

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)	BH10-1	SE131674.004	%	60 - 130%	78
	BH11-1	SE131674.005	%	60 - 130%	76
	BH12-1	SE131674.006	%	60 - 130%	84
	BH14-1	SE131674.007	%	60 - 130%	85
	BH14-2	SE131674.008	%	60 - 130%	80
	BH15-1	SE131674.009	%	60 - 130%	84
	BH15-2	SE131674.010	%	60 - 130%	78
	BH16-1	SE131674.011	%	60 - 130%	98
	BH16-2	SE131674.012	%	60 - 130%	78
	BH17-1	SE131674.013	%	60 - 130%	86
	BH17-2	SE131674.014	%	60 - 130%	102
	BH18-1	SE131674.015	%	60 - 130%	83
	BH19-1	SE131674.016	%	60 - 130%	97
	BH19-2	SE131674.017	%	60 - 130%	73
	BH21-1	SE131674.018	%	60 - 130%	92
	BH21-2	SE131674.019	%	60 - 130%	84
	BH22-1	SE131674.020	%	60 - 130%	77
	BH23-1	SE131674.021	%	60 - 130%	93
	B1	SE131674.022	%	60 - 130%	105
	TB	SE131674.023	%	60 - 130%	107
Dibromofluoromethane (Surrogate)	BH7-1	SE131674.001	%	60 - 130%	84
	BH8-1	SE131674.002	%	60 - 130%	104
	BH9-1	SE131674.003	%	60 - 130%	90
	BH10-1	SE131674.004	%	60 - 130%	80
	BH11-1	SE131674.005	%	60 - 130%	78
	BH12-1	SE131674.006	%	60 - 130%	86
	BH14-1	SE131674.007	%	60 - 130%	84
	BH14-2	SE131674.008	%	60 - 130%	76
	BH15-1	SE131674.009	%	60 - 130%	82
	BH15-2	SE131674.010	%	60 - 130%	81
	BH16-1	SE131674.011	%	60 - 130%	98
	BH16-2	SE131674.012	%	60 - 130%	73
	BH17-1	SE131674.013	%	60 - 130%	72
	BH17-2	SE131674.014	%	60 - 130%	82
	BH18-1	SE131674.015	%	60 - 130%	72
	BH19-1	SE131674.016	%	60 - 130%	78
	BH19-2	SE131674.017	%	60 - 130%	73
	BH21-1	SE131674.018	%	60 - 130%	71
	BH21-2	SE131674.019	%	60 - 130%	72
	BH22-1	SE131674.020	%	60 - 130%	72
	BH23-1	SE131674.021	%	60 - 130%	72
	B1	SE131674.022	%	60 - 130%	79
	TB	SE131674.023	%	60 - 130%	99

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	RB	SE131674.024	%	40 - 130%	83
d4-1,2-dichloroethane (Surrogate)	RB	SE131674.024	%	40 - 130%	115
d8-toluene (Surrogate)	RB	SE131674.024	%	40 - 130%	97
Dibromofluoromethane (Surrogate)	RB	SE131674.024	%	40 - 130%	122

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH7-1	SE131674.001	%	60 - 130%	74
	BH8-1	SE131674.002	%	60 - 130%	102
	BH9-1	SE131674.003	%	60 - 130%	84
	BH10-1	SE131674.004	%	60 - 130%	70
	BH11-1	SE131674.005	%	60 - 130%	72
	BH12-1	SE131674.006	%	60 - 130%	75
	BH14-1	SE131674.007	%	60 - 130%	83
	BH14-2	SE131674.008	%	60 - 130%	72
	BH15-1	SE131674.009	%	60 - 130%	81

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Volatile Petroleum Hydrocarbons In Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH15-2	SE131674.010	%	60 - 130%	76
	BH16-1	SE131674.011	%	60 - 130%	104
	BH16-2	SE131674.012	%	60 - 130%	103
	BH17-1	SE131674.013	%	60 - 130%	99
	BH17-2	SE131674.014	%	60 - 130%	107
	BH18-1	SE131674.015	%	60 - 130%	90
	BH19-1	SE131674.016	%	60 - 130%	105
	BH19-2	SE131674.017	%	60 - 130%	92
	BH21-1	SE131674.018	%	60 - 130%	91
	BH21-2	SE131674.019	%	60 - 130%	99
	BH22-1	SE131674.020	%	60 - 130%	87
	BH23-1	SE131674.021	%	60 - 130%	98
	B1	SE131674.022	%	60 - 130%	96
d4-1,2-dichloroethane (Surrogate)	BH7-1	SE131674.001	%	60 - 130%	98
	BH8-1	SE131674.002	%	60 - 130%	113
	BH9-1	SE131674.003	%	60 - 130%	98
	BH10-1	SE131674.004	%	60 - 130%	87
	BH11-1	SE131674.005	%	60 - 130%	87
	BH12-1	SE131674.006	%	60 - 130%	96
	BH14-1	SE131674.007	%	60 - 130%	94
	BH14-2	SE131674.008	%	60 - 130%	83
	BH15-1	SE131674.009	%	60 - 130%	91
	BH15-2	SE131674.010	%	60 - 130%	91
	BH16-1	SE131674.011	%	60 - 130%	105
	BH16-2	SE131674.012	%	60 - 130%	80
	BH17-1	SE131674.013	%	60 - 130%	80
	BH17-2	SE131674.014	%	60 - 130%	88
	BH18-1	SE131674.015	%	60 - 130%	82
	BH19-1	SE131674.016	%	60 - 130%	84
	BH19-2	SE131674.017	%	60 - 130%	81
	BH21-1	SE131674.018	%	60 - 130%	84
	BH21-2	SE131674.019	%	60 - 130%	81
	BH22-1	SE131674.020	%	60 - 130%	91
	BH23-1	SE131674.021	%	60 - 130%	90
	B1	SE131674.022	%	60 - 130%	79
d8-toluene (Surrogate)	BH7-1	SE131674.001	%	60 - 130%	82
	BH8-1	SE131674.002	%	60 - 130%	117
	BH9-1	SE131674.003	%	60 - 130%	99
	BH10-1	SE131674.004	%	60 - 130%	85
	BH11-1	SE131674.005	%	60 - 130%	83
	BH12-1	SE131674.006	%	60 - 130%	91
	BH14-1	SE131674.007	%	60 - 130%	91
	BH14-2	SE131674.008	%	60 - 130%	83
	BH15-1	SE131674.009	%	60 - 130%	91
	BH15-2	SE131674.010	%	60 - 130%	88
	BH16-1	SE131674.011	%	60 - 130%	123
	BH16-2	SE131674.012	%	60 - 130%	98
	BH17-1	SE131674.013	%	60 - 130%	100
	BH17-2	SE131674.014	%	60 - 130%	115
	BH18-1	SE131674.015	%	60 - 130%	93
	BH19-1	SE131674.016	%	60 - 130%	114
	BH19-2	SE131674.017	%	60 - 130%	92
	BH21-1	SE131674.018	%	60 - 130%	102
	BH21-2	SE131674.019	%	60 - 130%	82
	BH22-1	SE131674.020	%	60 - 130%	86
	BH23-1	SE131674.021	%	60 - 130%	102
	B1	SE131674.022	%	60 - 130%	105
Dibromofluoromethane (Surrogate)	BH7-1	SE131674.001	%	60 - 130%	92
	BH8-1	SE131674.002	%	60 - 130%	114
	BH9-1	SE131674.003	%	60 - 130%	99
	BH10-1	SE131674.004	%	60 - 130%	87

