matthew know when ready to pickup

Lab. No.	Sample ID	Sample Location	Sample Depth	Sample Date	Time	Matrix (Soil, etc)	Container Type & Preservative	T-A-T (Specify)	Analysis Request Section	NOTES
1	BH11-05-06	BH11	05-06	23/01/12	-	Soil	1gar + 1bag + tie	Standard	BTEX / TPH METALS PAHs / PHENOLS OCs / OPS Asbestos VHC VOC SYOC ASS Screening	SGS 24/01/12 2:10 pm
2	BH11-15-19	"	15-19	"	-	"	1gar + 1tie	"		
	DUPG	"	"	"	-	"	1gar + 1tie	"		
	TB4	"	"	"	-	"	1gar + 1tie	"		
	TS4	"	"	"	-	"	1gar + 1bag + tie	"		
3	BH16-06-06	BH16	05-06	"	-	"	1gar + 1tie	"		
4	BH16-15-19	"	15-19	"	-	"	1gar + 1tie	"		
5	BH16-30-39	"	30-39	"	-	"	1gar + 1tie	"		
6	BH16-45-49	"	45-49	"	-	"	1gar + 1tie	"		
7	DUPB	"	"	"	-	"	1gar + 1tie	"		

RELINQUISHED BY:

RECEIVED BY:

Signature: *[Signature]*  
 Company: COFFEY  
 Date: 24/01/12  
 Time:

Signature: *[Signature]*  
 Company: *[Signature]*  
 Date: 24/01/12  
 Time: 2:10 pm

Sample Receipt Advice: (Lab Use Only)

All Samples Received in Good Condition  
 All Documentation is in Proper Order  
 Samples Received Properly Chilled

\* Container Type & Preservation Codes: P - Plastic, G - Solvent Washed Acid Rinsed Glass Bottle, V - Val, N - Nitric Acid Preserved  
 C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice

Lab. Ref/Batch No. **SB 107555**

## CLIENT DETAILS

Contact **Matthew Locke**  
 Client **Coffey Geotechnics Pty Ltd**  
 Address **Unit 8, 12 Mars Road  
 NSW 2066**

Telephone **02 9911 1099**  
 Facsimile **02 9911 1002**  
 Email **matthew\_locke@coffey.com**

Project **GEOTLCOV24303AC-SICEEP**  
 Order Number **92344**  
 Samples **6**

## 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 **SE107555 R0**  
 Report Number **0000026674**  
 Date Reported **02 May 2012**  
 Date Received **24 Apr 2012**

## COMMENTS

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

No respirable fibres detected using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

## SIGNATORIES



Andy Sutton  
Organics Chemist



Huong Crawford  
Laboratory Manager



Ravee Sivasubramaniam  
Hygienist

	Sample Number	SE107555.001	SE107555.002	SE107555.003	SE107555.004	SE107555.005
	Sample Matrix	Soil	Soil	Soil	Soil	Soil
	Sample Date	23 Apr 2012	23 Apr 2012	23 Apr 2012	23 Apr 2012	23 Apr 2012
	Sample Name	BH11_0.5-0.6	BH11_1.5-1.9	BH16_0.5-0.6	BH16_1.5-1.9	BH16_3.0-3.4
Parameter	Units	LOR				

### VOC's in Soil Method: AN433/AN434

Monocyclic Aromatic Hydrocarbons

Parameter	Units	LOR	SE107555.001	SE107555.002	SE107555.003	SE107555.004	SE107555.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Surrogates

Dibromofluoromethane (Surrogate)	%	-	<b>93</b>	<b>93</b>	<b>93</b>	<b>93</b>	<b>92</b>
d4-1,2-dichloroethane (Surrogate)	%	-	<b>100</b>	<b>100</b>	<b>101</b>	<b>101</b>	<b>100</b>
d8-toluene (Surrogate)	%	-	<b>103</b>	<b>102</b>	<b>101</b>	<b>102</b>	<b>101</b>
Bromofluorobenzene (Surrogate)	%	-	<b>88</b>	<b>90</b>	<b>84</b>	<b>85</b>	<b>84</b>

Totals

Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	-	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

### Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434

TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
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Surrogates

Trifluorotoluene (Surrogate)	%	-	<b>90</b>	<b>81</b>	<b>88</b>	<b>86</b>	<b>74</b>
Dibromofluoromethane (Surrogate)	%	-	-	-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-	-	-	-	-
d8-toluene (Surrogate)	%	-	-	-	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-	-	-	-

### TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	50	<50	<50	<50	<50	<50
TRH C29-C36	mg/kg	50	<50	<50	<50	<50	<50

Surrogates

TRH (Surrogate)	%	-	-	-	-	-	-
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### PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<b>0.1</b>	<0.1	<b>0.1</b>	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<b>0.4</b>	<0.1	<b>0.1</b>	<0.1	<0.1
Pyrene	mg/kg	0.1	<b>0.4</b>	<0.1	<b>0.2</b>	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<b>0.2</b>	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<b>0.2</b>	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	mg/kg	0.1	<b>0.2</b>	<0.1	<b>0.1</b>	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<b>0.1</b>	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<b>0.2</b>	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<b>0.1</b>	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<b>0.1</b>	<0.1	<0.1	<0.1	<0.1
Total PAH (Vic EPA)	mg/kg	0.8	<b>2.0</b>	<0.8	<0.8	<0.8	<0.8

Surrogates

d5-nitrobenzene (Surrogate)	%	-	<b>110</b>	<b>112</b>	<b>118</b>	<b>111</b>	<b>113</b>
2-fluorobiphenyl (Surrogate)	%	-	<b>108</b>	<b>109</b>	<b>112</b>	<b>104</b>	<b>108</b>
d14-p-terphenyl (Surrogate)	%	-	<b>118</b>	<b>124</b>	<b>126</b>	<b>116</b>	<b>121</b>

### Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320

Parameter	Units	LOR	SE107555.001	SE107555.002	SE107555.003	SE107555.004	SE107555.005
Sample Number			SE107555.001	SE107555.002	SE107555.003	SE107555.004	SE107555.005
Sample Matrix			Soil	Soil	Soil	Soil	Soil
Sample Date			23 Apr 2012	23 Apr 2012	23 Apr 2012	23 Apr 2012	23 Apr 2012
Sample Name			BH11_0.5-0.6	BH11_1.5-1.9	BH16_0.5-0.6	BH16_1.5-1.9	BH16_3.0-3.4

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320 (continued)**

Parameter	Units	LOR	SE107555.001	SE107555.002	SE107555.003	SE107555.004	SE107555.005
Arsenic, As	mg/kg	3	10	13	4	<3	11
Cadmium, Cd	mg/kg	0.3	0.4	<0.3	0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	21	20	5.4	11	4.8
Copper, Cu	mg/kg	0.5	16	13	63	3.6	0.9
Lead, Pb	mg/kg	1	27	40	67	12	2
Nickel, Ni	mg/kg	0.5	8.1	4.7	5.1	1.1	1.9
Zinc, Zn	mg/kg	0.5	27	30	130	8.0	3.4

**Mercury in Soil Method: AN312**

Parameter	Units	LOR	SE107555.001	SE107555.002	SE107555.003	SE107555.004	SE107555.005
Mercury	mg/kg	0.05	0.12	0.18	0.10	<0.05	<0.05

**Fibre Identification in soil Method: AN602**

FibreID

Parameter	Units	LOR	SE107555.001	SE107555.002	SE107555.003	SE107555.004	SE107555.005
Asbestos Detected	No unit	-	No	-	No	-	-

SemiQuant

Parameter	Units	LOR	SE107555.001	SE107555.002	SE107555.003	SE107555.004	SE107555.005
Estimated Fibres	%w/w	0.01	<0.01	-	<0.01	-	-

**Moisture Content Method: AN002**

Parameter	Units	LOR	SE107555.001	SE107555.002	SE107555.003	SE107555.004	SE107555.005
% Moisture	%	0.5	20	17	8.2	14	22

Parameter	Units	LOR	SE107555.006
Sample Number			SE107555.006
Sample Matrix			Soil
Sample Date			23 Apr 2012
Sample Name			BH16_4.5-4.9

**VOC's in Soil Method: AN433/AN434**

Monocyclic Aromatic Hydrocarbons

Parameter	Units	LOR	SE107555.006
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

Surrogates

Parameter	Units	LOR	SE107555.006
Dibromofluoromethane (Surrogate)	%	-	93
d4-1,2-dichloroethane (Surrogate)	%	-	102
d8-toluene (Surrogate)	%	-	103
Bromofluorobenzene (Surrogate)	%	-	86

Totals

Parameter	Units	LOR	SE107555.006
Total Xylenes*	mg/kg	0.3	<0.3
Total BTEX*	mg/kg	-	0

**Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434**

Parameter	Units	LOR	SE107555.006
TRH C6-C9	mg/kg	20	<20

Surrogates

Parameter	Units	LOR	SE107555.006
Trifluorotoluene (Surrogate)	%	-	74
Dibromofluoromethane (Surrogate)	%	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-
d8-toluene (Surrogate)	%	-	-
Bromofluorobenzene (Surrogate)	%	-	-

Sample Number SE107555.006  
 Sample Matrix Soil  
 Sample Date 23 Apr 2012  
 Sample Name BH16\_4.5-4.9

Parameter	Units	LOR	
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**TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403**

TRH C10-C14	mg/kg	20	<20
TRH C15-C28	mg/kg	50	<50
TRH C29-C36	mg/kg	50	<50

Surrogates

TRH (Surrogate)	%	-	-
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**PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420**

Naphthalene	mg/kg	0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1
Fluorene	mg/kg	0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1
Anthracene	mg/kg	0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1
Pyrene	mg/kg	0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1
Chrysene	mg/kg	0.1	<0.1
Benzo(b)fluoranthene	mg/kg	0.1	<0.1
Benzo(k)fluoranthene	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 (Vic EPA)	mg/kg	0.8	<0.8

Surrogates

d5-nitrobenzene (Surrogate)	%	-	<b>112</b>
2-fluorobiphenyl (Surrogate)	%	-	<b>107</b>
d14-p-terphenyl (Surrogate)	%	-	<b>122</b>

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320**

Arsenic, As	mg/kg	3	<b>4</b>
Cadmium, Cd	mg/kg	0.3	<0.3
Chromium, Cr	mg/kg	0.3	<b>12</b>
Copper, Cu	mg/kg	0.5	<b>5.4</b>
Lead, Pb	mg/kg	1	<b>4</b>
Nickel, Ni	mg/kg	0.5	<b>1.9</b>
Zinc, Zn	mg/kg	0.5	<b>2.9</b>

**Mercury in Soil Method: AN312**

Mercury	mg/kg	0.05	<0.05
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Sample Number SE107555.006  
 Sample Matrix Soil  
 Sample Date 23 Apr 2012  
 Sample Name BH16\_4.5-4.9

Parameter	Units	LOR
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**Fibre Identification in soil Method: AN602**

FibreID

Asbestos Detected	No unit	-	-
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SemiQuant

Estimated Fibres	%w/w	0.01	-
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**Moisture Content Method: AN002**

% Moisture	%	0.5	<b>21</b>
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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.

**Mercury in Soil Method: ME-(AU)-[ENV]AN312**

Parameter	QC	Units	LOR	MB	DUP %RPD	LCS	MS
	Reference					%Recovery	%Recovery
Mercury	LB019142	mg/kg	0.05	<0.05	0%	107%	79%
	LB019143	mg/kg	0.05	<0.05	0%	110%	93%

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

Parameter	QC	Units	LOR	MB	LCS
	Reference				%Recovery
Naphthalene	LB018848	mg/kg	0.1	<0.1	100%
Acenaphthylene	LB018848	mg/kg	0.1	<0.1	113%
Acenaphthene	LB018848	mg/kg	0.1	<0.1	102%
Fluorene	LB018848	mg/kg	0.1	<0.1	NA
Phenanthrene	LB018848	mg/kg	0.1	<0.1	107%
Anthracene	LB018848	mg/kg	0.1	<0.1	115%
Fluoranthene	LB018848	mg/kg	0.1	<0.1	111%
Pyrene	LB018848	mg/kg	0.1	<0.1	113%
Benzo(a)anthracene	LB018848	mg/kg	0.1	<0.1	NA
Chrysene	LB018848	mg/kg	0.1	<0.1	NA
Benzo(b)fluoranthene	LB018848	mg/kg	0.1	<0.1	NA
Benzo(k)fluoranthene	LB018848	mg/kg	0.1	<0.1	NA
Benzo(a)pyrene	LB018848	mg/kg	0.1	<0.1	123%
Indeno(1,2,3-cd)pyrene	LB018848	mg/kg	0.1	<0.1	NA
Dibenzo(a&h)anthracene	LB018848	mg/kg	0.1	<0.1	NA
Benzo(ghi)perylene	LB018848	mg/kg	0.1	<0.1	NA
Total PAH (Vic EPA)	LB018848	mg/kg	0.8	<0.8	NA

Surrogates

Parameter	QC	Units	LOR	MB	LCS
	Reference				%Recovery
d5-nitrobenzene (Surrogate)	LB018848	%	-	107%	115%
2-fluorobiphenyl (Surrogate)	LB018848	%	-	107%	110%
d14-p-terphenyl (Surrogate)	LB018848	%	-	113%	127%

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: ME-(AU)-[ENV]AN040/AN320**

Parameter	QC	Units	LOR	MB	DUP %RPD	LCS	MS
	Reference					%Recovery	%Recovery
Arsenic, As	LB019136	mg/kg	3	<3	2 - 17%	96%	
	LB019137	mg/kg	3	<3	13 - 17%	96%	83%
Cadmium, Cd	LB019136	mg/kg	0.3	<0.3	0%	96%	
	LB019137	mg/kg	0.3	<0.3	4 - 8%	97%	89%
Chromium, Cr	LB019136	mg/kg	0.3	<0.3	3%	97%	
	LB019137	mg/kg	0.3	<0.3	2 - 6%	96%	81%
Copper, Cu	LB019136	mg/kg	0.5	<0.5	3 - 20%	98%	
	LB019137	mg/kg	0.5	<0.5	2 - 3%	93%	88%
Lead, Pb	LB019136	mg/kg	1	<1	10 - 21%	98%	79%
	LB019137	mg/kg	1	<1	9 - 21%	97%	85%
Nickel, Ni	LB019136	mg/kg	0.5	<0.5	2%	99%	
	LB019137	mg/kg	0.5	<0.5	3 - 5%	98%	90%
Zinc, Zn	LB019136	mg/kg	0.5	<0.5	3 - 27%	105%	89%
	LB019137	mg/kg	0.5	<0.5	5 - 17%	98%	90%

**TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403**

Parameter	QC	Units	LOR	MB	LCS
	Reference				%Recovery
TRH C10-C14	LB018848	mg/kg	20	<20	105%
TRH C15-C28	LB018848	mg/kg	50	<50	103%
TRH C29-C36	LB018848	mg/kg	50	<50	100%

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.

**VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434**

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene	LB018849	mg/kg	0.1	<0.1	0%	102%	105%
Toluene	LB018849	mg/kg	0.1	<0.1	0%	95%	98%
Ethylbenzene	LB018849	mg/kg	0.1	<0.1	0%	92%	98%
m/p-xylene	LB018849	mg/kg	0.2	<0.2	0%	98%	104%
o-xylene	LB018849	mg/kg	0.1	<0.1	0%	98%	106%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dibromofluoromethane (Surrogate)	LB018849	%	-	96%	0%	93%	93%
d4-1,2-dichloroethane (Surrogate)	LB018849	%	-	101%	0%	100%	100%
d8-toluene (Surrogate)	LB018849	%	-	102%	2%	103%	104%
Bromofluorobenzene (Surrogate)	LB018849	%	-	87%	2%	98%	96%

Totals

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Total Xylenes*	LB018849	mg/kg	0.3	<0.3	0%	NA	NA
Total BTEX*	LB018849	mg/kg	-	0	NA	NA	NA

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C6-C9	LB018849	mg/kg	20	<20	0%	110%	115%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Trifluorotoluene (Surrogate)	LB018849	%	-	88%	7%	85%	82%

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, 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
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 differential 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.
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.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria. Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

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

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-11.pdf>

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## CLIENT DETAILS

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Project **GEOTLCOV24303AC-SICEEP**  
 Order Number **92344**  
 Samples **6**

## LABORATORY DETAILS

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SGS Reference **SE107555 R0**  
 Report Number **0000026676**  
 Date Reported **02/05/2012 17:07:30**  
 Date Received **24 Apr 2012**

## COMMENTS

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

No respirable fibres detected using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

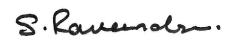
## SIGNATORIES



**Andy Sutton**  
Organics Chemist



**Huong Crawford**  
Laboratory Manager



**Ravee Sivasubramaniam**  
Hygienist

RESULTS

Fibre Identification in soil

Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w
SE107555.001	BH11_0.5-0.6	Soil	22g Clay,soil,rocks	23 Apr 2012	No Asbestos Found Organic Fibres Detected	<0.01
SE107555.003	BH16_0.5-0.6	Soil	54g Soil,rocks	23 Apr 2012	No Asbestos Found Organic Fibres Detected	<0.01

METHOD

METHODOLOGY SUMMARY

AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	Not Accredited
Amphiboles	-	Amosite and/or Crocidolite			

This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Sampled by the client.

Where reported: 'Asbestos Detected': Asbestos detected by polarized light microscopy, including dispersion staining.

Where reported: 'No Asbestos Found': No Asbestos Found by polarized light microscopy, including dispersion staining.

Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarized light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos-containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

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-11.pdf>

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## STATEMENT OF QA/QC PERFORMANCE

SE107555 R0

### CLIENT DETAILS

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Project **GEOTLCOV24303AC-SICEEP**  
Order Number **92344**  
Samples 6

### LABORATORY DETAILS

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SGS Reference SE107555 R0  
Report Number 0000026675  
Date Reported 02 May 2012

### COMMENTS

All the laboratory data for each environmental matrix was compared to 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	6 Soils	Type of documentation received	COC
Date documentation received	24/4/2012	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.7°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice	Samples clearly labelled	Yes
Complete documentation received	Yes		

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.

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 or **Red** with an appended dagger symbol (†) 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.

### Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH11_0.5-0.6	SE107555.001	LB019257	23 Apr 2012	24 Apr 2012	23 Apr 2013	02 May 2012	23 Apr 2013	02 May 2012
BH16_0.5-0.6	SE107555.003	LB019257	23 Apr 2012	24 Apr 2012	23 Apr 2013	02 May 2012	23 Apr 2013	02 May 2012

### Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH11_0.5-0.6	SE107555.001	LB019142	23 Apr 2012	24 Apr 2012	21 May 2012	01 May 2012	21 May 2012	02 May 2012
BH11_1.5-1.9	SE107555.002	LB019142	23 Apr 2012	24 Apr 2012	21 May 2012	01 May 2012	21 May 2012	02 May 2012
BH16_0.5-0.6	SE107555.003	LB019142	23 Apr 2012	24 Apr 2012	21 May 2012	01 May 2012	21 May 2012	02 May 2012
BH16_1.5-1.9	SE107555.004	LB019142	23 Apr 2012	24 Apr 2012	21 May 2012	01 May 2012	21 May 2012	02 May 2012
BH16_3.0-3.4	SE107555.005	LB019143	23 Apr 2012	24 Apr 2012	21 May 2012	01 May 2012	21 May 2012	02 May 2012
BH16_4.5-4.9	SE107555.006	LB019143	23 Apr 2012	24 Apr 2012	21 May 2012	01 May 2012	21 May 2012	02 May 2012

### Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH11_0.5-0.6	SE107555.001	LB018878	23 Apr 2012	24 Apr 2012	07 May 2012	27 Apr 2012	02 May 2012	30 Apr 2012
BH11_1.5-1.9	SE107555.002	LB018878	23 Apr 2012	24 Apr 2012	07 May 2012	27 Apr 2012	02 May 2012	30 Apr 2012
BH16_0.5-0.6	SE107555.003	LB018878	23 Apr 2012	24 Apr 2012	07 May 2012	27 Apr 2012	02 May 2012	30 Apr 2012
BH16_1.5-1.9	SE107555.004	LB018878	23 Apr 2012	24 Apr 2012	07 May 2012	27 Apr 2012	02 May 2012	30 Apr 2012
BH16_3.0-3.4	SE107555.005	LB018878	23 Apr 2012	24 Apr 2012	07 May 2012	27 Apr 2012	02 May 2012	30 Apr 2012
BH16_4.5-4.9	SE107555.006	LB018878	23 Apr 2012	24 Apr 2012	07 May 2012	27 Apr 2012	02 May 2012	30 Apr 2012

### PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH11_0.5-0.6	SE107555.001	LB018848	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	27 Apr 2012
BH11_1.5-1.9	SE107555.002	LB018848	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	27 Apr 2012
BH16_0.5-0.6	SE107555.003	LB018848	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	27 Apr 2012
BH16_1.5-1.9	SE107555.004	LB018848	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	27 Apr 2012
BH16_3.0-3.4	SE107555.005	LB018848	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	27 Apr 2012
BH16_4.5-4.9	SE107555.006	LB018848	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	27 Apr 2012

### Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH11_0.5-0.6	SE107555.001	LB019136	23 Apr 2012	24 Apr 2012	20 Oct 2012	01 May 2012	20 Oct 2012	02 May 2012
BH11_1.5-1.9	SE107555.002	LB019136	23 Apr 2012	24 Apr 2012	20 Oct 2012	01 May 2012	20 Oct 2012	02 May 2012
BH16_0.5-0.6	SE107555.003	LB019136	23 Apr 2012	24 Apr 2012	20 Oct 2012	01 May 2012	20 Oct 2012	02 May 2012
BH16_1.5-1.9	SE107555.004	LB019136	23 Apr 2012	24 Apr 2012	20 Oct 2012	01 May 2012	20 Oct 2012	02 May 2012
BH16_3.0-3.4	SE107555.005	LB019136	23 Apr 2012	24 Apr 2012	20 Oct 2012	01 May 2012	20 Oct 2012	02 May 2012
BH16_4.5-4.9	SE107555.006	LB019137	23 Apr 2012	24 Apr 2012	20 Oct 2012	01 May 2012	20 Oct 2012	02 May 2012

### TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH11_0.5-0.6	SE107555.001	LB018848	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH11_1.5-1.9	SE107555.002	LB018848	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH16_0.5-0.6	SE107555.003	LB018848	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH16_1.5-1.9	SE107555.004	LB018848	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH16_3.0-3.4	SE107555.005	LB018848	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH16_4.5-4.9	SE107555.006	LB018848	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012

### VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH11_0.5-0.6	SE107555.001	LB018849	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	30 Apr 2012
BH11_1.5-1.9	SE107555.002	LB018849	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	30 Apr 2012
BH16_0.5-0.6	SE107555.003	LB018849	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	30 Apr 2012
BH16_1.5-1.9	SE107555.004	LB018849	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	30 Apr 2012
BH16_3.0-3.4	SE107555.005	LB018849	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	30 Apr 2012
BH16_4.5-4.9	SE107555.006	LB018849	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	30 Apr 2012

### Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH11_0.5-0.6	SE107555.001	LB018849	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	30 Apr 2012
BH11_1.5-1.9	SE107555.002	LB018849	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	30 Apr 2012
BH16_0.5-0.6	SE107555.003	LB018849	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	30 Apr 2012
BH16_1.5-1.9	SE107555.004	LB018849	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	30 Apr 2012

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.

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 or **Red** with an appended dagger symbol (†) 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.

**Volatile Petroleum Hydrocarbons in Soil (continued)**

**Method: ME-(AU)-[ENV]AN433/AN434**

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH16_3.0-3.4	SE107555.005	LB018849	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	30 Apr 2012
BH16_4.5-4.9	SE107555.006	LB018849	23 Apr 2012	24 Apr 2012	07 May 2012	26 Apr 2012	05 Jun 2012	30 Apr 2012

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 **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH11_0.5-0.6	SE107555.001	%	60 - 130%	108
	BH11_1.5-1.9	SE107555.002	%	60 - 130%	109
	BH16_0.5-0.6	SE107555.003	%	60 - 130%	112
	BH16_1.5-1.9	SE107555.004	%	60 - 130%	104
	BH16_3.0-3.4	SE107555.005	%	60 - 130%	108
	BH16_4.5-4.9	SE107555.006	%	60 - 130%	107
d14-p-terphenyl (Surrogate)	BH11_0.5-0.6	SE107555.001	%	60 - 130%	118
	BH11_1.5-1.9	SE107555.002	%	60 - 130%	124
	BH16_0.5-0.6	SE107555.003	%	60 - 130%	126
	BH16_1.5-1.9	SE107555.004	%	60 - 130%	116
	BH16_3.0-3.4	SE107555.005	%	60 - 130%	121
	BH16_4.5-4.9	SE107555.006	%	60 - 130%	122
d5-nitrobenzene (Surrogate)	BH11_0.5-0.6	SE107555.001	%	60 - 130%	110
	BH11_1.5-1.9	SE107555.002	%	60 - 130%	112
	BH16_0.5-0.6	SE107555.003	%	60 - 130%	118
	BH16_1.5-1.9	SE107555.004	%	60 - 130%	111
	BH16_3.0-3.4	SE107555.005	%	60 - 130%	113
	BH16_4.5-4.9	SE107555.006	%	60 - 130%	112

**VOC's in Soil**

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH11_0.5-0.6	SE107555.001	%	60 - 130%	88
	BH11_1.5-1.9	SE107555.002	%	60 - 130%	90
	BH16_0.5-0.6	SE107555.003	%	60 - 130%	84
	BH16_1.5-1.9	SE107555.004	%	60 - 130%	85
	BH16_3.0-3.4	SE107555.005	%	60 - 130%	84
	BH16_4.5-4.9	SE107555.006	%	60 - 130%	86
d4-1,2-dichloroethane (Surrogate)	BH11_0.5-0.6	SE107555.001	%	60 - 130%	100
	BH11_1.5-1.9	SE107555.002	%	60 - 130%	100
	BH16_0.5-0.6	SE107555.003	%	60 - 130%	101
	BH16_1.5-1.9	SE107555.004	%	60 - 130%	101
	BH16_3.0-3.4	SE107555.005	%	60 - 130%	100
	BH16_4.5-4.9	SE107555.006	%	60 - 130%	102
d8-toluene (Surrogate)	BH11_0.5-0.6	SE107555.001	%	60 - 130%	103
	BH11_1.5-1.9	SE107555.002	%	60 - 130%	102
	BH16_0.5-0.6	SE107555.003	%	60 - 130%	101
	BH16_1.5-1.9	SE107555.004	%	60 - 130%	102
	BH16_3.0-3.4	SE107555.005	%	60 - 130%	101
	BH16_4.5-4.9	SE107555.006	%	60 - 130%	103
Dibromofluoromethane (Surrogate)	BH11_0.5-0.6	SE107555.001	%	60 - 130%	93
	BH11_1.5-1.9	SE107555.002	%	60 - 130%	93
	BH16_0.5-0.6	SE107555.003	%	60 - 130%	93
	BH16_1.5-1.9	SE107555.004	%	60 - 130%	93
	BH16_3.0-3.4	SE107555.005	%	60 - 130%	92
	BH16_4.5-4.9	SE107555.006	%	60 - 130%	93

**Volatile Petroleum Hydrocarbons in Soil**

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Trifluorotoluene (Surrogate)	BH11_0.5-0.6	SE107555.001	%	60 - 130%	90
	BH11_1.5-1.9	SE107555.002	%	60 - 130%	81
	BH16_0.5-0.6	SE107555.003	%	60 - 130%	88
	BH16_1.5-1.9	SE107555.004	%	60 - 130%	86
	BH16_3.0-3.4	SE107555.005	%	60 - 130%	74
	BH16_4.5-4.9	SE107555.006	%	60 - 130%	74

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

**Mercury in Soil**

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB019142.001	Mercury	mg/kg	0.05	<0.05
LB019143.001	Mercury	mg/kg	0.05	<0.05

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB018848.001	Naphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	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
Surrogates	d5-nitrobenzene (Surrogate)	%	-	107
	2-fluorobiphenyl (Surrogate)	%	-	107
	d14-p-terphenyl (Surrogate)	%	-	113

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest**

Method: ME-(AU)-[ENV]AN40/AN320

Sample Number	Parameter	Units	LOR	Result
LB019136.001	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
LB019137.001	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

Sample Number	Parameter	Units	LOR	Result
LB018848.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	50	<50
	TRH C29-C36	mg/kg	50	<50

**VOC's in Soil**

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

Sample Number	Parameter	Units	LOR	Result	
LB018849.001	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
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	96
		d4-1,2-dichloroethane (Surrogate)	%	-	101
		d8-toluene (Surrogate)	%	-	102
		Bromofluorobenzene (Surrogate)	%	-	87
		Totals	Total BTEX*	mg/kg	-

**Volatile Petroleum Hydrocarbons in Soil**

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

Sample Number	Parameter	Units	LOR
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Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Volatile Petroleum Hydrocarbons in Soil (continued)

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

Sample Number	Parameter	Units	LOR	Result
LB018849.001	TRH C6-C9	mg/kg	20	<20
	Surrogates			
	Trifluorotoluene (Surrogate)	%	-	88

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula:  $RPD = |OriginalResult - ReplicateResult| \times 100 / Mean$

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times SDL / Mean + LR$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107536.001	LB019142.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE107555.004	LB019142.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE107557.009	LB019143.014	Mercury	mg/kg	0.05	0.03013742670	0.0287802387	200	0
SE107557.020	LB019143.024	Mercury	mg/kg	0.05	0.01787625110	0.0220773687	200	0

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE107536.004	LB019136.014	Arsenic, As	mg/kg	3	6	6	84	2	
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0	
		Chromium, Cr	mg/kg	0.3	2.9	3.0	40	3	
		Copper, Cu	mg/kg	0.5	3.2	3.3	45	3	
		Lead, Pb	mg/kg	1	1	1	110	10	
		Nickel, Ni	mg/kg	0.5	1.3	1.2	70	2	
SE107555.005	LB019136.024	Zinc, Zn	mg/kg	0.5	4.4	4.5	41	3	
		Arsenic, As	mg/kg	3	11	13	54	17	
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0	
		Chromium, Cr	mg/kg	0.3	4.8	4.6	36	3	
		Copper, Cu	mg/kg	0.5	0.9	1.1	80	20	
		Lead, Pb	mg/kg	1	2	2	89	21	
SE107557.010	LB019137.014	Nickel, Ni	mg/kg	0.5	1.9	1.9	57	2	
		Zinc, Zn	mg/kg	0.5	3.4	4.5	43	27	
		Arsenic, As	mg/kg	3	NVL	10	76	13	
		Cadmium, Cd	mg/kg	0.3	NVL	1.4	52	4	
		Chromium, Cr	mg/kg	0.3	NVL	30	31	2	
		Copper, Cu	mg/kg	0.5	NVL	64	31	2	
SE107557.021	LB019137.024	Lead, Pb	mg/kg	1	NVL	330	30	9	
		Nickel, Ni	mg/kg	0.5	NVL	12	34	5	
		Zinc, Zn	mg/kg	0.5	NVL	2400	30	17	
		Arsenic, As	mg/kg	3	NVL	5	90	17	
		Cadmium, Cd	mg/kg	0.3	NVL	1.1	56	8	
		Chromium, Cr	mg/kg	0.3	NVL	33	31	6	
		Copper, Cu	mg/kg	0.5	NVL	41	31	3	
		Lead, Pb	mg/kg	1	NVL	160	31	21	
		Nickel, Ni	mg/kg	0.5	NVL	10	35	3	
		Zinc, Zn	mg/kg	0.5	NVL	400	30	5	