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Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	BH11-1	SE131674.005	%	60 - 130%	86
	BH12-1	SE131674.006	%	60 - 130%	95
	BH14-1	SE131674.007	%	60 - 130%	93
	BH14-2	SE131674.008	%	60 - 130%	84
	BH15-1	SE131674.009	%	60 - 130%	90
	BH15-2	SE131674.010	%	60 - 130%	89
	BH16-1	SE131674.011	%	60 - 130%	106
	BH16-2	SE131674.012	%	60 - 130%	79
	BH17-1	SE131674.013	%	60 - 130%	78
	BH17-2	SE131674.014	%	60 - 130%	90
	BH18-1	SE131674.015	%	60 - 130%	81
	BH19-1	SE131674.016	%	60 - 130%	85
	BH19-2	SE131674.017	%	60 - 130%	85
	BH21-1	SE131674.018	%	60 - 130%	87
	BH21-2	SE131674.019	%	60 - 130%	81
	BH22-1	SE131674.020	%	60 - 130%	81
	BH23-1	SE131674.021	%	60 - 130%	91
	B1	SE131674.022	%	60 - 130%	79

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	RB	SE131674.024	%	60 - 130%	83
d4-1,2-dichloroethane (Surrogate)	RB	SE131674.024	%	60 - 130%	115
d8-toluene (Surrogate)	RB	SE131674.024	%	60 - 130%	97
Dibromofluoromethane (Surrogate)	RB	SE131674.024	%	60 - 130%	122



METHOD BLANKS

SE131674 R1

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Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB064639.001	Mercury	mg/L	0.0001	0.0000

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB064768.001	Mercury	mg/kg	0.01	<0.01
LB064771.001	Mercury	mg/kg	0.01	<0.01

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result
LB064690.001	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
	Alpha BHC	mg/kg	0.1	<0.1
	Lindane	mg/kg	0.1	<0.1
	Heptachlor	mg/kg	0.1	<0.1
	Aldrin	mg/kg	0.1	<0.1
	Beta BHC	mg/kg	0.1	<0.1
	Delta BHC	mg/kg	0.1	<0.1
	Heptachlor epoxide	mg/kg	0.1	<0.1
	Alpha Endosulfan	mg/kg	0.2	<0.2
	Gamma Chlordane	mg/kg	0.1	<0.1
	Alpha Chlordane	mg/kg	0.1	<0.1
	p,p'-DDE	mg/kg	0.1	<0.1
	Dieldrin	mg/kg	0.2	<0.2
	Endrin	mg/kg	0.2	<0.2
	Beta Endosulfan	mg/kg	0.2	<0.2
	p,p'-DDD	mg/kg	0.1	<0.1
	p,p'-DDT	mg/kg	0.1	<0.1
	Endosulfan sulphate	mg/kg	0.1	<0.1
	Endrin Aldehyde	mg/kg	0.1	<0.1
	Methoxychlor	mg/kg	0.1	<0.1
	Endrin Ketone	mg/kg	0.1	<0.1
	Isodrin	mg/kg	0.1	<0.1
	Mirex	mg/kg	0.1	<0.1
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	90
LB064691.001	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
	Alpha BHC	mg/kg	0.1	<0.1
	Lindane	mg/kg	0.1	<0.1
	Heptachlor	mg/kg	0.1	<0.1
	Aldrin	mg/kg	0.1	<0.1
	Beta BHC	mg/kg	0.1	<0.1
	Delta BHC	mg/kg	0.1	<0.1
	Heptachlor epoxide	mg/kg	0.1	<0.1
	Alpha Endosulfan	mg/kg	0.2	<0.2
	Gamma Chlordane	mg/kg	0.1	<0.1
	Alpha Chlordane	mg/kg	0.1	<0.1
	p,p'-DDE	mg/kg	0.1	<0.1
	Dieldrin	mg/kg	0.2	<0.2
	Endrin	mg/kg	0.2	<0.2
	Beta Endosulfan	mg/kg	0.2	<0.2
	p,p'-DDD	mg/kg	0.1	<0.1
	p,p'-DDT	mg/kg	0.1	<0.1
	Endosulfan sulphate	mg/kg	0.1	<0.1
	Endrin Aldehyde	mg/kg	0.1	<0.1
	Methoxychlor	mg/kg	0.1	<0.1
	Endrin Ketone	mg/kg	0.1	<0.1
	Isodrin	mg/kg	0.1	<0.1
	Mirex	mg/kg	0.1	<0.1
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	83

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OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result
LB064690.001	Dichlorvos	mg/kg	0.5	<0.5
	Dimethoate	mg/kg	0.5	<0.5
	Diazinon (Dimpylate)	mg/kg	0.5	<0.5
	Fenitrothion	mg/kg	0.2	<0.2
	Malathion	mg/kg	0.2	<0.2
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
	Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
	Bromophos Ethyl	mg/kg	0.2	<0.2
	Methidathion	mg/kg	0.5	<0.5
	Ethion	mg/kg	0.2	<0.2
	Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates			
	2-fluorobiphenyl (Surrogate)	%	-	82
	d14-p-terphenyl (Surrogate)	%	-	98
LB064691.001	Dichlorvos	mg/kg	0.5	<0.5
	Dimethoate	mg/kg	0.5	<0.5
	Diazinon (Dimpylate)	mg/kg	0.5	<0.5
	Fenitrothion	mg/kg	0.2	<0.2
	Malathion	mg/kg	0.2	<0.2
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
	Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
	Bromophos Ethyl	mg/kg	0.2	<0.2
	Methidathion	mg/kg	0.5	<0.5
	Ethion	mg/kg	0.2	<0.2
	Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates			
	2-fluorobiphenyl (Surrogate)	%	-	80
	d14-p-terphenyl (Surrogate)	%	-	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB064690.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	<0.1
	Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
	Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
	Benzo(ghi)perylene	mg/kg	0.1	<0.1
	Total PAH	mg/kg	0.8	<0.8
	Surrogates			
	d5-nitrobenzene (Surrogate)	%	-	84
LB064691.001	2-fluorobiphenyl (Surrogate)	%	-	82
	d14-p-terphenyl (Surrogate)	%	-	98
	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1



METHOD BLANKS

SE131674 R1

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PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Sample Number	Parameter	Units	LOR	Result
LB064691.001	Benzo(a)pyrene	mg/kg	0.1	<0.1
	Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
	Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
	Benzo(ghi)perylene	mg/kg	0.1	<0.1
	Total PAH	mg/kg	0.8	<0.8
	Surrogates			
	d5-nitrobenzene (Surrogate)	%	-	80
	2-fluorobiphenyl (Surrogate)	%	-	80
	d14-p-terphenyl (Surrogate)	%	-	90

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result
LB064690.001	Arochlor 1016	mg/kg	0.2	<0.2
	Arochlor 1221	mg/kg	0.2	<0.2
	Arochlor 1232	mg/kg	0.2	<0.2
	Arochlor 1242	mg/kg	0.2	<0.2
	Arochlor 1248	mg/kg	0.2	<0.2
	Arochlor 1254	mg/kg	0.2	<0.2
	Arochlor 1260	mg/kg	0.2	<0.2
	Arochlor 1262	mg/kg	0.2	<0.2
	Arochlor 1268	mg/kg	0.2	<0.2
	Total PCBs (Arochlors)	mg/kg	1	<1
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	90
LB064691.001	Arochlor 1016	mg/kg	0.2	<0.2
	Arochlor 1221	mg/kg	0.2	<0.2
	Arochlor 1232	mg/kg	0.2	<0.2
	Arochlor 1242	mg/kg	0.2	<0.2
	Arochlor 1248	mg/kg	0.2	<0.2
	Arochlor 1254	mg/kg	0.2	<0.2
	Arochlor 1260	mg/kg	0.2	<0.2
	Arochlor 1262	mg/kg	0.2	<0.2
	Arochlor 1268	mg/kg	0.2	<0.2
	Total PCBs (Arochlors)	mg/kg	1	<1
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	83

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result
LB064906.001	Total Phenols	mg/kg	0.1	<0.1
LB064908.001	Total Phenols	mg/kg	0.1	<0.1

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Number	Parameter	Units	LOR	Result
LB064761.001	Arsenic, As	mg/kg	3	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.5
	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	<2.0
LB064762.001	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
LB064825.001	Arsenic, As	mg/kg	0.5	<0.5
	Cadmium, Cd	mg/kg	3	<3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	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



METHOD BLANKS

SE131674 R1

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.

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest (continued)

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

Sample Number	Parameter	Units	LOR	Result
LB064825.001	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	Result
LB064724.001	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	5	<5

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB064690.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110
LB064691.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB064695.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB064655.001	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1
		1,2-dichloropropane	mg/kg	0.1	<0.1
		cis-1,3-dichloropropene	mg/kg	0.1	<0.1
		trans-1,3-dichloropropene	mg/kg	0.1	<0.1
		1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1
		Chloromethane	mg/kg	1	<1
		Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1
		Bromomethane	mg/kg	1	<1
		Chloroethane	mg/kg	1	<1
		Trichlorofluoromethane	mg/kg	1	<1
		Iodomethane	mg/kg	5	<5
		1,1-dichloroethene	mg/kg	0.1	<0.1
		Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5
		Allyl chloride	mg/kg	0.1	<0.1
		trans-1,2-dichloroethene	mg/kg	0.1	<0.1
		1,1-dichloroethane	mg/kg	0.1	<0.1
		cis-1,2-dichloroethene	mg/kg	0.1	<0.1
		Bromochloromethane	mg/kg	0.1	<0.1
		1,2-dichloroethane	mg/kg	0.1	<0.1
		1,1,1-trichloroethane	mg/kg	0.1	<0.1
		1,1-dichloropropene	mg/kg	0.1	<0.1
		Carbon tetrachloride	mg/kg	0.1	<0.1
		Dibromomethane	mg/kg	0.1	<0.1
		Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1
		1,1,2-trichloroethane	mg/kg	0.1	<0.1
		1,3-dichloropropane	mg/kg	0.1	<0.1
		Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1
		1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1



METHOD BLANKS

SE131674 R1

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

VOC's in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB064655.001	Halogenated Aliphatics	cis-1,4-dichloro-2-butene	mg/kg	1	<1
		1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1
		1,2,3-trichloropropane	mg/kg	0.1	<0.1
		trans-1,4-dichloro-2-butene	mg/kg	1	<1
		1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1
		Hexachlorobutadiene	mg/kg	0.1	<0.1
	Halogenated Aromatics	Chlorobenzene	mg/kg	0.1	<0.1
		Bromobenzene	mg/kg	0.1	<0.1
		2-chlorotoluene	mg/kg	0.1	<0.1
		4-chlorotoluene	mg/kg	0.1	<0.1
		1,3-dichlorobenzene	mg/kg	0.1	<0.1
		1,4-dichlorobenzene	mg/kg	0.1	<0.1
		1,2-dichlorobenzene	mg/kg	0.1	<0.1
		1,2,4-trichlorobenzene	mg/kg	0.1	<0.1
		1,2,3-trichlorobenzene	mg/kg	0.1	<0.1
	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
		Styrene (Vinyl benzene)	mg/kg	0.1	<0.1
		o-xylene	mg/kg	0.1	<0.1
		Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1
		n-propylbenzene	mg/kg	0.1	<0.1
		1,3,5-trimethylbenzene	mg/kg	0.1	<0.1
		tert-butylbenzene	mg/kg	0.1	<0.1
		1,2,4-trimethylbenzene	mg/kg	0.1	<0.1
		sec-butylbenzene	mg/kg	0.1	<0.1
		p-isopropyltoluene	mg/kg	0.1	<0.1
		n-butylbenzene	mg/kg	0.1	<0.1
	Nitrogenous Compounds	Acrylonitrile	mg/kg	0.1	<0.1
		2-nitropropane	mg/kg	10	<10
	Oxygenated Compounds	Acetone (2-propanone)	mg/kg	10	<10
		MTBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1
		Vinyl acetate	mg/kg	10	<10
		MEK (2-butanone)	mg/kg	10	<10
		MIBK (4-methyl-2-pentanone)	mg/kg	1	<1
		2-hexanone (MBK)	mg/kg	5	<5
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	112
		d4-1,2-dichloroethane (Surrogate)	%	-	104
		d8-toluene (Surrogate)	%	-	115
		Bromofluorobenzene (Surrogate)	%	-	110
	Totals	Total BTEX*	mg/kg	0.6	<0.3
	Trihalomethanes	Chloroform	mg/kg	0.1	<0.1
		Bromodichloromethane	mg/kg	0.1	<0.1
		Chlorodibromomethane	mg/kg	0.1	<0.1
		Bromoform	mg/kg	0.1	<0.1
LB064657.001	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1
		1,2-dichloropropane	mg/kg	0.1	<0.1
		cis-1,3-dichloropropene	mg/kg	0.1	<0.1
		trans-1,3-dichloropropene	mg/kg	0.1	<0.1
		1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1
		Chloromethane	mg/kg	1	<1
		Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1
		Bromomethane	mg/kg	1	<1
		Chloroethane	mg/kg	1	<1
		Trichlorofluoromethane	mg/kg	1	<1
		Iodomethane	mg/kg	5	<5
		1,1-dichloroethene	mg/kg	0.1	<0.1



METHOD BLANKS

SE131674 R1

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.