VOC's in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %		
SE107555.006	LB018849.012	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0	
			Aromatic	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
		Surrogates	Dibromofluoromethane (Surrogate)	%	-	93.0	93.0	50	0	
			d4-1,2-dichloroethane (Surrogate)	%	-	102.0	102.0	50	0	
			d8-toluene (Surrogate)	%	-	103.0	101.0	50	2	
		Totals	Bromofluorobenzene (Surrogate)	%	-	86.0	88.0	50	2	
			Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0	
				Total BTEX*	mg/kg	-	0	0	200	NA

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107555.006	LB018849.012	TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	%	-	74	79	30	7

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 this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

**Mercury in Soil**

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB019142.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	107
LB019143.002	Mercury	mg/kg	0.05	0.22	0.2	70 - 130	110

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB018848.002	Naphthalene	mg/kg	0.1	4.0	4	60 - 140	100	
	Acenaphthylene	mg/kg	0.1	4.5	4	60 - 140	113	
	Acenaphthene	mg/kg	0.1	4.1	4	60 - 140	102	
	Phenanthrene	mg/kg	0.1	4.3	4	60 - 140	107	
	Anthracene	mg/kg	0.1	4.6	4	60 - 140	115	
	Fluoranthene	mg/kg	0.1	4.4	4	60 - 140	111	
	Pyrene	mg/kg	0.1	4.5	4	60 - 140	113	
	Benzo(a)pyrene	mg/kg	0.1	4.9	4	60 - 140	123	
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	115.0	100	60 - 140	115
		2-fluorobiphenyl (Surrogate)	%	-	110.0	100	60 - 140	110
d14-p-terphenyl (Surrogate)		%	-	127.0	100	60 - 140	127	

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest**

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB019136.002	Arsenic, As	mg/kg	3	48	50	80 - 120	96
	Cadmium, Cd	mg/kg	0.3	48	50	80 - 120	96
	Chromium, Cr	mg/kg	0.3	48	50	80 - 120	97
	Copper, Cu	mg/kg	0.5	49	50	80 - 120	98
	Lead, Pb	mg/kg	1	49	50	80 - 120	98
	Nickel, Ni	mg/kg	0.5	49	50	80 - 120	99
	Zinc, Zn	mg/kg	0.5	52	50	80 - 120	105
LB019137.002	Arsenic, As	mg/kg	3	48	50	80 - 120	96
	Cadmium, Cd	mg/kg	0.3	48	50	80 - 120	97
	Chromium, Cr	mg/kg	0.3	48	50	80 - 120	96
	Copper, Cu	mg/kg	0.5	46	50	80 - 120	93
	Lead, Pb	mg/kg	1	48	50	80 - 120	97
	Nickel, Ni	mg/kg	0.5	49	50	80 - 120	98
	Zinc, Zn	mg/kg	0.5	49	50	80 - 120	98

**TRH (Total Recoverable Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB018848.002	TRH C10-C14	mg/kg	20	42	40	60 - 140	105
	TRH C15-C28	mg/kg	50	<50	40	60 - 140	103
	TRH C29-C36	mg/kg	50	<50	40	60 - 140	100

**VOC's in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB018849.002	Monocyclic Aromatic	Benzene	mg/kg	0.1	3.1	3	60 - 140	102
		Toluene	mg/kg	0.1	2.9	3	60 - 140	95
		Ethylbenzene	mg/kg	0.1	2.8	3	60 - 140	92
		m/p-xylene	mg/kg	0.2	5.8	5.9	60 - 140	98
		o-xylene	mg/kg	0.1	2.9	2.9	60 - 140	98
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	93.0	100	60 - 140	93
		d4-1,2-dichloroethane (Surrogate)	%	-	100.0	100	60 - 140	100
		d8-toluene (Surrogate)	%	-	103.0	100	60 - 140	103
		Bromofluorobenzene (Surrogate)	%	-	98.0	100	60 - 140	98

**Volatile Petroleum Hydrocarbons in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB018849.002	TRH C6-C9	mg/kg	20	27	24.4	60 - 140	110

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 this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

**Mercury in Soil**

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE107484.001	LB019142.004	Mercury	mg/kg	0.05	0.31	0.14769825789	0.2	79
SE107555.005	LB019143.004	Mercury	mg/kg	0.05	0.19	<0.05	0.2	93

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest**

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE107484.021	LB019136.004	Lead, Pb	mg/kg	1	53	13.62173782714	50	79
		Zinc, Zn	mg/kg	0.5	63	18.7511992115€	50	89
SE107555.006	LB019137.004	Arsenic, As	mg/kg	3	46	4	50	83
		Cadmium, Cd	mg/kg	0.3	44	<0.3	50	89
		Chromium, Cr	mg/kg	0.3	52	12	50	81
		Copper, Cu	mg/kg	0.5	50	5.4	50	88
		Lead, Pb	mg/kg	1	47	4	50	85
		Nickel, Ni	mg/kg	0.5	47	1.9	50	90
		Zinc, Zn	mg/kg	0.5	48	2.9	50	90

**VOC's in Soil**

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE107554.001	LB018849.004	Monocyclic Aromatic	Benzene	mg/kg	0.1	3.2	<0.1	3	105
			Toluene	mg/kg	0.1	2.9	<0.1	3	98
			Ethylbenzene	mg/kg	0.1	2.9	<0.1	3	98
			m/p-xylene	mg/kg	0.2	6.2	<0.2	5.9	104
		Surrogates	o-xylene	mg/kg	0.1	3.1	<0.1	2.9	106
			Dibromofluoromethane (Surrogate)	%	-	93.0	92.0	100	93
			d4-1,2-dichloroethane (Surrogate)	%	-	100.0	100.0	100	100
			d8-toluene (Surrogate)	%	-	104.0	101.0	100	104
			Bromofluorobenzene (Surrogate)	%	-	96.0	87.0	100	96
		Totals	Total Xylenes*	mg/kg	0.3	9.2	<0.3	-	-
			Total BTEX*	mg/kg	-	18	0	-	-

**Volatile Petroleum Hydrocarbons in Soil**

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE107554.001	LB018849.004	TRH C6-C9	mg/kg	20	28	<20	24.4	115
		Surrogates	Trifluorotoluene (Surrogate)	%	-	82	81	-

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula:  $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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 Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC 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-11.pdf>

- \* Non-accredited analysis.
- Sample not analysed for this analyte.
- ^ Analysis performed by external laboratory.
  
- IS Insufficient sample for analysis.
- LNR Sample listed, but not received.
- LOR Limit of reporting.
- QFH QC result is above the upper tolerance.
- QFL QC result is below the lower tolerance.
  
- ① At least 2 of 3 surrogates are within acceptance criteria.
- ② RPD failed acceptance criteria due to sample heterogeneity.
- ③ Results less than 5 times LOR preclude acceptance criteria for RPD.
- ④ Recovery failed acceptance criteria due to matrix interference.
- ⑤ Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
- ⑥ LOR was raised due to sample matrix interference.
- ⑦ LOR was raised due to dilution of significantly high concentration of analyte in sample.
- ⑧ Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
- ⑨ Recovery failed acceptance criteria due to sample heterogeneity.
- † Refer to Analytical Report comments for further information.

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

92341



Philippines:  3rd Floor, JMT Bldg, ADB Ave, Ortigas Ctr, Pasig City, Metro Manila, Philippines ..... Tel (+63) (2) 638 9686 ..... Fax (+63) (2) 867 3518  
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 NSW:  Level 1, 3 Rider Blvd, Rhodes NSW 2138 ..... Tel (02) 8083 1600 ..... Fax (02) 8765 0762  
 Lot 101, 19 Warabrook Blvd, Warabrook NSW 2304 ..... Tel (02) 4016 2300 ..... Fax (02) 4016 2380  
 1/222 Berkeley Rd, Unanderra NSW 2526 ..... Tel (02) 4272 6071 ..... Fax (02) 4272 6075

QLD:  47 Doggett St, Newstead QLD 4006 ..... Tel (07) 3608 2500 ..... Fax (07) 3852 2805  
 SA:  Level 1, 2-3 Greenhill Rd, Wayville SA 5034 ..... Tel (08) 7221 3500 ..... Fax (08) 8172 1968  
 TAS:  Coffey Business Centre, 2 Melville St, Hobart TAS 7000 ..... Tel (03) 6108 0100 ..... Fax (03) 6108 0199  
 VIC:  126 Trenerry Cres, Abbotstord VIC 3067 ..... Tel (03) 9473 1400 ..... Fax (03) 9473 1450  
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 WA:  61 Duke St, Albany WA 6530 ..... Tel (08) 9892 6400 ..... Fax (08) 9892 6444  
 Suite 2, 53 Burswood Rd, Burswood WA 6100 ..... Tel (08) 9355 7100 ..... Fax (08) 9355 7111  
 Suite 3 & 4, 236 Naturaliste Tce, Dunsborough WA 6281 ..... Tel (08) 9756 7869 ..... Fax (08) 9756 8878

Project No: GEOTLCOV24303AC

Task No: SGS

Project Name: SICEEP

Laboratory: SGS  
 Project Manager: Matthew Locke

Special Instructions: *Keep For 36 months. Please advise Coffey when remaining sample can be delivered to our office.*

Lab. No.	Sample ID	Sample Location	Sample Depth	Sample Date	Time	Matrix (Soil ... etc)	Container Type & Preservative*	T-A-T (Specify)
1	BH1-surface	BH1	0.1-0.2	14/04/12		Soil	gar + 2 bag + size	ASAS
2	BH1-0.5-0.6		0.5-0.6					
3	BH1-1.5-1.9		1.5-1.9					
4	TB2							
5	T52							
6	QC3							
7	BH28-surface	BH28	0.1-0.2	20/04/12				
8	BH28-0.5-0.6		0.5-0.6					
9	BH28-1.5-1.9		1.5-1.9					
10	BH28-3.0-3.4		3.0-3.4					
	BH28-4.8-4.7		4.3-4.7					
	BH28-5.8-6.2		5.8-6.2					
	BH28-7.3-7.8		7.3-7.8					
	BH28-8.8-9.2		8.8-9.2					
	BH28-10.3-10.7		10.3-10.7					

RELINQUISHED BY:

RECEIVED BY:

Signature: *[Signature]*  
 Date: 24/04/12  
 Company: *[Signature]*  
 Time: *[Signature]*

Signature: *[Signature]*  
 Date: 24/04/12  
 Company: *[Signature]*  
 Time: 2:10 PM

Analysis Request Section	NOTES
BTEX / TPH	
METALS (Specify)	
PAHs / <i>[Signature]</i>	
OCs / OPs	
Asbestos	
VHC	
VOC	
SVOC	
ASS Screening	

**Sample Receipt Advice: (Lab Use Only)**  
 All Samples Received in Good Condition .....   
 All Documentation is in Proper Order .....   
 Samples Received Properly Chilled .....   
 Lab. Ref/Batch No. *SE 107556*

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

92342



Philippines:  3rd Floor, JMT Bldg, ADB Ave, Ortigas Ctr, Pasig City, Metro Manila, Philippines ..... Tel (+63) (2) 638 9686 ..... Fax (+63) (2) 687 3518  
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 Suite 3 & 4, 236 Naturaliste Tce, Dunsborough WA 6281 ..... Tel (08) 9756 7869 ..... Fax (08) 9756 8878

Project No: **G/BOTLCOV 24 303 AC**  
 Project Name: **SICEEP**  
 Laboratory: **SGS**  
 Samplers Name: **Adriana Corona Mathe**  
 Project Manager: **Matthew Locke / Sara Somasundaram**

Special Instructions: **Remaining sample to be stored for 36 months. Advise Coffey on remaining soil availability to pickup after analyses complete**

Lab. No.	Sample ID	Sample Location	Sample Depth	Sample Date	Time	Matrix (Soil, etc)	Container Type & Preservative	T-A-T (Specify)	NOTES
	TS3	-	-	20-09-12	-	Soil	1 vial + ice	8days	
	IB3	-	-	"	-	"	1 jar + ice		
	OCA	-	-	"	-	Water	1g, 10ml, 2x5 ml		
	12	OCA	-	"	-	Soil			
									<b>STANDARD</b>

RELINQUISHED BY:

RECEIVED BY:

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
 Company: \_\_\_\_\_ Time: \_\_\_\_\_  
 Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
 Company: \_\_\_\_\_ Time: \_\_\_\_\_

Sample Receipt Advice: (Lab Use Only)  
 All Samples Received in Good Condition .....   
 All Documentation is in Proper Order .....   
 Samples Received Properly Chilled .....

\* Container Type & Preservation Codes: P - Plastic, G - Solvent Washed Acid Rinsed Glass Bottle, V - Vial, N - Nitric Acid Preserved  
 C - Hydrochloric Acid Preserved, S - Sulphuric Acid Preserved, I - Ice  
 Lab. Ref/ Batch No. **SE 101556**

## CLIENT DETAILS

Contact **Matthew Locke**  
 Client **Coffey Geotechnics Pty Ltd**  
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 NSW 2066**

Telephone **02 9911 1099**  
 Facsimile **02 9911 1002**  
 Email **matthew\_locke@coffey.com**

Project **GEOTLCOV24303AC - SICEEP**  
 Order Number **92341-92342**  
 Samples **12**

## LABORATORY DETAILS

Manager **Huong Crawford**  
 Laboratory **SGS Alexandria Environmental**  
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Telephone **+61 2 8594 0400**  
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 Email **au.environmental.sydney@sgs.com**

SGS Reference **SE107556 R0**  
 Report Number **0000027064**  
 Date Reported **04 May 2012**  
 Date Received **24 Apr 2012**

## COMMENTS

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

pH field subcontracted to SGS Cairns, 2/58 Comport St, Portsmith QLD 4870, NATA Accreditation Number: 2562, Site Number: 3146

No respirable fibres detected using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

## SIGNATORIES



Andy Sutton  
Organics Chemist



Dong Liang  
Inorganics Metals Team Leader



Edward Ibrahim  
Business Manager



Ravee Sivasubramaniam  
Hygienist

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Sample Number			SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Sample Matrix			Soil	Soil	Soil	Soil	Soil
Sample Date			14 Apr 2012	14 Apr 2012	14 Apr 2012	14 Apr 2012	14 Apr 2012
Sample Name			BH1_0.5-0.6	BH1_1.5-1.9	TB2	TS2	QC3

**VOC's in Soil Method: AN433/AN434**

Monocyclic Aromatic Hydrocarbons

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	[95%]	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	[89%]	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	[87%]	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	[77%]	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	[89%]	<0.1

Surrogates

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Dibromofluoromethane (Surrogate)	%	-	81	81	78	72	77
d4-1,2-dichloroethane (Surrogate)	%	-	100	100	99	92	96
d8-toluene (Surrogate)	%	-	103	103	103	99	102
Bromofluorobenzene (Surrogate)	%	-	98	98	99	108	104

Totals

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	-	<0.3
Total BTEX*	mg/kg	-	0	0	0	-	0

**Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434**

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
TRH C6-C9	mg/kg	20	<20	<20	<20	-	<20

Surrogates

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Trifluorotoluene (Surrogate)	%	-	103	77	74	-	72
Dibromofluoromethane (Surrogate)	%	-	-	-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-	-	-	-	-
d8-toluene (Surrogate)	%	-	-	-	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-	-	-	-

**TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403**

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
TRH C10-C14	mg/kg	20	<20	<20	<20	-	<20
TRH C15-C28	mg/kg	50	<50	<50	<50	-	<50
TRH C29-C36	mg/kg	50	<50	<50	<50	-	<50

Surrogates

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
TRH (Surrogate)	%	-	-	-	-	-	-

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420**

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Benzo(b)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-	<0.1
Total PAH (Vic EPA)	mg/kg	0.8	<0.8	<0.8	-	-	<0.8