VOC's in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB064657.001	Halogenated Aliphatics	Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5
		Allyl chloride	mg/kg	0.1	<0.1
		trans-1,2-dichloroethene	mg/kg	0.1	<0.1
		1,1-dichloroethane	mg/kg	0.1	<0.1
		cis-1,2-dichloroethene	mg/kg	0.1	<0.1
		Bromochloromethane	mg/kg	0.1	<0.1
		1,2-dichloroethane	mg/kg	0.1	<0.1
		1,1,1-trichloroethane	mg/kg	0.1	<0.1
		1,1-dichloropropene	mg/kg	0.1	<0.1
		Carbon tetrachloride	mg/kg	0.1	<0.1
		Dibromomethane	mg/kg	0.1	<0.1
		Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1
		1,1,2-trichloroethane	mg/kg	0.1	<0.1
		1,3-dichloropropane	mg/kg	0.1	<0.1
		Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1
		1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1
		cis-1,4-dichloro-2-butene	mg/kg	1	<1
		1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1
		1,2,3-trichloropropane	mg/kg	0.1	<0.1
		trans-1,4-dichloro-2-butene	mg/kg	1	<1
		1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1
	Halogenated Aromatics	Hexachlorobutadiene	mg/kg	0.1	<0.1
		Chlorobenzene	mg/kg	0.1	<0.1
		Bromobenzene	mg/kg	0.1	<0.1
		2-chlorotoluene	mg/kg	0.1	<0.1
		4-chlorotoluene	mg/kg	0.1	<0.1
		1,3-dichlorobenzene	mg/kg	0.1	<0.1
		1,4-dichlorobenzene	mg/kg	0.1	<0.1
		1,2-dichlorobenzene	mg/kg	0.1	<0.1
	Monocyclic Aromatic Hydrocarbons	1,2,4-trichlorobenzene	mg/kg	0.1	<0.1
		1,2,3-trichlorobenzene	mg/kg	0.1	<0.1
		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
		Styrene (Vinyl benzene)	mg/kg	0.1	<0.1
		o-xylene	mg/kg	0.1	<0.1
		Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1
		n-propylbenzene	mg/kg	0.1	<0.1
		1,3,5-trimethylbenzene	mg/kg	0.1	<0.1
		tert-butylbenzene	mg/kg	0.1	<0.1
		1,2,4-trimethylbenzene	mg/kg	0.1	<0.1
	Nitrogenous Compounds	sec-butylbenzene	mg/kg	0.1	<0.1
		p-isopropyltoluene	mg/kg	0.1	<0.1
	Oxygenated Compounds	n-butylbenzene	mg/kg	0.1	<0.1
		Acrylonitrile	mg/kg	0.1	<0.1
	Polycyclic VOCs	2-nitropropane	mg/kg	10	<10
		Acetone (2-propanone)	mg/kg	10	<10
		MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1
		Vinyl acetate	mg/kg	10	<10
		MEK (2-butanone)	mg/kg	10	<10
		MIBK (4-methyl-2-pentanone)	mg/kg	1	<1
	Sulphonated	2-hexanone (MBK)	mg/kg	5	<5
		Naphthalene	mg/kg	0.1	<0.1
	Surrogates	Carbon disulfide	mg/kg	0.5	<0.5
		Dibromofluoromethane (Surrogate)	%	-	85
		d4-1,2-dichloroethane (Surrogate)	%	-	101
		d8-toluene (Surrogate)	%	-	102
		Bromofluorobenzene (Surrogate)	%	-	100
	Totals	Total BTEX*	mg/kg	0.6	<0.6
	Trihalomethanes	Chloroform	mg/kg	0.1	<0.1

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.

VOC's in Soil (continued)

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

Sample Number	Parameter	Units	LOR	Result
LB064657.001	Trihalomethanes	Bromodichloromethane	mg/kg	0.1
		Chlorodibromomethane	mg/kg	0.1
		Bromoform	mg/kg	0.1

VOCs in Water

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

Sample Number	Parameter	Units	LOR	Result
LB064697.001	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
	Polycyclic VOCs Surrogates	Naphthalene	µg/L	0.5
		Dibromofluoromethane (Surrogate)	%	-
		d4-1,2-dichloroethane (Surrogate)	%	-
		d8-toluene (Surrogate)	%	-
		Bromofluorobenzene (Surrogate)	%	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result
LB064655.001	Surrogates	TRH C6-C9	mg/kg	20
		Dibromofluoromethane (Surrogate)	%	-
		d4-1,2-dichloroethane (Surrogate)	%	-
		d8-toluene (Surrogate)	%	-
LB064657.001	Surrogates	TRH C6-C9	mg/kg	20
		Dibromofluoromethane (Surrogate)	%	-
		d4-1,2-dichloroethane (Surrogate)	%	-
		d8-toluene (Surrogate)	%	-

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result
LB064697.001	Surrogates	TRH C6-C9	µg/L	40
		Dibromofluoromethane (Surrogate)	%	-
		d4-1,2-dichloroethane (Surrogate)	%	-
		d8-toluene (Surrogate)	%	-
		Bromofluorobenzene (Surrogate)	%	-

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.

Mercury (dissolved) in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131688.001	LB064639.014	Mercury	µg/L	0.0001	0.00006	0.00006	96	7
SE131706.001	LB064639.021	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 %
SE131666.048	LB064768.014	Mercury	mg/kg	0.01	<0.01	<0.01	200	0
SE131674.004	LB064768.024	Mercury	mg/kg	0.01	0.13	0.10	74	28
SE131674.014	LB064771.014	Mercury	mg/kg	0.01	0.02	0.03	200	0
SE131674.022	LB064771.023	Mercury	mg/kg	0.01	0.06	0.02	152	13

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.010	LB064738.011	% Moisture	%w/w	0.5	27	27	34	1
SE131674.020	LB064738.022	% Moisture	%	0.5	19	18	35	6
SE131674.023	LB064738.026	% Moisture	%	0.5	<0.5	<0.5	200	0

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.013	LB064690.020	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Lindane	mg/kg	0.1	<0.1	<0.1	200	0
		Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
		Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
		Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
		Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
		Endrin	mg/kg	0.2	<0.2	<0.2	200	0
		o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
		p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
		Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
		Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15
SE131705.012	LB064691.016	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Lindane	mg/kg	0.1	<0.1	<0.1	200	0
		Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
		Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
		Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0

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.

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131705.012	LB064691.016	Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
		Endrin	mg/kg	0.2	<0.2	<0.2	200	0
		o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
		p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
		Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
		Mirex	mg/kg	0.1	<0.1	<0.1	200	0
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16	30	0
SE131705.021	LB064691.023	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Lindane	mg/kg	0.1	<0.1	<0.1	200	0
		Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
		Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
		Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
		Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
		Endrin	mg/kg	0.2	<0.2	<0.2	200	0
		o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
		p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
		Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
		Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.020	LB064690.027	Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
		Malathion	mg/kg	0.2	<0.2	<0.2	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
		Methodathion	mg/kg	0.5	<0.5	<0.5	200	0
		Ethion	mg/kg	0.2	<0.2	<0.2	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Surrogates						
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	6
SE131705.012	LB064691.016	Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	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.

OP Pesticides in Soil (continued)

Method: ME-(AU)-ENVJAN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131705.012	LB064691.016	Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
		Malathion	mg/kg	0.2	<0.2	<0.2	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
		Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
		Ethion	mg/kg	0.2	<0.2	<0.2	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Surrogates						
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	30	7
SE131705.021	LB064691.023	d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.6	30	9
		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
		Malathion	mg/kg	0.2	<0.2	<0.2	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
		Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
		Ethion	mg/kg	0.2	<0.2	<0.2	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Surrogates						
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	5
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-ENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.010	LB064690.016	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		1-methylnaphthalene	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&j)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
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	<0.3	<0.3	134	0
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	175	0
		Total PAH	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates						
		d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	30	7
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	5
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.6	30	2
SE131674.020	LB064690.027	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		1-methylnaphthalene	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	148	0
		Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluoranthene	mg/kg	0.1	0.1	0.1	104	7
		Pyrene	mg/kg	0.1	0.1	0.2	97	13

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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-ENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.020	LB064690.027	Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	163	0
		Chrysene	mg/kg	0.1	<0.1	<0.1	184	0
		Benzo(b&j)fluoranthene	mg/kg	0.1	0.1	<0.1	135	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	163	0
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	173	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	163	0
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	<0.3	<0.3	134	0
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	175	0
		Total PAH	mg/kg	0.8	1.1	1.1	103	2
		d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	2
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	6
SE131705.012	LB064691.016	Naphthalene	mg/kg	0.1	0.1	<0.1	125	26
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthylene	mg/kg	0.1	0.2	0.1	97	53
		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	0.8	0.6	45	34
		Anthracene	mg/kg	0.1	0.2	0.1	91	42
		Fluoranthene	mg/kg	0.1	1.6	1.3	37	21
		Pyrene	mg/kg	0.1	1.8	1.5	36	16
		Benzo(a)anthracene	mg/kg	0.1	1.1	0.9	40	16
		Chrysene	mg/kg	0.1	0.8	0.7	44	17
		Benzo(b&j)fluoranthene	mg/kg	0.1	1.7	1.4	36	25
		Benzo(k)fluoranthene	mg/kg	0.1	0.4	0.4	55	7
		Benzo(a)pyrene	mg/kg	0.1	1.1	0.9	40	27
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.8	0.6	44	35
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(ghi)perylene	mg/kg	0.1	0.6	0.5	48	33
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ	0.2	1.5	1.2	25	26 @
		<LOR=0*	TEQ (mg/kg)	0.2	1.5	1.2	25	26 @
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	1.6	1.3	31	24
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	1.5	1.2	25	25
		Total PAH	mg/kg	0.8	11	8.9	38	23
		d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	0
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	30	7
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.6	30	9
SE131705.021	LB064691.023	Naphthalene	mg/kg	0.1	0.1	0.1	125	10
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthylene	mg/kg	0.1	0.2	0.3	71	4
		Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluorene	mg/kg	0.1	0.1	<0.1	130	18
		Phenanthrene	mg/kg	0.1	1.5	1.2	37	26
		Anthracene	mg/kg	0.1	0.5	0.4	53	9
		Fluoranthene	mg/kg	0.1	2.6	2.4	34	8
		Pyrene	mg/kg	0.1	3.2	3.0	33	8
		Benzo(a)anthracene	mg/kg	0.1	1.6	1.5	37	8
		Chrysene	mg/kg	0.1	1.2	1.1	39	9
		Benzo(b&j)fluoranthene	mg/kg	0.1	2.4	2.3	34	3
		Benzo(k)fluoranthene	mg/kg	0.1	0.7	0.6	46	11
		Benzo(a)pyrene	mg/kg	0.1	1.5	1.4	37	6
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	1.1	1.1	39	6
		Dibenzo(a&h)anthracene	mg/kg	0.1	0.1	0.1	113	0
		Benzo(ghi)perylene	mg/kg	0.1	0.9	0.8	42	8
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ	0.2	2.2	2.1	19	6
		<LOR=0*	TEQ (mg/kg)	0.2	2.2	2.1	19	6

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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131705.021	LB064691.023	Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	2.2	2.1	24	6
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	2.2	2.1	19	6
		Total PAH	mg/kg	0.8	18	16	35	9
		d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	2
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	5
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.013	LB064690.020	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
		Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
SE131705.012	LB064691.016	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	30	3
		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
SE131705.012	LB064691.016	Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
		Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	30	0
SE131705.021	LB064691.023	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
		Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
SE131705.021	LB064691.023	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	30	3

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.001	LB064906.004	Total Phenols	mg/kg	0.1	0.2	0.3	51	27
SE131674.011	LB064906.015	Total Phenols	mg/kg	0.1	1.0	1.0	25	4
SE131717.008	LB064908.016	Total Phenols	mg/kg	0.1	0.1	0.1	103	11

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 %
SE131666.046	LB064761.014	Arsenic, As	mg/kg	3	7	4	48	59 @
		Cadmium, Cd	mg/kg	0.3	0.3	<0.3	157	11
		Chromium, Cr	mg/kg	0.3	19	7.8	34	85 @
		Copper, Cu	mg/kg	0.5	8.9	11	35	21
		Lead, Pb	mg/kg	1	19	16	36	18
		Nickel, Ni	mg/kg	0.5	9.6	5.2	37	60 @
SE131674.002	LB064761.024	Zinc, Zn	mg/kg	0.5	25	28	37	13
		Arsenic, As	mg/kg	3	8	8	43	2
		Cadmium, Cd	mg/kg	0.3	0.3	0.4	110	16
		Chromium, Cr	mg/kg	0.3	16	23	33	32
		Copper, Cu	mg/kg	0.5	5.8	4.2	40	31

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.

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest (continued)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.002	LB064761.024	Lead, Pb	mg/kg	1	37	30	33	22
		Nickel, Ni	mg/kg	0.5	2.4	2.1	52	12
		Zinc, Zn	mg/kg	0.5	24	18	40	25
SE131674.012	LB064762.014	Arsenic, As	mg/kg	3	8	7	43	10
		Cadmium, Cd	mg/kg	0.3	0.4	0.4	101	2
		Chromium, Cr	mg/kg	0.3	21	18	33	14
		Copper, Cu	mg/kg	0.5	7.6	9.1	36	18
		Lead, Pb	mg/kg	1	24	23	34	7
		Nickel, Ni	mg/kg	0.5	1.0	0.9	84	10
		Zinc, Zn	mg/kg	0.5	51	54	34	7
SE131674.021	LB064762.024	Arsenic, As	mg/kg	3	11	11	39	2
		Cadmium, Cd	mg/kg	0.3	0.5	0.5	93	6
		Chromium, Cr	mg/kg	0.3	27	28	32	2
		Copper, Cu	mg/kg	0.5	7.4	8.5	36	14
		Lead, Pb	mg/kg	1	47	53	32	12
		Nickel, Ni	mg/kg	0.5	3.1	2.2	49	34
		Zinc, Zn	mg/kg	0.5	55	65	33	17
SE131761.004	LB064825.014	Arsenic, As	mg/kg	3	5	5	49	6
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	145	0
		Chromium, Cr	mg/kg	0.3	36	36	31	1
		Copper, Cu	mg/kg	0.5	22	21	32	3
		Lead, Pb	mg/kg	1	13	13	38	3
		Nickel, Ni	mg/kg	0.5	18	17	33	1
		Zinc, Zn	mg/kg	0.5	48	47	34	2
SE131787.008	LB064825.024	Lead, Pb	mg/kg	1	6	7	45	6

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131697.002	LB064724.014	Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	1	1	90	8
		Lead, Pb	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	<5	<5	119	0
SE131706.001	LB064724.017	Arsenic, As	µg/L	1	20	21	20	3
		Cadmium, Cd	µg/L	0.1	0.1	0.1	109	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	4	4	41	11
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	33	36	18	10
		Zinc, Zn	µg/L	5	29	31	31	6

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.010	LB064690.016	TRH C10-C14	mg/kg	20	<20	<20	200	0
		TRH C15-C28	mg/kg	45	<45	<45	200	0
		TRH C29-C36	mg/kg	45	<45	<45	200	0
		TRH C37-C40	mg/kg	100	<100	<100	200	0
		TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
		TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
		TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	<25	<25	200	0
		TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
		TRH C10-C14	mg/kg	20	23	45	89	65
		TRH C15-C28	mg/kg	45	110	110	73	1
SE131674.020	LB064690.027	TRH C29-C36	mg/kg	45	<45	<45	200	0
		TRH C37-C40	mg/kg	100	<100	<100	200	0
		TRH C10-C36 Total	mg/kg	110	130	150	109	16
		TRH C10-C40 Total	mg/kg	210	<210	<210	181	0
		TRH >C10-C16 (F2)	mg/kg	25	25	53	94	72
		TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	25	53	94	72
		TRH >C16-C34 (F3)	mg/kg	90	130	120	102	7