Surrogates

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
d5-nitrobenzene (Surrogate)	%	-	96	100	-	-	84
2-fluorobiphenyl (Surrogate)	%	-	88	88	-	-	80

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Sample Number			SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Sample Matrix			Soil	Soil	Soil	Soil	Soil
Sample Date			14 Apr 2012	14 Apr 2012	14 Apr 2012	14 Apr 2012	14 Apr 2012
Sample Name			BH1_0.5-0.6	BH1_1.5-1.9	TB2	TS2	QC3

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)**

d14-p-terphenyl (Surrogate)	%	-	98	98	-	-	94
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**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320**

Arsenic, As	mg/kg	3	<3	<3	-	-	<3
Cadmium, Cd	mg/kg	0.3	0.5	<0.3	-	-	<0.3
Chromium, Cr	mg/kg	0.3	11	3.6	-	-	3.0
Copper, Cu	mg/kg	0.5	58	2.5	-	-	3.1
Nickel, Ni	mg/kg	0.5	92	1.0	-	-	0.7
Lead, Pb	mg/kg	1	24	7	-	-	11
Zinc, Zn	mg/kg	0.5	79	19	-	-	20

**Mercury in Soil Method: AN312**

Mercury	mg/kg	0.05	0.13	<0.05	-	-	<0.05
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**Fibre Identification in soil Method: AN602**

FibreID

Asbestos Detected	No unit	-	No	-	-	-	-
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SemiQuant

Estimated Fibres	%w/w	0.01	<0.01	-	-	-	-
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**VOCs in Water Method: AN433/AN434**

Monocyclic Aromatic Hydrocarbons

Benzene	µg/L	0.5	-	-	-	-	-
Toluene	µg/L	0.5	-	-	-	-	-
Ethylbenzene	µg/L	0.5	-	-	-	-	-
m/p-xylene	µg/L	1	-	-	-	-	-
o-xylene	µg/L	0.5	-	-	-	-	-

Surrogates

Dibromofluoromethane (Surrogate)	%	-	-	-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-	-	-	-	-
d8-toluene (Surrogate)	%	-	-	-	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-	-	-	-

Totals

Total Xylenes	µg/L	1.5	-	-	-	-	-
Total BTEX	µg/L	3	-	-	-	-	-

**Volatile Petroleum Hydrocarbons in Water Method: AN433/AN434**

TRH C6-C9	µg/L	40	-	-	-	-	-
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Surrogates

Trifluorotoluene (Surrogate)	%	-	-	-	-	-	-
Dibromofluoromethane (Surrogate)	%	-	-	-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-	-	-	-	-
d8-toluene (Surrogate)	%	-	-	-	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-	-	-	-

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Sample Number			SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Sample Matrix			Soil	Soil	Soil	Soil	Soil
Sample Date			14 Apr 2012	14 Apr 2012	14 Apr 2012	14 Apr 2012	14 Apr 2012
Sample Name			BH1_0.5-0.6	BH1_1.5-1.9	TB2	TS2	QC3

**TRH (Total Recoverable Hydrocarbons) in Water Method: AN403**

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
TRH C10-C14	µg/L	100	-	-	-	-	-
TRH C15-C28	µg/L	200	-	-	-	-	-
TRH C29-C36	µg/L	200	-	-	-	-	-

Surrogates

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
TRH (Surrogate)	%	-	-	-	-	-	-

**PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: AN420**

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
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)fluoranthene	µg/L	0.1	-	-	-	-	-
Benzo(k)fluoranthene	µg/L	0.1	-	-	-	-	-
Benzo(a)pyrene	µg/L	0.1	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/L	0.1	-	-	-	-	-
Dibenzo(a&h)anthracene	µg/L	0.1	-	-	-	-	-
Benzo(ghi)perylene	µg/L	0.1	-	-	-	-	-
Total PAH (Vic EPA 16)*	µg/L	1	-	-	-	-	-

Surrogates

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
d5-nitrobenzene (Surrogate)	%	-	-	-	-	-	-
2-fluorobiphenyl (Surrogate)	%	-	-	-	-	-	-
d14-p-terphenyl (Surrogate)	%	-	-	-	-	-	-

**Trace Metals (Dissolved) in Water by ICPMS Method: AN318**

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Arsenic, As	µg/L	1	-	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-	-
Zinc, Zn	µg/L	1	-	-	-	-	-

**Mercury (dissolved) in Water Method: AN311/AN312**

Parameter	Units	LOR	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Mercury	mg/L	0.0001	-	-	-	-	-

	Sample Number	SE107556.001	SE107556.002	SE107556.003	SE107556.004	SE107556.005
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	14 Apr 2012	14 Apr 2012	14 Apr 2012	14 Apr 2012	14 Apr 2012	14 Apr 2012
Sample Name	BH1_0.5-0.6	BH1_1.5-1.9	TB2	TS2	QC3	

**Moisture Content Method: AN002**

Parameter	Units	LOR					
% Moisture	%	0.5	<b>19</b>	<b>20</b>	<b>17</b>	-	<b>12</b>

	Sample Number	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	20 Apr 2012	20 Apr 2012	20 Apr 2012	20 Apr 2012	20 Apr 2012	20 Apr 2012
Sample Name	BH28_Surface	BH28_0.5-0.6	BH28_1.5-1.9	BH28_3.0-3.4	BH28_7.3-7.8	

**VOC's in Soil Method: AN433/AN434**

Monocyclic Aromatic Hydrocarbons

Parameter	Units	LOR				
Benzene	mg/kg	0.1	-	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	-	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	-	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	-	<0.1	<0.1	<0.1

Surrogates

Dibromofluoromethane (Surrogate)	%	-	-	<b>76</b>	<b>78</b>	<b>78</b>	<b>78</b>
d4-1,2-dichloroethane (Surrogate)	%	-	-	<b>97</b>	<b>98</b>	<b>97</b>	<b>98</b>
d8-toluene (Surrogate)	%	-	-	<b>101</b>	<b>103</b>	<b>102</b>	<b>102</b>
Bromofluorobenzene (Surrogate)	%	-	-	<b>100</b>	<b>99</b>	<b>99</b>	<b>101</b>

Totals

Total Xylenes*	mg/kg	0.3	-	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	-	-	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434**

TRH C6-C9	mg/kg	20	-	<20	<20	<20	<20
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Surrogates

Trifluorotoluene (Surrogate)	%	-	-	<b>72</b>	<b>73</b>	<b>102</b>	<b>102</b>
Dibromofluoromethane (Surrogate)	%	-	-	-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-	-	-	-	-
d8-toluene (Surrogate)	%	-	-	-	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-	-	-	-

**TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403**

TRH C10-C14	mg/kg	20	-	<20	<20	<20	<20
TRH C15-C28	mg/kg	50	-	<50	<50	<50	<50
TRH C29-C36	mg/kg	50	-	<50	<50	<50	<50

Surrogates

TRH (Surrogate)	%	-	-	-	-	-	-
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**PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420**

Naphthalene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Sample Number			SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Sample Matrix			Soil	Soil	Soil	Soil	Soil
Sample Date			20 Apr 2012	20 Apr 2012	20 Apr 2012	20 Apr 2012	20 Apr 2012
Sample Name			BH28_Surface	BH28_0.5-0.6	BH28_1.5-1.9	BH28_3.0-3.4	BH28_7.3-7.8

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)**

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Benzo(a)pyrene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Total PAH (Vic EPA)	mg/kg	0.8	-	<0.8	<0.8	<0.8	<0.8

Surrogates

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
d5-nitrobenzene (Surrogate)	%	-	-	84	90	98	98
2-fluorobiphenyl (Surrogate)	%	-	-	78	84	92	88
d14-p-terphenyl (Surrogate)	%	-	-	88	94	96	90

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320**

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Arsenic, As	mg/kg	3	-	<3	<3	8	<3
Cadmium, Cd	mg/kg	0.3	-	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	-	5.7	2.7	6.6	6.0
Copper, Cu	mg/kg	0.5	-	21	2.0	8.9	2.8
Nickel, Ni	mg/kg	0.5	-	32	3.4	2.2	0.8
Lead, Pb	mg/kg	1	-	18	3	20	7
Zinc, Zn	mg/kg	0.5	-	29	5.3	7.4	2.2

**Mercury in Soil Method: AN312**

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Mercury	mg/kg	0.05	-	0.08	<0.05	0.10	<0.05

**Fibre Identification in soil Method: AN602**

FibreID

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Asbestos Detected	No unit	-	No	-	-	-	-

SemiQuant

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Estimated Fibres	%w/w	0.01	<0.01	-	-	-	-

**VOCs in Water Method: AN433/AN434**

Monocyclic Aromatic Hydrocarbons

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Benzene	µg/L	0.5	-	-	-	-	-
Toluene	µg/L	0.5	-	-	-	-	-
Ethylbenzene	µg/L	0.5	-	-	-	-	-
m/p-xylene	µg/L	1	-	-	-	-	-
o-xylene	µg/L	0.5	-	-	-	-	-

Surrogates

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Dibromofluoromethane (Surrogate)	%	-	-	-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-	-	-	-	-
d8-toluene (Surrogate)	%	-	-	-	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-	-	-	-

Totals

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Total Xylenes	µg/L	1.5	-	-	-	-	-
Total BTEX	µg/L	3	-	-	-	-	-

**Volatile Petroleum Hydrocarbons in Water Method: AN433/AN434**

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
TRH C6-C9	µg/L	40	-	-	-	-	-

Surrogates

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Trifluorotoluene (Surrogate)	%	-	-	-	-	-	-
Dibromofluoromethane (Surrogate)	%	-	-	-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-	-	-	-	-

	Sample Number	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	20 Apr 2012	20 Apr 2012	20 Apr 2012	20 Apr 2012	20 Apr 2012	20 Apr 2012
Sample Name	BH28_Surface	BH28_0.5-0.6	BH28_1.5-1.9	BH28_3.0-3.4	BH28_7.3-7.8	

Parameter Units LOR

**Volatile Petroleum Hydrocarbons in Water Method: AN433/AN434 (continued)**

d8-toluene (Surrogate)	%	-	-	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-	-	-

**TRH (Total Recoverable Hydrocarbons) in Water Method: AN403**

TRH C10-C14	µg/L	100	-	-	-	-
TRH C15-C28	µg/L	200	-	-	-	-
TRH C29-C36	µg/L	200	-	-	-	-

Surrogates

TRH (Surrogate)	%	-	-	-	-	-
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**PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: AN420**

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)fluoranthene	µg/L	0.1	-	-	-	-	-
Benzo(k)fluoranthene	µg/L	0.1	-	-	-	-	-
Benzo(a)pyrene	µg/L	0.1	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/L	0.1	-	-	-	-	-
Dibenzo(a&h)anthracene	µg/L	0.1	-	-	-	-	-
Benzo(ghi)perylene	µg/L	0.1	-	-	-	-	-
Total PAH (Vic EPA 16)*	µg/L	1	-	-	-	-	-

Surrogates

d5-nitrobenzene (Surrogate)	%	-	-	-	-	-	-
2-fluorobiphenyl (Surrogate)	%	-	-	-	-	-	-
d14-p-terphenyl (Surrogate)	%	-	-	-	-	-	-

**Trace Metals (Dissolved) in Water by ICPMS Method: AN318**

Arsenic, As	µg/L	1	-	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-	-
Zinc, Zn	µg/L	1	-	-	-	-	-

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Sample Number			SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Sample Matrix			Soil	Soil	Soil	Soil	Soil
Sample Date			20 Apr 2012	20 Apr 2012	20 Apr 2012	20 Apr 2012	20 Apr 2012
Sample Name			BH28_Surface	BH28_0.5-0.6	BH28_1.5-1.9	BH28_3.0-3.4	BH28_7.3-7.8

**Mercury (dissolved) in Water Method: AN311/AN312**

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
Mercury	mg/L	0.0001	-	-	-	-	-

**Moisture Content Method: AN002**

Parameter	Units	LOR	SE107556.006	SE107556.007	SE107556.008	SE107556.009	SE107556.010
% Moisture	%	0.5	-	7.7	12	16	16

Parameter	Units	LOR	SE107556.011	SE107556.012
Sample Number			SE107556.011	SE107556.012
Sample Matrix			Water	Soil
Sample Date			20 Apr 2012	20 Apr 2012
Sample Name			QCA	QC4

**VOC's in Soil Method: AN433/AN434**

Monocyclic Aromatic Hydrocarbons

Parameter	Units	LOR	SE107556.011	SE107556.012
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

Surrogates

Parameter	Units	LOR	SE107556.011	SE107556.012
Dibromofluoromethane (Surrogate)	%	-	-	73
d4-1,2-dichloroethane (Surrogate)	%	-	-	98
d8-toluene (Surrogate)	%	-	-	102
Bromofluorobenzene (Surrogate)	%	-	-	99

Totals

Parameter	Units	LOR	SE107556.011	SE107556.012
Total Xylenes*	mg/kg	0.3	-	<0.3
Total BTEX*	mg/kg	-	-	0

**Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434**

Parameter	Units	LOR	SE107556.011	SE107556.012
TRH C6-C9	mg/kg	20	-	<20

Surrogates

Parameter	Units	LOR	SE107556.011	SE107556.012
Trifluorotoluene (Surrogate)	%	-	-	102
Dibromofluoromethane (Surrogate)	%	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-	-
d8-toluene (Surrogate)	%	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-

**TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403**

Parameter	Units	LOR	SE107556.011	SE107556.012
TRH C10-C14	mg/kg	20	-	<20
TRH C15-C28	mg/kg	50	-	<50
TRH C29-C36	mg/kg	50	-	<50

Surrogates

Parameter	Units	LOR	SE107556.011	SE107556.012
TRH (Surrogate)	%	-	-	-

Sample Number	SE107556.011	SE107556.012
Sample Matrix	Water	Soil
Sample Date	20 Apr 2012	20 Apr 2012
Sample Name	QCA	QC4

Parameter	Units	LOR		
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### PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	-	<0.1
Acenaphthylene	mg/kg	0.1	-	<0.1
Acenaphthene	mg/kg	0.1	-	<0.1
Fluorene	mg/kg	0.1	-	<0.1
Phenanthrene	mg/kg	0.1	-	<0.1
Anthracene	mg/kg	0.1	-	<0.1
Fluoranthene	mg/kg	0.1	-	<0.1
Pyrene	mg/kg	0.1	-	<0.1
Benzo(a)anthracene	mg/kg	0.1	-	<0.1
Chrysene	mg/kg	0.1	-	<0.1
Benzo(b)fluoranthene	mg/kg	0.1	-	<0.1
Benzo(k)fluoranthene	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 (Vic EPA)	mg/kg	0.8	-	<0.8

#### Surrogates

d5-nitrobenzene (Surrogate)	%	-	-	<b>94</b>
2-fluorobiphenyl (Surrogate)	%	-	-	<b>88</b>
d14-p-terphenyl (Surrogate)	%	-	-	<b>96</b>

### Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320

Arsenic, As	mg/kg	3	-	<3
Cadmium, Cd	mg/kg	0.3	-	<0.3
Chromium, Cr	mg/kg	0.3	-	<b>16</b>
Copper, Cu	mg/kg	0.5	-	<b>11</b>
Nickel, Ni	mg/kg	0.5	-	<b>1.7</b>
Lead, Pb	mg/kg	1	-	<b>10</b>
Zinc, Zn	mg/kg	0.5	-	<b>8.1</b>

### Mercury in Soil Method: AN312

Mercury	mg/kg	0.05	-	<0.05
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### Fibre Identification in soil Method: AN602

#### FibreID

Asbestos Detected	No unit	-	-	-
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#### SemiQuant

Estimated Fibres	%w/w	0.01	-	-
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### VOCs in Water Method: AN433/AN434

#### Monocyclic Aromatic Hydrocarbons

Benzene	µg/L	0.5	<0.5	-
Toluene	µg/L	0.5	<0.5	-
Ethylbenzene	µg/L	0.5	<0.5	-
m/p-xylene	µg/L	1	<1	-
o-xylene	µg/L	0.5	<0.5	-

#### Surrogates

Dibromofluoromethane (Surrogate)	%	-	<b>105</b>	-
d4-1,2-dichloroethane (Surrogate)	%	-	<b>107</b>	-
d8-toluene (Surrogate)	%	-	<b>101</b>	-
Bromofluorobenzene (Surrogate)	%	-	<b>64</b>	-

#### Totals

Sample Number	SE107556.011	SE107556.012
Sample Matrix	Water	Soil
Sample Date	20 Apr 2012	20 Apr 2012
Sample Name	QCA	QC4

Parameter	Units	LOR		
<b>VOCs in Water Method: AN433/AN434 (continued)</b>				
Total Xylenes	µg/L	1.5	<1.5	-
Total BTEX	µg/L	3	<3	-

<b>Volatile Petroleum Hydrocarbons in Water Method: AN433/AN434</b>				
TRH C6-C9	µg/L	40	<40	-

Surrogates

Trifluorotoluene (Surrogate)	%	-	<b>101</b>	-
Dibromofluoromethane (Surrogate)	%	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	-	-
d8-toluene (Surrogate)	%	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-

**TRH (Total Recoverable Hydrocarbons) in Water Method: AN403**

TRH C10-C14	µg/L	100	<100	-
TRH C15-C28	µg/L	200	<200	-
TRH C29-C36	µg/L	200	<200	-

Surrogates

TRH (Surrogate)	%	-	-	-
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**PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: AN420**

Naphthalene	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(b)fluoranthene	µg/L	0.1	<0.1	-
Benzo(k)fluoranthene	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	-
Total PAH (Vic EPA 16)*	µg/L	1	<1	-

Surrogates

d5-nitrobenzene (Surrogate)	%	-	<b>85</b>	-
2-fluorobiphenyl (Surrogate)	%	-	<b>78</b>	-
d14-p-terphenyl (Surrogate)	%	-	<b>83</b>	-



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.