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.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.020	LB064690.027	TRH F Bands	TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE131674.022	LB064691.006		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE131705.012	LB064691.017		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	76	69	92	10
			TRH C29-C36	mg/kg	45	<45	<45	171	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	135	0
			TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	110	95	120	10
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.010	LB064655.014	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0
			1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0
			cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0
			trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0
			1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	200	0
		Halogenated	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	200	0
			Aliphatics	Chloromethane	mg/kg	1	<1	<1	200
		Vinyl chloride (Chloroethene)		mg/kg	0.1	<0.1	<0.1	200	0
		Bromomethane		mg/kg	1	<1	<1	200	0
		Chloroethane		mg/kg	1	<1	<1	200	0
		Trichlorofluoromethane		mg/kg	1	<1	<1	200	0
		Iodomethane		mg/kg	5	<5	<5	200	0
		1,1-dichloroethene		mg/kg	0.1	<0.1	<0.1	200	0
		Dichloromethane (Methylene chloride)		mg/kg	0.5	<0.5	<0.5	200	0
		Allyl chloride		mg/kg	0.1	<0.1	<0.1	200	0
		trans-1,2-dichloroethene		mg/kg	0.1	<0.1	<0.1	200	0
		1,1-dichloroethane		mg/kg	0.1	<0.1	<0.1	200	0
		cis-1,2-dichloroethene		mg/kg	0.1	<0.1	<0.1	200	0
		Bromochloromethane		mg/kg	0.1	<0.1	<0.1	200	0
		1,2-dichloroethane		mg/kg	0.1	<0.1	<0.1	200	0
		1,1,1-trichloroethane		mg/kg	0.1	<0.1	<0.1	200	0
		1,1-dichloropropene		mg/kg	0.1	<0.1	<0.1	200	0
		Carbon tetrachloride		mg/kg	0.1	<0.1	<0.1	200	0
		Dibromomethane		mg/kg	0.1	<0.1	<0.1	200	0
		Trichloroethene (Trichloroethylene -TCE)		mg/kg	0.1	<0.1	<0.1	200	0
		1,1,2-trichloroethane		mg/kg	0.1	<0.1	<0.1	200	0
		1,3-dichloropropane		mg/kg	0.1	<0.1	<0.1	200	0
		Tetrachloroethene (Perchloroethylene,PCE)		mg/kg	0.1	<0.1	<0.1	200	0
		1,1,1,2-tetrachloroethane		mg/kg	0.1	<0.1	<0.1	200	0
		cis-1,4-dichloro-2-butene		mg/kg	1	<1	<1	200	0
		1,1,2,2-tetrachloroethane		mg/kg	0.1	<0.1	<0.1	200	0
		1,2,3-trichloropropane		mg/kg	0.1	<0.1	<0.1	200	0
		trans-1,4-dichloro-2-butene		mg/kg	1	<1	<1	200	0
		1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	200	0	
		Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	200	0	
		Halogenated	Chlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
Aromatics	Bromobenzene		mg/kg	0.1	<0.1	<0.1	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.

VOC's in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.010	LB064655.014	Halogenated	2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	200	0
			4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatics	1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
			1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
			1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
			1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
			1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
		Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			Toluene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
			Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	200	0
			n-propylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	200	0
			n-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
		Nitrogenous	Acrylonitrile	mg/kg	0.1	<0.1	<0.1	200	0
		Compounds	2-nitropropane	mg/kg	10	<10	<10	200	0
		Oxygenated	Acetone (2-propanone)	mg/kg	10	<10	<10	200	0
			MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	200	0
			Vinyl acetate	mg/kg	10	<10	<10	200	0
			MEK (2-butanone)	mg/kg	10	<10	<10	200	0
			MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	200	0
			2-hexanone (MBK)	mg/kg	5	<5	<5	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5	<0.5	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.1	3.7	50	10
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.2	4.6	50	12
			d8-toluene (Surrogate)	mg/kg	-	3.9	3.7	50	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	3.9	50	6
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX*	mg/kg	0.6	<0.6	<0.3	200	0
		Trihalomethanes	Chloroform	mg/kg	0.1	<0.1	<0.1	200	0
			Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	200	0
			Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	200	0
			Bromoform	mg/kg	0.1	<0.1	<0.1	200	0
SE131674.019	LB064655.024	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0
			1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0
			cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0
			trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0
			1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	200	0
		Halogenated	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	200	0
			Chloromethane	mg/kg	1	<1	<1	200	0
			Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	200	0
			Bromomethane	mg/kg	1	<1	<1	200	0
			Chloroethane	mg/kg	1	<1	<1	200	0
			Trichlorofluoromethane	mg/kg	1	<1	<1	200	0
			Iodomethane	mg/kg	5	<5	<5	200	0
			1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	200	0
			Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	200	0
			Allyl chloride	mg/kg	0.1	<0.1	<0.1	200	0
			trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	200	0
			1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	200	0
			cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	200	0
			Bromochloromethane	mg/kg	0.1	<0.1	<0.1	200	0
			1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	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.

VOC's in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE131674.019	LB064655.024	Halogenated Aliphatics	1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	200	0	
			1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0	
		Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	200	0		
		Dibromomethane	mg/kg	0.1	<0.1	<0.1	200	0		
		Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1	<0.1	200	0		
		1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	200	0		
		1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0		
		Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	200	0		
		1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	200	0		
		cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	200	0		
		1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	200	0		
		1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	200	0		
		trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	200	0		
		1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	200	0		
		Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	200	0		
		Halogenated Aromatics	Chlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			Bromobenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	200	0	
			4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	200	0	
			1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0	
		Monocyclic Aromatic	1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			Benzene	mg/kg	0.1	<0.1	<0.1	200	0	
			Toluene	mg/kg	0.1	<0.1	<0.1	200	0	
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0	
			Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	200	0	
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0	
			Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	200	0	
			n-propylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			1,2,4-trimethylbenzene	mg/kg	0.1	0.3	0.3	64	21	
			sec-butylbenzene	mg/kg	0.1	<0.3	<0.3	200	0	
			p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	200	0	
			n-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			Nitrogenous Compounds	Acrylonitrile	mg/kg	0.1	<0.1	<0.1	200	0
			Oxygenated Compounds	2-nitropropane	mg/kg	10	<10	<10	200	0
		Acetone (2-propanone)	mg/kg	10	<10	<10	200	0		
		MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	200	0		
		Vinyl acetate	mg/kg	10	<10	<10	200	0		
		MEK (2-butanone)	mg/kg	10	<10	<10	200	0		
		MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	200	0		
		2-hexanone (MBK)	mg/kg	5	<5	<5	200	0		
		Polycyclic	Napthalene	mg/kg	0.1	0.4	0.4	56	11	
		Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5	<0.5	200	0	
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.6	3.6	50	1	
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.4	4.6	50	17	
			d8-toluene (Surrogate)	mg/kg	-	4.2	4.7	50	10	
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.5	5.0	50	10	
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0	
			Total BTEX*	mg/kg	0.6	<0.6	<0.3	200	0	
		Trihalomethan es	Chloroform	mg/kg	0.1	<0.1	<0.1	200	0	
			Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	200	0	
			Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	200	0	
			Bromoform	mg/kg	0.1	<0.1	<0.1	200	0	
SE131705.009	LB064657.014	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	

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.