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MSD %RPD
Mercury	LB019093	mg/L	0.0001	<0.0001	0%	118%	NA

**Mercury in Soil Method: ME-(AU)-[ENV]AN312**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB019434	mg/kg	0.05	<0.05	0%	105%	85%

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Naphthalene	LB018826	mg/kg	0.1	<0.1	0%	76%
Acenaphthylene	LB018826	mg/kg	0.1	<0.1	0%	97%
Acenaphthene	LB018826	mg/kg	0.1	<0.1	0%	101%
Fluorene	LB018826	mg/kg	0.1	<0.1	0%	NA
Phenanthrene	LB018826	mg/kg	0.1	<0.1	0%	97%
Anthracene	LB018826	mg/kg	0.1	<0.1	0%	102%
Fluoranthene	LB018826	mg/kg	0.1	<0.1	0%	106%
Pyrene	LB018826	mg/kg	0.1	<0.1	0%	106%
Benzo(a)anthracene	LB018826	mg/kg	0.1	<0.1	0%	NA
Chrysene	LB018826	mg/kg	0.1	<0.1	0%	NA
Benzo(b)fluoranthene	LB018826	mg/kg	0.1	<0.1	0%	NA
Benzo(k)fluoranthene	LB018826	mg/kg	0.1	<0.1	0%	NA
Benzo(a)pyrene	LB018826	mg/kg	0.1	<0.1	0%	118%
Indeno(1,2,3-cd)pyrene	LB018826	mg/kg	0.1	<0.1	0%	NA
Dibenzo(a&h)anthracene	LB018826	mg/kg	0.1	<0.1	0%	NA
Benzo(ghi)perylene	LB018826	mg/kg	0.1	<0.1	0%	NA
Total PAH (Vic EPA)	LB018826	mg/kg	0.8	<0.8	0%	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
d5-nitrobenzene (Surrogate)	LB018826	%	-	110%	2%	100%
2-fluorobiphenyl (Surrogate)	LB018826	%	-	94%	0%	86%
d14-p-terphenyl (Surrogate)	LB018826	%	-	100%	2%	88%

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

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Naphthalene	LB018779	µg/L	0.1	<0.1	87%
Acenaphthylene	LB018779	µg/L	0.1	<0.1	99%
Acenaphthene	LB018779	µg/L	0.1	<0.1	89%
Fluorene	LB018779	µg/L	0.1	<0.1	NA
Phenanthrene	LB018779	µg/L	0.1	<0.1	102%
Anthracene	LB018779	µg/L	0.1	<0.1	94%
Fluoranthene	LB018779	µg/L	0.1	<0.1	107%
Pyrene	LB018779	µg/L	0.1	<0.1	108%
Benzo(a)anthracene	LB018779	µg/L	0.1	<0.1	NA
Chrysene	LB018779	µg/L	0.1	<0.1	NA
Benzo(b)fluoranthene	LB018779	µg/L	0.1	<0.1	NA
Benzo(k)fluoranthene	LB018779	µg/L	0.1	<0.1	NA
Benzo(a)pyrene	LB018779	µg/L	0.1	<0.1	105%
Indeno(1,2,3-cd)pyrene	LB018779	µg/L	0.1	<0.1	NA
Dibenzo(a&h)anthracene	LB018779	µg/L	0.1	<0.1	NA
Benzo(ghi)perylene	LB018779	µg/L	0.1	<0.1	NA
Total PAH (Vic EPA 16)*	LB018779	µg/L	1	<1	

Surrogates

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.

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

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
d5-nitrobenzene (Surrogate)	LB018779	%	-	94%	116%
2-fluorobiphenyl (Surrogate)	LB018779	%	-	94%	109%
d14-p-terphenyl (Surrogate)	LB018779	%	-	115%	130%

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: ME-(AU)-[ENV]AN040/AN320**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB019430	mg/kg	3	<3	0 - 8%	97%	89%
Cadmium, Cd	LB019430	mg/kg	0.3	<0.3	0%	100%	85%
Chromium, Cr	LB019430	mg/kg	0.3	<0.3	6 - 9%	97%	87%
Copper, Cu	LB019430	mg/kg	0.5	<0.5	6%	98%	78%
Nickel, Ni	LB019430	mg/kg	0.5	<0.5	2 - 7%	99%	50%
Lead, Pb	LB019430	mg/kg	1	<1	2 - 13%	99%	131%
Zinc, Zn	LB019430	mg/kg	0.5	<0.5	2 - 7%	100%	70%

**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	LB019263	µg/L	1	<1	2%	96%	96%
Cadmium, Cd	LB019263	µg/L	0.1	<0.1	0 - 3%	96%	89%
Chromium, Cr	LB019263	µg/L	1	<1	0%	100%	93%
Copper, Cu	LB019263	µg/L	1	<1	0 - 13%	104%	85%
Lead, Pb	LB019263	µg/L	1	<1	0%	99%	87%
Nickel, Ni	LB019263	µg/L	1	<1	0 - 1%	102%	87%
Zinc, Zn	LB019263	µg/L	1	<1	0 - 8%	104%	91%

**TRH (Total Recoverable Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN403**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
TRH C10-C14	LB018826	mg/kg	20	<20	0%	100%
TRH C15-C28	LB018826	mg/kg	50	<50	0%	108%
TRH C29-C36	LB018826	mg/kg	50	<50	0%	90%

**TRH (Total Recoverable Hydrocarbons) in Water Method: ME-(AU)-[ENV]AN403**

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
TRH C10-C14	LB018779	µg/L	100	<100	101%
TRH C15-C28	LB018779	µg/L	200	<200	102%
TRH C29-C36	LB018779	µg/L	200	<200	100%

**VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434**

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Benzene	LB018816	mg/kg	0.1	<0.1	0%	103%
Toluene	LB018816	mg/kg	0.1	<0.1	0%	96%
Ethylbenzene	LB018816	mg/kg	0.1	<0.1	0%	91%
m/p-xylene	LB018816	mg/kg	0.2	<0.2	0%	97%
o-xylene	LB018816	mg/kg	0.1	<0.1	0%	99%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Dibromofluoromethane (Surrogate)	LB018816	%	-	96%	7%	96%
d4-1,2-dichloroethane (Surrogate)	LB018816	%	-	102%	1%	102%
d8-toluene (Surrogate)	LB018816	%	-	103%	0%	104%
Bromofluorobenzene (Surrogate)	LB018816	%	-	96%	2 - 3%	107%

Totals

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.

**VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434 (continued)**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Total Xylenes*	LB018816	mg/kg	0.3	<0.3	0%	NA
Total BTEX*	LB018816	mg/kg	-	0	NA	NA

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

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene	LB018782	µg/L	0.5	<0.5	0%	83%	102%
Toluene	LB018782	µg/L	0.5	<0.5	0%	81%	103%
Ethylbenzene	LB018782	µg/L	0.5	<0.5	0%	83%	95%
m/p-xylene	LB018782	µg/L	1	<1	0%	78%	96%
o-xylene	LB018782	µg/L	0.5	<0.5	0%	90%	98%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dibromofluoromethane (Surrogate)	LB018782	%	-	99%	0 - 5%	99%	108%
d4-1,2-dichloroethane (Surrogate)	LB018782	%	-	90%	3 - 8%	100%	116%
d8-toluene (Surrogate)	LB018782	%	-	101%	0%	99%	103%
Bromofluorobenzene (Surrogate)	LB018782	%	-	107%	19 - 21%	112%	105%

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
TRH C6-C9	LB018816	mg/kg	20	<20	0%	110%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Trifluorotoluene (Surrogate)	LB018816	%	-	87%	0 - 3%	82%

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C6-C9	LB018782	µg/L	40	<40	0%	73%	85%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Trifluorotoluene (Surrogate)	LB018782	%	-	101%	0%	99%	103%

METHOD

METHODOLOGY SUMMARY

AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
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.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
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.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, 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 differential polarity of the eluent 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.
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).

METHOD

METHODOLOGY SUMMARY

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.

AN602

Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic 'clues', which provide a reasonable degree of certainty, dispersion staining is a mandatory 'clue' for positive identification. If sufficient 'clues' are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.

AN602

AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

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

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-11.pdf>

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## CLIENT DETAILS

Contact **Matthew Locke**  
 Client **Coffey Geotechnics Pty Ltd**  
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 LANE COVE WEST NSW 2066**

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 Facsimile **02 9911 1002**  
 Email **matthew\_locke@coffey.com**

Project **GEOTLCOV24303AC - SICEEP**  
 Order Number **92341-92342**  
 Samples **12**

## LABORATORY DETAILS

Manager **Huong Crawford**  
 Laboratory **SGS Alexandria Environmental**  
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 Alexandria NSW 2015**

Telephone **+61 2 8594 0400**  
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SGS Reference **SE107556 R0**  
 Report Number **0000027066**  
 Date Reported **04/05/2012 17:55:43**  
 Date Received **24 Apr 2012**

## COMMENTS

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

pH field subcontracted to SGS Cairns, 2/58 Comport St, Portsmith QLD 4870, NATA Accreditation Number: 2562, Site Number: 3146

No respirable fibres detected using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

## SIGNATORIES



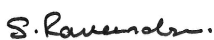
**Andy Sutton**  
Organics Chemist



**Dong Liang**  
Inorganics Metals Team Leader



**Edward Ibrahim**  
Business Manager



**Ravee Sivasubramaniam**  
Hygienist

RESULTS

Fibre Identification in soil

Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w
SE107556.001	BH1_0.5-0.6	Soil	60g Soil,rocks	14 Apr 2012	No Asbestos Found Organic Fibres Detected	<0.01
SE107556.006	BH28_Surface	Soil	60g Soil,rocks	20 Apr 2012	No Asbestos Found Organic Fibres Detected	<0.01

METHOD

METHODOLOGY SUMMARY

AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	Not Accredited
Amphiboles	-	Amosite and/or Crocidolite			

This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Sampled by the client.

Where reported: 'Asbestos Detected': Asbestos detected by polarized light microscopy, including dispersion staining.

Where reported: 'No Asbestos Found': No Asbestos Found by polarized light microscopy, including dispersion staining.

Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarized light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos-containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

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-11.pdf>

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**LABORATORY REPORT COVERSHEET**

**Date:** 1 May 2012

**To:** Coffey Geotechnics Pty Ltd  
8 / 12 Mars Rd  
LANE COVE WEST NSW 2066

**Attention:** Matthew Locke

**Your Reference:** SE107556 - GEOTLCOV23931AA  
**Laboratory Report No:** CE77724

**Samples Received:** 26/04/2012  
**Samples / Quantity:** 1 Soil

The above samples were received intact and analysed according to your written instructions. Unless otherwise stated, solid samples are reported on a dry weight basis and liquid samples as received.

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**Jon Dicker**  
Manager  
CAIRNS



**Anthony Nilsson**  
Operations Manager  
CAIRNS



**CLIENT:** Coffey Geotechnics Pty Ltd  
**PROJECT:** SE107556 - GEOTLCOV23931AA

**Laboratory Report No:** CE77724

**LABORATORY REPORT**

<b>PH Field</b> <b>Our Reference</b> <b>Your Reference</b> <b>Type of Sample</b> <b>Date Sampled</b>	<b>Units</b>	<b>CE77724-1</b> <b>SE107556-9</b> <b>BH28_3.0-3.4</b> <b>Soil</b> <b>20/04/2012</b>
Date Extracted		26/04/2012
Date Analysed		1/05/2012
pH F #	pH Units	7.1
pH FOx #	pH Units	2.1
Field pH reaction #		XXXX



**CLIENT:** Coffey Geotechnics Pty Ltd  
**PROJECT:** SE107556 - GEOTLCOV23931AA

**Laboratory Report No:** CE77724

**LABORATORY REPORT**

TEST PARAMETERS	UNITS	LOR	METHOD
<b>PH Field</b>			
Date Extracted			
Date Analysed			
pH F #	pH Units	0.1	AN101
pH FOx #	pH Units	0.1	AN101
Field pH reaction #			Other



**CLIENT:** Coffey Geotechnics Pty Ltd  
**PROJECT:** SE107556 - GEOTLCOV23931AA

**Laboratory Report No:** CE77724

## LABORATORY REPORT

### NOTES:

LOR - Limit of Reporting.

The significance of all reported results are defined by their analytical limit of reporting.

NOTE: Rate of Reaction:

X - Slight Reaction

XX - Moderate Reaction

XXX - High Reaction

XXXX - Very vigorous, gas evolution and heat generation, commonly >80°

### Geneva Legal Comment

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### ISO 17025

Unless otherwise stated the results shown in this test report only refer to the sample(s) tested and such sample(s) are only retained for 60 days only. This document cannot be reproduced except in full, without prior approval of the Company.

**Analysis Date: Between 26/04/12 and 1/05/12**

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## STATEMENT OF QA/QC PERFORMANCE

SE107556 R0

### CLIENT DETAILS

Contact **Matthew Locke**  
Client **Coffey Geotechnics Pty Ltd**  
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Project **GEOTLCOV24303AC - SICEEP**  
Order Number **92341-92342**  
Samples **12**

### LABORATORY DETAILS

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SGS Reference **SE107556 R0**  
Report Number **0000027065**  
Date Reported **04 May 2012**

### COMMENTS

All the laboratory data for each environmental matrix was compared to 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 with the exception of the following:

Matrix Spike	Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest	2 items
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### SAMPLE SUMMARY

Sample counts by matrix	11 Soils, 1 Water	Type of documentation received	COC
Date documentation received	24/4/2012	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.6°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice	Samples clearly labelled	Yes
Complete documentation received	Yes		

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.

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 or **Red** with an appended dagger symbol (†) 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.

### Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.5-0.6	SE107556.001	LB019479	14 Apr 2012	24 Apr 2012	14 Apr 2013	04 May 2012	14 Apr 2013	04 May 2012
BH28_Surface	SE107556.006	LB019479	20 Apr 2012	24 Apr 2012	20 Apr 2013	04 May 2012	20 Apr 2013	04 May 2012

### Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QCA	SE107556.011	LB019093	20 Apr 2012	24 Apr 2012	18 May 2012	01 May 2012	18 May 2012	01 May 2012

### Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.5-0.6	SE107556.001	LB019434	14 Apr 2012	24 Apr 2012	12 May 2012	04 May 2012	12 May 2012	04 May 2012
BH1_1.5-1.9	SE107556.002	LB019434	14 Apr 2012	24 Apr 2012	12 May 2012	04 May 2012	12 May 2012	04 May 2012
QC3	SE107556.005	LB019434	14 Apr 2012	24 Apr 2012	12 May 2012	04 May 2012	12 May 2012	04 May 2012
BH28_0.5-0.6	SE107556.007	LB019434	20 Apr 2012	24 Apr 2012	18 May 2012	04 May 2012	18 May 2012	04 May 2012
BH28_1.5-1.9	SE107556.008	LB019434	20 Apr 2012	24 Apr 2012	18 May 2012	04 May 2012	18 May 2012	04 May 2012
BH28_3.0-3.4	SE107556.009	LB019434	20 Apr 2012	24 Apr 2012	18 May 2012	04 May 2012	18 May 2012	04 May 2012
BH28_7.3-7.8	SE107556.010	LB019434	20 Apr 2012	24 Apr 2012	18 May 2012	04 May 2012	18 May 2012	04 May 2012
QC4	SE107556.012	LB019434	20 Apr 2012	24 Apr 2012	18 May 2012	04 May 2012	18 May 2012	04 May 2012

### Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.5-0.6	SE107556.001	LB019342	14 Apr 2012	24 Apr 2012	28 Apr 2012	27 Apr 2012	02 May 2012	02 May 2012
BH1_1.5-1.9	SE107556.002	LB019342	14 Apr 2012	24 Apr 2012	28 Apr 2012	27 Apr 2012	02 May 2012	02 May 2012
TB2	SE107556.003	LB019342	14 Apr 2012	24 Apr 2012	28 Apr 2012	27 Apr 2012	02 May 2012	02 May 2012
QC3	SE107556.005	LB019342	14 Apr 2012	24 Apr 2012	28 Apr 2012	27 Apr 2012	02 May 2012	02 May 2012
BH28_0.5-0.6	SE107556.007	LB019342	20 Apr 2012	24 Apr 2012	04 May 2012	27 Apr 2012	02 May 2012	02 May 2012
BH28_1.5-1.9	SE107556.008	LB019342	20 Apr 2012	24 Apr 2012	04 May 2012	27 Apr 2012	02 May 2012	02 May 2012
BH28_3.0-3.4	SE107556.009	LB019342	20 Apr 2012	24 Apr 2012	04 May 2012	27 Apr 2012	02 May 2012	02 May 2012
BH28_7.3-7.8	SE107556.010	LB019342	20 Apr 2012	24 Apr 2012	04 May 2012	27 Apr 2012	02 May 2012	02 May 2012
QC4	SE107556.012	LB019342	20 Apr 2012	24 Apr 2012	04 May 2012	27 Apr 2012	02 May 2012	02 May 2012

### PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.5-0.6	SE107556.001	LB018826	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	01 May 2012
BH1_1.5-1.9	SE107556.002	LB018826	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	01 May 2012
TB2	SE107556.003	LB018826	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	01 May 2012
QC3	SE107556.005	LB018826	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	01 May 2012
BH28_0.5-0.6	SE107556.007	LB018826	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	01 May 2012
BH28_1.5-1.9	SE107556.008	LB018826	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	01 May 2012
BH28_3.0-3.4	SE107556.009	LB018826	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	01 May 2012
BH28_7.3-7.8	SE107556.010	LB018826	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	01 May 2012
QC4	SE107556.012	LB018826	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	01 May 2012

### PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QCA	SE107556.011	LB018779	20 Apr 2012	24 Apr 2012	27 Apr 2012	25 Apr 2012	04 Jun 2012	30 Apr 2012

### Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.5-0.6	SE107556.001	LB019430	14 Apr 2012	24 Apr 2012	11 Oct 2012	04 May 2012	11 Oct 2012	04 May 2012
BH1_1.5-1.9	SE107556.002	LB019430	14 Apr 2012	24 Apr 2012	11 Oct 2012	04 May 2012	11 Oct 2012	04 May 2012
QC3	SE107556.005	LB019430	14 Apr 2012	24 Apr 2012	11 Oct 2012	04 May 2012	11 Oct 2012	04 May 2012
BH28_0.5-0.6	SE107556.007	LB019430	20 Apr 2012	24 Apr 2012	17 Oct 2012	04 May 2012	17 Oct 2012	04 May 2012
BH28_1.5-1.9	SE107556.008	LB019430	20 Apr 2012	24 Apr 2012	17 Oct 2012	04 May 2012	17 Oct 2012	04 May 2012
BH28_3.0-3.4	SE107556.009	LB019430	20 Apr 2012	24 Apr 2012	17 Oct 2012	04 May 2012	17 Oct 2012	04 May 2012
BH28_7.3-7.8	SE107556.010	LB019430	20 Apr 2012	24 Apr 2012	17 Oct 2012	04 May 2012	17 Oct 2012	04 May 2012
QC4	SE107556.012	LB019430	20 Apr 2012	24 Apr 2012	17 Oct 2012	04 May 2012	17 Oct 2012	04 May 2012

### Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QCA	SE107556.011	LB019263	20 Apr 2012	24 Apr 2012	17 Oct 2012	02 May 2012	17 Oct 2012	03 May 2012

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.

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 or **Red** with an appended dagger symbol (†) 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.

### TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.5-0.6	SE107556.001	LB018826	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	04 May 2012
BH1_1.5-1.9	SE107556.002	LB018826	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	04 May 2012
TB2	SE107556.003	LB018826	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	04 May 2012
QC3	SE107556.005	LB018826	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	04 May 2012
BH28_0.5-0.6	SE107556.007	LB018826	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	04 May 2012
BH28_1.5-1.9	SE107556.008	LB018826	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	04 May 2012
BH28_3.0-3.4	SE107556.009	LB018826	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	04 May 2012
BH28_7.3-7.8	SE107556.010	LB018826	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	04 May 2012
QC4	SE107556.012	LB018826	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	04 May 2012

### TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QCA	SE107556.011	LB018779	20 Apr 2012	24 Apr 2012	27 Apr 2012	25 Apr 2012	04 Jun 2012	30 Apr 2012

### VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.5-0.6	SE107556.001	LB018816	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH1_1.5-1.9	SE107556.002	LB018816	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	02 May 2012
TB2	SE107556.003	LB018816	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	02 May 2012
TS2	SE107556.004	LB018816	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	02 May 2012
QC3	SE107556.005	LB018816	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH28_0.5-0.6	SE107556.007	LB018816	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH28_1.5-1.9	SE107556.008	LB018816	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH28_3.0-3.4	SE107556.009	LB018816	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH28_7.3-7.8	SE107556.010	LB018816	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
QC4	SE107556.012	LB018816	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012

### VOCs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QCA	SE107556.011	LB018782	20 Apr 2012	24 Apr 2012	27 Apr 2012	25 Apr 2012	04 Jun 2012	26 Apr 2012

### Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.5-0.6	SE107556.001	LB018816	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH1_1.5-1.9	SE107556.002	LB018816	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	02 May 2012
TB2	SE107556.003	LB018816	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	02 May 2012
TS2	SE107556.004	LB018816	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	02 May 2012
QC3	SE107556.005	LB018816	14 Apr 2012	24 Apr 2012	28 Apr 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH28_0.5-0.6	SE107556.007	LB018816	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH28_1.5-1.9	SE107556.008	LB018816	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH28_3.0-3.4	SE107556.009	LB018816	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
BH28_7.3-7.8	SE107556.010	LB018816	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012
QC4	SE107556.012	LB018816	20 Apr 2012	24 Apr 2012	04 May 2012	26 Apr 2012	05 Jun 2012	02 May 2012

### Volatile Petroleum Hydrocarbons in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QCA	SE107556.011	LB018782	20 Apr 2012	24 Apr 2012	27 Apr 2012	25 Apr 2012	04 Jun 2012	26 Apr 2012

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 **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %	
2-fluorobiphenyl (Surrogate)	BH1_0.5-0.6	SE107556.001	%	60 - 130%	88	
	BH1_1.5-1.9	SE107556.002	%	60 - 130%	88	
	QC3	SE107556.005	%	60 - 130%	80	
	BH28_0.5-0.6	SE107556.007	%	60 - 130%	78	
	BH28_1.5-1.9	SE107556.008	%	60 - 130%	84	
	BH28_3.0-3.4	SE107556.009	%	60 - 130%	92	
	BH28_7.3-7.8	SE107556.010	%	60 - 130%	88	
	QC4	SE107556.012	%	60 - 130%	88	
	d14-p-terphenyl (Surrogate)	BH1_0.5-0.6	SE107556.001	%	60 - 130%	98
		BH1_1.5-1.9	SE107556.002	%	60 - 130%	98
QC3		SE107556.005	%	60 - 130%	94	
BH28_0.5-0.6		SE107556.007	%	60 - 130%	88	
BH28_1.5-1.9		SE107556.008	%	60 - 130%	94	
BH28_3.0-3.4		SE107556.009	%	60 - 130%	96	
BH28_7.3-7.8		SE107556.010	%	60 - 130%	90	
QC4		SE107556.012	%	60 - 130%	96	
d5-nitrobenzene (Surrogate)	BH1_0.5-0.6	SE107556.001	%	60 - 130%	96	
	BH1_1.5-1.9	SE107556.002	%	60 - 130%	100	
	QC3	SE107556.005	%	60 - 130%	84	
	BH28_0.5-0.6	SE107556.007	%	60 - 130%	84	
	BH28_1.5-1.9	SE107556.008	%	60 - 130%	90	
	BH28_3.0-3.4	SE107556.009	%	60 - 130%	98	
	BH28_7.3-7.8	SE107556.010	%	60 - 130%	98	
	QC4	SE107556.012	%	60 - 130%	94	

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	QCA	SE107556.011	%	40 - 130%	78
d14-p-terphenyl (Surrogate)	QCA	SE107556.011	%	40 - 130%	83
d5-nitrobenzene (Surrogate)	QCA	SE107556.011	%	40 - 130%	85

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %	
Bromofluorobenzene (Surrogate)	BH1_0.5-0.6	SE107556.001	%	60 - 130%	98	
	BH1_1.5-1.9	SE107556.002	%	60 - 130%	98	
	TB2	SE107556.003	%	60 - 130%	99	
	TS2	SE107556.004	%	60 - 130%	108	
	QC3	SE107556.005	%	60 - 130%	104	
	BH28_0.5-0.6	SE107556.007	%	60 - 130%	100	
	BH28_1.5-1.9	SE107556.008	%	60 - 130%	99	
	BH28_3.0-3.4	SE107556.009	%	60 - 130%	99	
	BH28_7.3-7.8	SE107556.010	%	60 - 130%	101	
	QC4	SE107556.012	%	60 - 130%	99	
	d4-1,2-dichloroethane (Surrogate)	BH1_0.5-0.6	SE107556.001	%	60 - 130%	100
		BH1_1.5-1.9	SE107556.002	%	60 - 130%	100
		TB2	SE107556.003	%	60 - 130%	99
		TS2	SE107556.004	%	60 - 130%	92
QC3		SE107556.005	%	60 - 130%	96	
BH28_0.5-0.6		SE107556.007	%	60 - 130%	97	
BH28_1.5-1.9		SE107556.008	%	60 - 130%	98	
BH28_3.0-3.4		SE107556.009	%	60 - 130%	97	
BH28_7.3-7.8		SE107556.010	%	60 - 130%	98	
QC4		SE107556.012	%	60 - 130%	98	
d8-toluene (Surrogate)	BH1_0.5-0.6	SE107556.001	%	60 - 130%	103	
	BH1_1.5-1.9	SE107556.002	%	60 - 130%	103	
	TB2	SE107556.003	%	60 - 130%	103	
	TS2	SE107556.004	%	60 - 130%	99	
	QC3	SE107556.005	%	60 - 130%	102	
	BH28_0.5-0.6	SE107556.007	%	60 - 130%	101	
	BH28_1.5-1.9	SE107556.008	%	60 - 130%	103	
	BH28_3.0-3.4	SE107556.009	%	60 - 130%	102	
	BH28_7.3-7.8	SE107556.010	%	60 - 130%	102	

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 **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	QC4	SE107556.012	%	60 - 130%	102
Dibromofluoromethane (Surrogate)	BH1_0.5-0.6	SE107556.001	%	60 - 130%	81
	BH1_1.5-1.9	SE107556.002	%	60 - 130%	81
	TB2	SE107556.003	%	60 - 130%	78
	TS2	SE107556.004	%	60 - 130%	72
	QC3	SE107556.005	%	60 - 130%	77
	BH28_0.5-0.6	SE107556.007	%	60 - 130%	76
	BH28_1.5-1.9	SE107556.008	%	60 - 130%	78
	BH28_3.0-3.4	SE107556.009	%	60 - 130%	78
	BH28_7.3-7.8	SE107556.010	%	60 - 130%	78
	QC4	SE107556.012	%	60 - 130%	73

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QCA	SE107556.011	%	60 - 130%	64
d4-1,2-dichloroethane (Surrogate)	QCA	SE107556.011	%	40 - 130%	107
d8-toluene (Surrogate)	QCA	SE107556.011	%	60 - 130%	101
Dibromofluoromethane (Surrogate)	QCA	SE107556.011	%	60 - 130%	105

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Trifluorotoluene (Surrogate)	BH1_0.5-0.6	SE107556.001	%	60 - 130%	103
	BH1_1.5-1.9	SE107556.002	%	60 - 130%	77
	TB2	SE107556.003	%	60 - 130%	74
	QC3	SE107556.005	%	60 - 130%	72
	BH28_0.5-0.6	SE107556.007	%	60 - 130%	72
	BH28_1.5-1.9	SE107556.008	%	60 - 130%	73
	BH28_3.0-3.4	SE107556.009	%	60 - 130%	102
	BH28_7.3-7.8	SE107556.010	%	60 - 130%	102
	QC4	SE107556.012	%	60 - 130%	102

Volatile Petroleum Hydrocarbons in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Trifluorotoluene (Surrogate)	QCA	SE107556.011	%	40 - 130%	101

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

**Mercury (dissolved) in Water**

Method: ME-(AU)-[ENV]AN311/AN312

Sample Number	Parameter	Units	LOR	Result
LB019093.001	Mercury	mg/L	0.0001	<0.0001

**Mercury in Soil**

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB019434.001	Mercury	mg/kg	0.05	<0.05

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	
LB018826.001	Naphthalene	mg/kg	0.1	<0.1	
	Acenaphthylene	mg/kg	0.1	<0.1	
	Acenaphthene	mg/kg	0.1	<0.1	
	Fluorene	mg/kg	0.1	<0.1	
	Phenanthrene	mg/kg	0.1	<0.1	
	Anthracene	mg/kg	0.1	<0.1	
	Fluoranthene	mg/kg	0.1	<0.1	
	Pyrene	mg/kg	0.1	<0.1	
	Benzo(a)anthracene	mg/kg	0.1	<0.1	
	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	
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	110
		2-fluorobiphenyl (Surrogate)	%	-	94
	d14-p-terphenyl (Surrogate)	%	-	100	

**PAH (Polynuclear Aromatic Hydrocarbons) in Water**

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	
LB018779.001	Naphthalene	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)	%	-	94
		2-fluorobiphenyl (Surrogate)	%	-	94
	d14-p-terphenyl (Surrogate)	%	-	115	

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest**

Method: ME-(AU)-[ENV]AN40/AN320

Sample Number	Parameter	Units	LOR	Result
LB019430.001	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
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	0.5	<0.5