VOC's in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131705.009	LB064657.014	Monocyclic	m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			Aromatic	o-xylene	mg/kg	0.1	<0.1	<0.1	200
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.2	4.8	50	13
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	5.0	50	15
			d8-toluene (Surrogate)	mg/kg	-	4.9	5.7	50	15
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.0	4.5	50	10
			Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200
			Total BTEX*	mg/kg	0.6	<0.6	<0.6	200	0
		SE131705.021	LB064657.023	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
	Polycyclic			Naphthalene	mg/kg	0.1	<0.1	<0.1	200
Surrogates	Dibromofluoromethane (Surrogate)			mg/kg	-	4.6	4.0	50	14
	d4-1,2-dichloroethane (Surrogate)			mg/kg	-	4.1	4.4	50	7
	d8-toluene (Surrogate)			mg/kg	-	4.2	4.5	50	7
	Bromofluorobenzene (Surrogate)			mg/kg	-	4.1	3.7	50	11
	Totals			Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200
	Total BTEX*			mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %		
SE131674.010	LB064655.014	TRH C6-C10	mg/kg	25	<25	<25	200	0		
		TRH C6-C9	mg/kg	20	<20	<20	200	0		
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	4.0	30	10	
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.5	4.0	30	12	
			d8-toluene (Surrogate)	mg/kg	-	4.4	3.9	30	13	
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.8	3.4	30	11	
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0	
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0	
		SE131674.019	LB064655.024	TRH C6-C10	mg/kg	25	<25	<25	200	0
				TRH C6-C9	mg/kg	20	<20	<20	200	0
Surrogates	Dibromofluoromethane (Surrogate)			mg/kg	-	4.0	4.0	30	2	
	d4-1,2-dichloroethane (Surrogate)			mg/kg	-	4.0	4.0	30	0	
	d8-toluene (Surrogate)			mg/kg	-	4.1	5.4	30	27	
	Bromofluorobenzene (Surrogate)			mg/kg	-	5.0	5.5	30	9	
VPH F Bands	Benzene (F0)			mg/kg	0.1	<0.1	<0.1	200	0	
	TRH C6-C10 minus BTEX (F1)			mg/kg	25	<25	<25	200	0	
SE131705.009	LB064657.014			TRH C6-C10	mg/kg	25	<25	<25	200	0
				TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.2	4.8	30	13	
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	5.0	30	15	
			d8-toluene (Surrogate)	mg/kg	-	4.9	5.7	30	15	
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.0	4.5	30	10	
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0	
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0	
		SE131705.021	LB064657.023	TRH C6-C10	mg/kg	25	<25	<25	200	0
				TRH C6-C9	mg/kg	20	<20	<20	200	0
Surrogates	Dibromofluoromethane (Surrogate)			mg/kg	-	4.6	4.0	30	14	
	d4-1,2-dichloroethane (Surrogate)			mg/kg	-	4.1	4.4	30	7	
	d8-toluene (Surrogate)			mg/kg	-	4.2	4.5	30	7	
	Bromofluorobenzene (Surrogate)			mg/kg	-	4.1	3.7	30	11	
VPH F Bands	Benzene (F0)			mg/kg	0.1	<0.1	<0.1	200	0	
	TRH C6-C10 minus BTEX (F1)			mg/kg	25	<25	<25	200	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 in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064768.002	Mercury	mg/kg	0.01	0.22	0.2	70 - 130	112
LB064771.002	Mercury	mg/kg	0.01	0.22	0.2	70 - 130	112

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064690.002	Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	97
	Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	100
	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	92
	Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	96
	Endrin	mg/kg	0.2	0.2	0.2	60 - 140	102
	p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	81
LB064691.002	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	-	0.15	0.15	40 - 130	102
	Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	90
	Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	93
	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	84
	Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	90
	Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	96
LB064691.002	Surrogates	p,p'-DDT	0.1	0.2	0.2	60 - 140	80
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	-	0.14	0.15	40 - 130	90

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064690.002	Dichlorvos	mg/kg	0.5	1.8	2	60 - 140	90
	Diazinon (Dimpylate)	mg/kg	0.5	1.7	2	60 - 140	85
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.6	2	60 - 140	82
	Ethion	mg/kg	0.2	1.8	2	60 - 140	90
	Surrogates	2-fluorobiphenyl (Surrogate)	-	0.4	0.5	40 - 130	84
	Surrogates	d14-p-terphenyl (Surrogate)	-	0.5	0.5	40 - 130	96
LB064691.002	Dichlorvos	mg/kg	0.5	1.7	2	60 - 140	85
	Diazinon (Dimpylate)	mg/kg	0.5	1.6	2	60 - 140	78
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.6	2	60 - 140	79
	Ethion	mg/kg	0.2	1.6	2	60 - 140	80
	Surrogates	2-fluorobiphenyl (Surrogate)	-	0.4	0.5	40 - 130	86
	Surrogates	d14-p-terphenyl (Surrogate)	-	0.5	0.5	40 - 130	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064690.002	Naphthalene	mg/kg	0.1	3.6	4	60 - 140	90
	Acenaphthylene	mg/kg	0.1	3.7	4	60 - 140	92
	Acenaphthene	mg/kg	0.1	3.5	4	60 - 140	87
	Phenanthrene	mg/kg	0.1	3.7	4	60 - 140	93
	Anthracene	mg/kg	0.1	3.5	4	60 - 140	88
	Fluoranthene	mg/kg	0.1	3.5	4	60 - 140	87
	Pyrene	mg/kg	0.1	3.6	4	60 - 140	90
	Benzo(a)pyrene	mg/kg	0.1	4.0	4	60 - 140	100
	Surrogates	d5-nitrobenzene (Surrogate)	-	0.5	0.5	40 - 130	90
	Surrogates	2-fluorobiphenyl (Surrogate)	-	0.4	0.5	40 - 130	84
	Surrogates	d14-p-terphenyl (Surrogate)	-	0.5	0.5	40 - 130	96
LB064691.002	Naphthalene	mg/kg	0.1	3.8	4	60 - 140	95
	Acenaphthylene	mg/kg	0.1	4.0	4	60 - 140	99
	Acenaphthene	mg/kg	0.1	3.8	4	60 - 140	94
	Phenanthrene	mg/kg	0.1	3.9	4	60 - 140	98
	Anthracene	mg/kg	0.1	3.7	4	60 - 140	93
	Fluoranthene	mg/kg	0.1	3.8	4	60 - 140	95
	Pyrene	mg/kg	0.1	3.9	4	60 - 140	97
	Benzo(a)pyrene	mg/kg	0.1	4.1	4	60 - 140	101
	Surrogates	d5-nitrobenzene (Surrogate)	-	0.4	0.5	40 - 130	86
	Surrogates	2-fluorobiphenyl (Surrogate)	-	0.4	0.5	40 - 130	86
	Surrogates	d14-p-terphenyl (Surrogate)	-	0.5	0.5	40 - 130	90

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR
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LABORATORY CONTROL SAMPLES

SE131674 R1

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.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064690.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	113
LB064691.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	106

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064906.002	Total Phenols	mg/kg	0.1	2.4	2.5	70 - 130	97
LB064908.002	Total Phenols	mg/kg	0.1	2.1	2.5	70 - 130	83

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 %
LB064761.002	Arsenic, As	mg/kg	3	50	50	80 - 120	100
	Cadmium, Cd	mg/kg	0.3	52	50	80 - 120	103
	Chromium, Cr	mg/kg	0.3	51	50	80 - 120	102
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	101
	Lead, Pb	mg/kg	1	50	50	80 - 120	101
	Nickel, Ni	mg/kg	0.5	50	50	80 - 120	100
	Zinc, Zn	mg/kg	0.5	51	50	80 - 120	102
LB064762.002	Arsenic, As	mg/kg	3	50	50	80 - 120	100
	Cadmium, Cd	mg/kg	0.3	51	50	80 - 120	103
	Chromium, Cr	mg/kg	0.3	51	50	80 - 120	101
	Copper, Cu	mg/kg	0.5	50	50	80 - 120	100
	Lead, Pb	mg/kg	1	50	50	80 - 120	100
	Nickel, Ni	mg/kg	0.5	50	50	80 - 120	99
	Zinc, Zn	mg/kg	0.5	51	50	80 - 120	101
LB064825.002	Arsenic, As	mg/kg	3	50	50	80 - 120	100
	Cadmium, Cd	mg/kg	0.3	52	50	80 - 120	103
	Chromium, Cr	mg/kg	0.3	51	50	80 - 120	102
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	102
	Lead, Pb	mg/kg	1	50	50	80 - 120	101
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	101
	Zinc, Zn	mg/kg	0.5	51	50	80 - 120	102