**Trace Metals (Dissolved) in Water by ICPMS**

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR
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Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

**Trace Metals (Dissolved) in Water by ICPMS (continued)**

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB019263.001	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

**TRH (Total Recoverable Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB018826.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	50	<50
	TRH C29-C36	mg/kg	50	<50

**TRH (Total Recoverable Hydrocarbons) in Water**

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB018779.001	TRH C10-C14	µg/L	100	<100
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200

**VOC's in Soil**

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

Sample Number	Parameter	Units	LOR	Result	
LB018816.001	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
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	96
		d4-1,2-dichloroethane (Surrogate)	%	-	102
		d8-toluene (Surrogate)	%	-	103
		Bromofluorobenzene (Surrogate)	%	-	96
	Totals	Total BTEX*	mg/kg	-	0

**Volatile Petroleum Hydrocarbons in Soil**

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

Sample Number	Parameter	Units	LOR	Result
LB018816.001	TRH C6-C9	mg/kg	20	<20
	Surrogates	Trifluorotoluene (Surrogate)	%	-

**Volatile Petroleum Hydrocarbons in Water**

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

Sample Number	Parameter	Units	LOR	Result
LB018782.001	TRH C6-C9	µg/L	40	<40
	Surrogates	Trifluorotoluene (Surrogate)	%	-

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula:  $RPD = |OriginalResult - ReplicateResult| \times 100 / Mean$

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times SDL / Mean + LR$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

**Mercury (dissolved) in Water**

Method: ME-(AU)-[ENV]AN311/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107556.011	LB019093.014	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	0
SE107598.017	LB019093.018	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	0

**Mercury in Soil**

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107635.002	LB019434.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE107641.003	LB019434.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107556.001	LB018826.004	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
		Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
		Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
		Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(b)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
		Dibenzo(a,h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
		Total PAH (Vic EPA)	mg/kg	0.8	<0.8	<0.8	200	0
Surrogates		d5-nitrobenzene (Surrogate)	%	-	96.0	94.0	30	2
		2-fluorobiphenyl (Surrogate)	%	-	88.0	88.0	30	0
		d14-p-terphenyl (Surrogate)	%	-	98.0	96.0	30	2

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest**

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107635.001	LB019430.014	Arsenic, As	mg/kg	3	3	<3	126	8
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	21	20	31	6
		Copper, Cu	mg/kg	0.5	11	10	35	6
		Nickel, Ni	mg/kg	0.5	6.4	6.3	38	2
		Lead, Pb	mg/kg	1	18	16	36	13
		Zinc, Zn	mg/kg	0.5	15	15	33	2
SE107641.002	LB019430.024	Arsenic, As	mg/kg	3	<3	<3	138	0
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	13	14	32	9
		Copper, Cu	mg/kg	0.5	7.7	8.2	36	6
		Nickel, Ni	mg/kg	0.5	7.8	8.4	36	7
		Lead, Pb	mg/kg	1	9	9	41	2
		Zinc, Zn	mg/kg	0.5	36	38	31	7

**Trace Metals (Dissolved) in Water by ICPMS**

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107653.009	LB019263.014	Arsenic, As	µg/L	1	6.064	6.19	31	2
		Cadmium, Cd	µg/L	0.1	2.606	2.539	19	3
		Chromium, Cr	µg/L	1	0.11	0.115	200	0
		Copper, Cu	µg/L	1	2.751	3.129	49	13
		Lead, Pb	µg/L	1	0.092	0.273	200	0
		Nickel, Ni	µg/L	1	80.554	80.018	16	1
		Zinc, Zn	µg/L	1	28.661	30.994	18	8
SE107762.001	LB019263.024	Arsenic, As	µg/L	1	2	1	82	2
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula:  $RPD = |OriginalResult - ReplicateResult| \times 100 / Mean$

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times SDL / Mean + LR$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Trace Metals (Dissolved) in Water by ICPMS (continued)

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107762.001	LB019263.024	Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	1	<1	<1	200	0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107556.001	LB018826.004	TRH C10-C14	mg/kg	20	<20	<20	200	0
		TRH C15-C28	mg/kg	50	<50	<50	200	0
		TRH C29-C36	mg/kg	50	<50	<50	200	0

VOC's in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE107556.005	LB018816.015	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	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
		Surrogates	Dibromofluoromethane (Surrogate)	%	-	77.0	72.0	50	7
			d4-1,2-dichloroethane (Surrogate)	%	-	96.0	97.0	50	1
			d8-toluene (Surrogate)	%	-	102.0	102.0	50	0
			Bromofluorobenzene (Surrogate)	%	-	104.0	101.0	50	3
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX*	mg/kg	-	0	0	200	NA
		SE107556.012	LB018816.021	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1
Aromatic	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
Surrogates	Dibromofluoromethane (Surrogate)			%	-	73.0	78.0	50	7
	d4-1,2-dichloroethane (Surrogate)			%	-	98.0	97.0	50	1
	d8-toluene (Surrogate)			%	-	102.0	102.0	50	0
	Bromofluorobenzene (Surrogate)			%	-	99.0	101.0	50	2
Totals	Total Xylenes*			mg/kg	0.3	<0.3	<0.3	200	0
	Total BTEX*			mg/kg	-	0	0	200	NA

VOCs in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE107558.001	LB018782.008	Monocyclic	Benzene	µg/L	0.5	<0.5	<0.5	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	<0.5	200	0
			Ethylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			m/p-xylene	µg/L	1	<1	<1	200	0
			o-xylene	µg/L	0.5	<0.5	<0.5	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	102.0	107.0	30	5
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	104.0	113.0	30	8
			d8-toluene (Surrogate)	µg/L	-	101.0	101.0	30	0
			Bromofluorobenzene (Surrogate)	µg/L	-	83.0	67.0	30	21
		SE107558.011	LB018782.020	Monocyclic	Benzene	µg/L	0.5	<0.5	<0.5
Aromatic	Toluene			µg/L	0.5	<0.5	<0.5	200	0
	Ethylbenzene			µg/L	0.5	<0.5	<0.5	200	0
	m/p-xylene			µg/L	1	<1	<1	200	0
	o-xylene			µg/L	0.5	<0.5	<0.5	200	0
Surrogates	Dibromofluoromethane (Surrogate)			µg/L	-	108.0	108.0	30	0
	d4-1,2-dichloroethane (Surrogate)			µg/L	-	111.0	114.0	30	3
	d8-toluene (Surrogate)			µg/L	-	102.0	102.0	30	0
	Bromofluorobenzene (Surrogate)			µg/L	-	87.0	72.0	30	19

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107556.005	LB018816.014	TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Trifluorotoluene (Surrogate)	%	-	72.0	74.0	30
SE107556.012	LB018816.020	TRH C6-C9	mg/kg	20	<20	<20	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula:  $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

**Volatile Petroleum Hydrocarbons in Soil (continued)**

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107556.012	LB018816.020	Surrogates Trifluorotoluene (Surrogate)	%	-	102.0	102.0	30	0

**Volatile Petroleum Hydrocarbons in Water**

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE107558.001	LB018782.008	TRH C6-C9	µg/L	40	<40	<40	200	0
		Surrogates Trifluorotoluene (Surrogate)	%	-	101.0	101.0	30	0
SE107558.011	LB018782.020	TRH C6-C9	µg/L	40	<40	<40	200	0
		Surrogates Trifluorotoluene (Surrogate)	%	-	102.0	102.0	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 this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

**Mercury (dissolved) in Water**

Method: ME-(AU)-[ENV]AN311/AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB019093.002	Mercury	mg/L	0.0001	0.0094	0.008	80 - 120	118

**Mercury in Soil**

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB019434.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	105

**PAH (Polynuclear Aromatic Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB018826.002	Naphthalene	mg/kg	0.1	3.0	4	60 - 140	76	
	Acenaphthylene	mg/kg	0.1	3.9	4	60 - 140	97	
	Acenaphthene	mg/kg	0.1	4.0	4	60 - 140	101	
	Phenanthrene	mg/kg	0.1	3.9	4	60 - 140	97	
	Anthracene	mg/kg	0.1	4.1	4	60 - 140	102	
	Fluoranthene	mg/kg	0.1	4.2	4	60 - 140	106	
	Pyrene	mg/kg	0.1	4.2	4	60 - 140	106	
	Benzo(a)pyrene	mg/kg	0.1	4.7	4	60 - 140	118	
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	100.0	100	60 - 140	100
		2-fluorobiphenyl (Surrogate)	%	-	86.0	100	60 - 140	86
	d14-p-terphenyl (Surrogate)	%	-	88.0	100	60 - 140	88	

**PAH (Polynuclear Aromatic Hydrocarbons) in Water**

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB018779.002	Naphthalene	µg/L	0.1	35	40	60 - 140	87	
	Acenaphthylene	µg/L	0.1	40	40	60 - 140	99	
	Acenaphthene	µg/L	0.1	36	40	60 - 140	89	
	Phenanthrene	µg/L	0.1	41	40	60 - 140	102	
	Anthracene	µg/L	0.1	38	40	60 - 140	94	
	Fluoranthene	µg/L	0.1	43	40	60 - 140	107	
	Pyrene	µg/L	0.1	43	40	60 - 140	108	
	Benzo(a)pyrene	µg/L	0.1	42	40	60 - 140	105	
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	116.0	100	60 - 140	116
		2-fluorobiphenyl (Surrogate)	%	-	109.0	100	60 - 140	109
	d14-p-terphenyl (Surrogate)	%	-	130.0	100	60 - 140	130	

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest**

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB019430.002	Arsenic, As	mg/kg	3	48	50	80 - 120	97
	Cadmium, Cd	mg/kg	0.3	50	50	80 - 120	100
	Chromium, Cr	mg/kg	0.3	49	50	80 - 120	97
	Copper, Cu	mg/kg	0.5	49	50	80 - 120	98
	Nickel, Ni	mg/kg	0.5	50	50	80 - 120	99
	Lead, Pb	mg/kg	1	50	50	80 - 120	99
	Zinc, Zn	mg/kg	0.5	50	50	80 - 120	100

**Trace Metals (Dissolved) in Water by ICPMS**

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB019263.002	Arsenic, As	µg/L	1	19	20	80 - 120	96
	Cadmium, Cd	µg/L	0.1	19	20	80 - 120	96
	Chromium, Cr	µg/L	1	20	20	80 - 120	100
	Copper, Cu	µg/L	1	21	20	80 - 120	104
	Lead, Pb	µg/L	1	20	20	80 - 120	99
	Nickel, Ni	µg/L	1	20	20	80 - 120	102
	Zinc, Zn	µg/L	1	21	20	80 - 120	104

**TRH (Total Recoverable Hydrocarbons) in Soil**

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB018826.002	TRH C10-C14	mg/kg	20	40	40	60 - 140	100
	TRH C15-C28	mg/kg	50	<50	40	60 - 140	108
	TRH C29-C36	mg/kg	50	<50	40	60 - 140	90

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 this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

**TRH (Total Recoverable Hydrocarbons) in Water**

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB018779.002	TRH C10-C14	µg/L	100	1200	1200	60 - 140	101
	TRH C15-C28	µg/L	200	1200	1200	60 - 140	102
	TRH C29-C36	µg/L	200	1200	1200	60 - 140	100

**VOC's in Soil**

Method: ME-(AU)-[ENV]AN434

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB018816.002	Monocyclic	Benzene	mg/kg	0.1	3.1	3	60 - 140	103
		Aromatic	Toluene	mg/kg	0.1	2.9	3	60 - 140
	Ethylbenzene		mg/kg	0.1	2.7	3	60 - 140	91
	m/p-xylene		mg/kg	0.2	5.7	5.9	60 - 140	97
	o-xylene		mg/kg	0.1	2.9	2.9	60 - 140	99
	Surrogates		Dibromofluoromethane (Surrogate)	%	-	96.0	100	60 - 140
		d4-1,2-dichloroethane (Surrogate)	%	-	102.0	100	60 - 140	102
		d8-toluene (Surrogate)	%	-	104.0	100	60 - 140	104
		Bromofluorobenzene (Surrogate)	%	-	107.0	100	60 - 140	107

**VOCs in Water**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB018782.002	Monocyclic	Benzene	µg/L	0.5	38	45.45	60 - 140	83
		Aromatic	Toluene	µg/L	0.5	37	45.45	60 - 140
	Ethylbenzene		µg/L	0.5	38	45.45	60 - 140	83
	m/p-xylene		µg/L	1	70	90.9	60 - 140	78
	o-xylene	µg/L	0.5	41	45.45	60 - 140	90	

**Volatile Petroleum Hydrocarbons in Soil**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB018816.002	TRH C6-C9	mg/kg	20	27	24.4	60 - 140	110

**Volatile Petroleum Hydrocarbons in Water**

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB018782.002	TRH C6-C9	µg/L	40	600	827	60 - 140	73

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 this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

**Mercury in Soil**

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE107556.001	LB019434.004	Mercury	mg/kg	0.05	0.30	0.13	0.2	85

**Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest**

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE107556.001	LB019430.004	Arsenic, As	mg/kg	3	46	<3	50	89
		Cadmium, Cd	mg/kg	0.3	43	0.5	50	85
		Chromium, Cr	mg/kg	0.3	55	11	50	87
		Copper, Cu	mg/kg	0.5	97	58	50	78
		Nickel, Ni	mg/kg	0.5	120	92	50	50 ⊕
		Lead, Pb	mg/kg	1	90	24	50	131 ⊕
		Zinc, Zn	mg/kg	0.5	110	79	50	70

**Trace Metals (Dissolved) in Water by ICPMS**

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE107645.001	LB019263.004	Arsenic, As	µg/L	1	20	1.232	20	96
		Cadmium, Cd	µg/L	0.1	18	0.002	20	89
		Chromium, Cr	µg/L	1	19	0.08	20	93
		Copper, Cu	µg/L	1	19	1.573	20	85
		Lead, Pb	µg/L	1	17	-0.018	20	87
		Nickel, Ni	µg/L	1	20	2.511	20	87
		Zinc, Zn	µg/L	1	26	8.376	20	91

**VOCs in Water**

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE107558.002	LB018782.010	Monocyclic	µg/L	0.5	47	<0.5	45.45	102
		Aromatic	µg/L	0.5	47	<0.5	45.45	103
		Ethylbenzene	µg/L	0.5	43	<0.5	45.45	95
		m/p-xylene	µg/L	1	87	<1	90.9	96
		o-xylene	µg/L	0.5	45	<0.5	45.45	98
		Surrogates	µg/L	-	108.0	101.0	-	108
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	116.0	103.0	-	116
		d8-toluene (Surrogate)	µg/L	-	103.0	102.0	-	103
		Bromofluorobenzene (Surrogate)	µg/L	-	105.0	77.0	-	105

**Volatile Petroleum Hydrocarbons in Water**

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE107558.002	LB018782.010	TRH C6-C9	µg/L	40	710	<40	827	85
		Surrogates	%	-	103.0	102.0	-	103

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula:  $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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 Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula:  $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC 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-11.pdf>

- \* Non-accredited analysis.
- Sample not analysed for this analyte.
- ^ Analysis performed by external laboratory.

- IS Insufficient sample for analysis.
- LNR Sample listed, but not received.
- LOR Limit of reporting.
- QFH QC result is above the upper tolerance.
- QFL QC result is below the lower tolerance.

- ① At least 2 of 3 surrogates are within acceptance criteria.
- ② RPD failed acceptance criteria due to sample heterogeneity.
- ③ Results less than 5 times LOR preclude acceptance criteria for RPD.
- ④ Recovery failed acceptance criteria due to matrix interference.
- ⑤ Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
- ⑥ LOR was raised due to sample matrix interference.
- ⑦ LOR was raised due to dilution of significantly high concentration of analyte in sample.
- ⑧ Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
- ⑨ Recovery failed acceptance criteria due to sample heterogeneity.
- † Refer to Analytical Report comments for further information.

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

81298



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- Adelaide: Tel (08) 7221 3500 Fax (08) 8172 1968
- Brisbane: Tel (07) 3608 2500 Fax (07) 3852 2805
- Perth: Tel (08) 9355 7100 Fax (08) 9355 7197
- Sydney: Tel: (02) 8083 1600 Fax (02) 8765 0762
- Melbourne: Tel (03) 9473 1400 Fax (03) 9473 1450
- Hobart: Tel (03) 6208 6860 Fax (03) 6208 6869
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- 47 Doggett Street, Newstead QLD 4006
- 89-91 Burswood Road, Burswood WA 6100
- Level 1, 3 Hilder Boulevard, Rhodes, NSW 2138
- 126 Ternery Crescent, Abbotsford VIC 3067
- 8/12 Mars Road, Lane Cove West, NSW 2066
- 254 Northbourne Avenue, Canberra ACT 2601
- Dillhorn House: Tel: (08) 9328 3488 Fax (08) 9328 3588

Project No: GEOTLON24303AC

Task No:

Project Name: SICEEP

Laboratory: SGS

Samplers Name: Jocelin Wigney / Adriana Coore-Moffat

Project Manager: Matthew Locke

Special Instructions: Please keep all remaining soil after analysis. Soil to be stored for 36 months. Please contact Coffey after analysis completion to organize pick-up of remaining soil samples.

Lab. No.	Sample ID	Sample Location	Sample Depth	Sample Date	Time	Matrix (Soil... etc)	Container Type & Preservative*	T-A-T (Specify)
1	BH28-14-1495	BH28	14-1495	27/04/12		Soil	1 jar + 1 ice	
2	BH7-surface	BH7	-	27/04/12		Soil	1 jar + 1 bag + 1 ice	
3	BH7-24-3		24-3	27/04/12		Soil	1 jar + 1 bag + 1 ice	
4	BH7-04-0.5		0.4-0.5	27/04/12		Soil	1 jar + 1 bag + 1 ice	
5	BH12-surface	BH12	-	27/04/12		Soil	1 jar + 1 bag + 1 ice	
6	BH12-0.4-0.5		0.4-0.5	27/04/12		Soil	1 jar + 1 bag + 1 ice	
7	BH12-1.5-1.95		1.5-1.95	27/04/12		Soil	1 jar + 1 bag + 1 ice	
8	BH12-2.9-3.0		2.9-3.0	27/04/12		Soil	1 jar + 1 bag + 1 ice	
9	BH12-4.5-4.95		4.5-4.95	27/04/12		Soil	1 jar + 1 bag + 1 ice	
10	BH23-0.5-0.6	BH23	0.5-0.6	27/04/12		Soil	1 jar + 1 bag + 1 ice	
11	BH23-1.5-1.95		1.5-1.95	27/04/12		Soil	1 jar + 1 bag + 1 ice	
12	BH23-3-3.45		3-3.45	27/04/12		Soil	1 jar + 1 bag + 1 ice	

RELINQUISHED BY:

RECEIVED BY:

Signature: [Signature] Date: 27/04  
 Company: COFFEY Time: 2:45 PM  
 Signature: [Signature] Date: 27/04/12  
 Company: SAS Time: 4:30 PM

Analysis Request Section

BTEX / TPH	
METALS (Specify)	
PAHs (Specify)	
OCs / OPs	
Asbestos	
VHC	
VOC	
SVOC	
ASS Screening	
Chlor. Hydrocarbons	

Sample Receipt Advice: (Lab Use Only)

All Samples Received in Good Condition

All Documentation is in Proper Order

Samples Received Properly Chilled

Lab. Ref/Batch No. **SB 107686**

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

81299



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 2/54 Northbourne Avenue, Canberra ACT 2601

Dillon House: Tel: (08) 9328 3488 Fax (08) 9328 3588  
 Dillon House, 2 Bulwer Street, Perth, WA 6000

Project No: 9E0TL0V24303AC

Task No:

Project Name: SICEEP

Laboratory: SGS

Sample Name: Adriana Lesona Metha

Project Manager: Matthew Locke

Special Instructions: Please keep all remaining soil, if requires to be stored for 36 months

Lab. No.	Sample ID	Sample Location	Sample Depth	Sample Date	Time	Matrix (Soil... etc)	Container Type & Preservative*	T-A-T (Specity)	Analysis Request Section	NOTES
13	BH19-0.5-0.6	BH19	0.5-0.6	24/04/12	9:27	Soil	1 jar + 1 bag tree	5 days	BTEX / TPH METALS PAHs / PHENOLS OCs / OPs Asbestos VHC VOC SVOC ASS Screening Chlor. Hydrocarbons	
14	BH19-1.3-1.4		1.3-1.4		9:45		1 jar			
15	BH26-surface	BH26	0.1-0.2		11:50		1 jar			
16	BH20-surface	BH20	0.1-0.2		13:39		1 jar			
16	BH20-0.3-0.4		0.3-0.4		14:36		1 jar			
17	BH20-1.5-1.8		1.5-1.8		14:58		1 jar			
18	BH20-3.0-3.4		3.0-3.4		15:19		1 jar			
19	BH20-4.5-4.9		4.5-4.9		15:30		1 jar + 1 bag tree			
20	NBH18-0.5-0.6	NBH18	0.5-0.6				1 jar			
21	NBH18-1.5-1.95		1.5-1.95				1 jar			
22	NBH18-3-3.45		3-3.45				1 jar			
23	NBH18-4.3-4.5		4.3-4.5				1 jar + 1 bag tree			
24	NBH22-0.5-0.6	NBH22	0.5-0.6				1 jar			
25	NBH22-1.3-1.5		1.3-1.5				1 jar			
	NBH22-1.5-1.95		1.5-1.95				1 jar			

RELINQUISHED BY:

RECEIVED BY:

Signature: *[Signature]*  
 Date: 27/04  
 Company: COFFEY  
 Time: 2:45 PM

Signature: *[Signature]*  
 Date: 27/04/12  
 Company: SGS  
 Time: 4:30 PM

Signature: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Time: \_\_\_\_\_

Signature: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Time: \_\_\_\_\_

Sample Receipt Advice: (Lab Use Only)

All Samples Received in Good Condition

All Documentation is in Proper Order

Samples Received Properly Chilled

Lab. Ref/Batch No.

8E 107686



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 The Distribution WA 6281 ..... Tel (08) 9736 7869 ..... Fax (08) 9736 8878

Project No: **SICEEP** Task No:  
 Project Name: **CEOTL0024303AC** Laboratory: **SGS**  
 Samplers Name: **Abelin Wirigya - Adriana Lopez Neth Project Manager: Matthew Locke**

Special Instructions: **Please keep All remaining soil after analysis. Soil to be stored for 36 months.**

Lab. No.	Sample ID	Sample Location	Sample Depth	Sample Date	Time	Matrix (Soil, etc)	Container Type & Preservative	T-A-T (Specify)
26	NBH18-3-52	NBH18	3-3.2	24/03/12	-	Soil	1jar + 1bag + 1tee	5 days
27	NBH18-43-4.5	NBH18	4.3-4.5				2jar + 1bag + 1tee	
28	NBH24-0-0.1	NBH24	0-0.1				1jar + 1bag + 1tee	
29	NBH24-0.13-0.5	NBH24	0.13-0.5				1jar + 1bag + 1tee	
30	NBH24-3.0-3.45	NBH24	3.0-3.45				1jar + 1bag + 1tee	
31	DUPC	-	-				1jar + 1tee	
32	DUPB	-	-				1jar + 1tee	
33	DUPA	-	-				1jar + 1tee	
34	DUPD	-	-				1jar + 1tee	
35	DUPG	-	-				1jar + 1tee	
36	DUPH	-	-				1jar + 1tee	
37	DUPI	-	-				1jar + 1tee	
38	DUPJ	-	-				1jar + 1tee	
39	DUPK	-	-				1jar + 1tee	
40	DUPL	-	-				1jar + 1tee	
41	DUPM	-	-				1jar + 1tee	
42	DUPN	-	-				1jar + 1tee	
43	DUPO	-	-				1jar + 1tee	
44	DUPP	-	-				1jar + 1tee	
45	DUPQ	-	-				1jar + 1tee	
46	DUPR	-	-				1jar + 1tee	
47	DUPS	-	-				1jar + 1tee	
48	DUPV	-	-				1jar + 1tee	
49	DUPW	-	-				1jar + 1tee	
50	DUPX	-	-				1jar + 1tee	
51	DUPY	-	-				1jar + 1tee	
52	DUPZ	-	-				1jar + 1tee	
53	DUPAA	-	-				1jar + 1tee	
54	DUPAB	-	-				1jar + 1tee	
55	DUPAC	-	-				1jar + 1tee	
56	DUPAD	-	-				1jar + 1tee	
57	DUPAE	-	-				1jar + 1tee	
58	DUPAF	-	-				1jar + 1tee	
59	DUPAG	-	-				1jar + 1tee	
60	DUPAH	-	-				1jar + 1tee	
61	DUPAI	-	-				1jar + 1tee	
62	DUPAJ	-	-				1jar + 1tee	
63	DUPAK	-	-				1jar + 1tee	
64	DUPAL	-	-				1jar + 1tee	
65	DUPAM	-	-				1jar + 1tee	
66	DUPAN	-	-				1jar + 1tee	
67	DUPAO	-	-				1jar + 1tee	
68	DUPAP	-	-				1jar + 1tee	
69	DUPAQ	-	-				1jar + 1tee	
70	DUPAR	-	-				1jar + 1tee	
71	DUPAS	-	-				1jar + 1tee	
72	DUPAT	-	-				1jar + 1tee	
73	DUPAU	-	-				1jar + 1tee	
74	DUPAV	-	-				1jar + 1tee	
75	DUPAW	-	-				1jar + 1tee	
76	DUPAX	-	-				1jar + 1tee	
77	DUPAY	-	-				1jar + 1tee	
78	DUPAZ	-	-				1jar + 1tee	
79	DUPBA	-	-				1jar + 1tee	
80	DUPBB	-	-				1jar + 1tee	
81	DUPBC	-	-				1jar + 1tee	
82	DUPBD	-	-				1jar + 1tee	
83	DUPBE	-	-				1jar + 1tee	
84	DUPBF	-	-				1jar + 1tee	
85	DUPBG	-	-				1jar + 1tee	
86	DUPBH	-	-				1jar + 1tee	
87	DUPBI	-	-				1jar + 1tee	
88	DUPBJ	-	-				1jar + 1tee	
89	DUPBK	-	-				1jar + 1tee	
90	DUPBL	-	-				1jar + 1tee	
91	DUPBM	-	-				1jar + 1tee	
92	DUPBN	-	-				1jar + 1tee	
93	DUPBO	-	-				1jar + 1tee	
94	DUPBP	-	-				1jar + 1tee	
95	DUPBQ	-	-				1jar + 1tee	
96	DUPBR	-	-				1jar + 1tee	
97	DUPBS	-	-				1jar + 1tee	
98	DUPBT	-	-				1jar + 1tee	
99	DUPBU	-	-				1jar + 1tee	
100	DUPBV	-	-				1jar + 1tee	
101	DUPBW	-	-				1jar + 1tee	
102	DUPBX	-	-				1jar + 1tee	
103	DUPBY	-	-				1jar + 1tee	
104	DUPBZ	-	-				1jar + 1tee	
105	DUPCA	-	-				1jar + 1tee	
106	DUPCB	-	-				1jar + 1tee	
107	DUPCC	-	-				1jar + 1tee	
108	DUPCD	-	-				1jar + 1tee	
109	DUPCE	-	-				1jar + 1tee	
110	DUPCF	-	-				1jar + 1tee	
111	DUPCG	-	-				1jar + 1tee	
112	DUPCH	-	-				1jar + 1tee	
113	DUPCI	-	-				1jar + 1tee	
114	DUPCJ	-	-				1jar + 1tee	
115	DUPCK	-	-				1jar + 1tee	
116	DUPCL	-	-				1jar + 1tee	
117	DUPCM	-	-				1jar + 1tee	
118	DUPCN	-	-				1jar + 1tee	
119	DUPCO	-	-				1jar + 1tee	
120	DUPCP	-	-				1jar + 1tee	
121	DUPCQ	-	-				1jar + 1tee	
122	DUPCR	-	-				1jar + 1tee	
123	DUPCS	-	-				1jar + 1tee	
124	DUPCT	-	-				1jar + 1tee	
125	DUPCU	-	-				1jar + 1tee	
126	DUPCV	-	-				1jar + 1tee	
127	DUPCW	-	-				1jar + 1tee	
128	DUPCX	-	-				1jar + 1tee	
129	DUPCY	-	-				1jar + 1tee	
130	DUPCZ	-	-				1jar + 1tee	
131	DUPDA	-	-				1jar + 1tee	
132	DUPDB	-	-				1jar + 1tee	
133	DUPDC	-	-				1jar + 1tee	
134	DUPDD	-	-				1jar + 1tee	
135	DUPDE	-	-				1jar + 1tee	
136	DUPDF	-	-				1jar + 1tee	
137	DUPDG	-	-				1jar + 1tee	
138	DUPDH	-	-				1jar + 1tee	
139	DUPDI	-	-				1jar + 1tee	
140	DUPDJ	-	-				1jar + 1tee	
141	DUPDK	-	-				1jar + 1tee	
142	DUPDL	-	-				1jar + 1tee	
143	DUPDM	-	-				1jar + 1tee	
144	DUPDN	-	-				1jar + 1tee	
145	DUPDO	-	-				1jar + 1tee	
146	DUPDP	-	-				1jar + 1tee	
147	DUPDQ	-	-				1jar + 1tee	
148	DUPDR	-	-				1jar + 1tee	
149	DUPDS	-	-				1jar + 1tee	
150	DUPDT	-	-				1jar + 1tee	
151	DUPDU	-	-				1jar + 1tee	
152	DUPDV	-	-				1jar + 1tee	
153	DUPDW	-	-				1jar + 1tee	
154	DUPDX	-	-				1jar + 1tee	
155	DUPDY	-	-				1jar + 1tee	
156	DUPDZ	-	-				1jar + 1tee	
157	DUPEA	-	-				1jar + 1tee	
158	DUPEB	-	-				1jar + 1tee	
159	DUPEC	-	-				1jar + 1tee	
160	DUPED	-	-				1jar + 1tee	
161	DUPEE	-	-				1jar + 1tee	
162	DUPEF	-	-				1jar + 1tee	
163	DUPEG	-	-				1jar + 1tee	
164	DUPEH	-	-				1jar + 1tee	
165	DUPI	-	-				1jar + 1tee	
166	DUPII	-	-				1jar + 1tee	
167	DUPII	-	-				1jar + 1tee	
168	DUPII	-	-				1jar + 1tee	
169	DUPII	-	-				1jar + 1tee	
170	DUPII	-	-				1jar + 1tee	
171	DUPII	-	-				1jar + 1tee	
172	DUPII	-	-				1jar + 1tee	
173	DUPII	-	-				1jar + 1tee	
174	DUPII	-	-				1jar + 1tee	
175	DUPII	-	-				1jar + 1tee	
176	DUPII	-	-				1jar + 1tee	
177	DUPII	-	-				1jar + 1tee	
178	DUPII	-	-				1jar + 1tee	
179	DUPII	-	-				1jar + 1tee	
180	DUPII	-	-				1jar + 1tee	
181	DUPII	-	-				1jar + 1tee	
182	DUPII	-	-				1jar + 1tee	
183	DUPII	-	-				1jar + 1tee	
184	DUPII	-	-				1jar + 1tee	
185	DUPII	-	-				1jar + 1tee	
186	DUPII	-	-				1jar + 1tee	
187	DUPII	-	-				1jar + 1tee	
188	DUPII	-	-				1jar + 1tee	
189	DUPII	-	-				1jar + 1tee	
190	DUPII	-	-				1jar + 1tee	
191	DUPII	-	-				1jar + 1tee	