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064724.002	Arsenic, As	µg/L	1	17	20	80 - 120	85
	Cadmium, Cd	µg/L	0.1	19	20	80 - 120	94
	Chromium, Cr	µg/L	1	20	20	80 - 120	98
	Copper, Cu	µg/L	1	21	20	80 - 120	105
	Lead, Pb	µg/L	1	19	20	80 - 120	96
	Nickel, Ni	µg/L	1	22	20	80 - 120	108
	Zinc, Zn	µg/L	5	18	20	80 - 120	92

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064690.002	TRH C10-C14	mg/kg	20	37	40	60 - 140	93
	TRH C15-C28	mg/kg	45	<45	40	60 - 140	98
	TRH C29-C36	mg/kg	45	<45	40	60 - 140	80
	TRH F Bands						
	TRH >C10-C16 (F2)	mg/kg	25	37	40	60 - 140	93
	TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	95
LB064691.002	TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	85
	TRH C10-C14	mg/kg	20	34	40	60 - 140	85
	TRH C15-C28	mg/kg	45	<45	40	60 - 140	85
	TRH C29-C36	mg/kg	45	<45	40	60 - 140	73
	TRH F Bands						
	TRH >C10-C16 (F2)	mg/kg	25	34	40	60 - 140	85
	TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	78
	TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	80

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR
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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 (continued)
Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB064695.002	TRH C10-C14	µg/L	50	1100	1200	60 - 140	88	
	TRH C15-C28	µg/L	200	1200	1200	60 - 140	96	
	TRH C29-C36	µg/L	200	1200	1200	60 - 140	96	
	TRH F Bands	TRH >C10-C16 (F2)	µg/L	60	1100	1200	60 - 140	89
		TRH >C16-C34 (F3)	µg/L	500	1200	1200	60 - 140	97
		TRH >C34-C40 (F4)	µg/L	500	610	600	60 - 140	102

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064655.002	Halogenated	1,1-dichloroethene	mg/kg	0.1	3.0	2.56	60 - 140	118
	Aliphatics	1,2-dichloroethane	mg/kg	0.1	3.0	2.56	60 - 140	117
		Trichloroethene (Trichloroethylene -TCE)		mg/kg	0.1	2.2	2.56	60 - 140
	Halogenated	Chlorobenzene	mg/kg	0.1	2.7	2.56	60 - 140	106
	Monocyclic	Benzene	mg/kg	0.1	2.8	2.9	60 - 140	96
	Aromatic	Toluene	mg/kg	0.1	2.6	2.9	60 - 140	89
		Ethylbenzene	mg/kg	0.1	2.6	2.9	60 - 140	89
		m/p-xylene	mg/kg	0.2	5.4	5.8	60 - 140	93
		o-xylene	mg/kg	0.1	2.8	2.9	60 - 140	98
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.6	5	60 - 140	113
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	6.0	5	60 - 140	120
		d8-toluene (Surrogate)	mg/kg	-	4.7	5	60 - 140	93
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.4	5	60 - 140	107
	Trihalomethan	Chloroform	mg/kg	0.1	2.5	2.56	60 - 140	96
LB064657.002	Halogenated	1,1-dichloroethene	mg/kg	0.1	2.6	2.56	60 - 140	102
	Aliphatics	1,2-dichloroethane	mg/kg	0.1	2.6	2.56	60 - 140	100
		Trichloroethene (Trichloroethylene -TCE)		mg/kg	0.1	2.0	2.56	60 - 140
	Halogenated	Chlorobenzene	mg/kg	0.1	2.6	2.56	60 - 140	102
	Monocyclic	Benzene	mg/kg	0.1	2.3	2.9	60 - 140	80
	Aromatic	Toluene	mg/kg	0.1	2.5	2.9	60 - 140	88
		Ethylbenzene	mg/kg	0.1	2.6	2.9	60 - 140	88
		m/p-xylene	mg/kg	0.2	5.2	5.8	60 - 140	89
		o-xylene	mg/kg	0.1	2.7	2.9	60 - 140	92
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.8	5	60 - 140	95
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	5	60 - 140	94
		d8-toluene (Surrogate)	mg/kg	-	4.7	5	60 - 140	94
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.3	5	60 - 140	106
	Trihalomethan	Chloroform	mg/kg	0.1	2.0	2.56	60 - 140	79

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064697.002	Monocyclic	Benzene	µg/L	0.5	51	45.45	60 - 140	111
	Aromatic	Toluene	µg/L	0.5	51	45.45	60 - 140	113
		Ethylbenzene	µg/L	0.5	51	45.45	60 - 140	112
		m/p-xylene	µg/L	1	100	90.9	60 - 140	111
		o-xylene	µg/L	0.5	51	45.45	60 - 140	112
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.8	5	60 - 140	96
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.8	5	60 - 140	96
		d8-toluene (Surrogate)	µg/L	-	5.0	5	60 - 140	99
		Bromofluorobenzene (Surrogate)	µg/L	-	4.9	5	60 - 140	99

Volatile Petroleum Hydrocarbons in Soil
Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB064655.002	TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	92	
	TRH C6-C9	mg/kg	20	20	23.2	60 - 140	87	
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.0	5	60 - 140	100
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.1	5	60 - 140	102
		d8-toluene (Surrogate)	mg/kg	-	5.5	5	60 - 140	110
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.5	5	60 - 140	110
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	89
LB064657.002	TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	91	
	TRH C6-C9	mg/kg	20	21	23.2	60 - 140	91	
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.6	5	60 - 140	91



LABORATORY CONTROL SAMPLES

SE131674 R1

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.

Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064657.002	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.6	5	60 - 140 91
		d8-toluene (Surrogate)	mg/kg	-	5.6	5	60 - 140 112
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.4	5	60 - 140 109
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140 100

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064697.002	TRH C6-C10	µg/L	50	1000	946.63	60 - 140 107	
		µg/L	40	830	818.71	60 - 140 101	
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.8	5	60 - 140 96
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.8	5	60 - 140 96
		d8-toluene (Surrogate)	µg/L	-	5.0	5	60 - 140 99
		Bromofluorobenzene (Surrogate)	µg/L	-	4.9	5	60 - 140 99
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	700	639.67	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 (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131625.001	LB064639.004	Mercury	mg/L	0.0001	0.0071	<0.00005	0.008	88

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131666.039	LB064768.004	Mercury	mg/kg	0.01	0.18	0.02	0.2	77
SE131674.005	LB064771.004	Mercury	mg/kg	0.01	0.26	0.11	0.2	74

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131674.005	LB064690.009	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Lindane	mg/kg	0.1	<0.1	<0.1	-	-
		Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	106
		Aldrin	mg/kg	0.1	0.2	<0.1	0.2	112
		Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	106
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Dieldrin	mg/kg	0.2	0.2	<0.2	0.2	113
		Endrin	mg/kg	0.2	0.2	<0.2	0.2	115
		o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	93
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
		Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
		Mirex	mg/kg	0.1	<0.1	<0.1	-	-
SE131705.004	LB064691.009	Surrogates						
		Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.15	-	105
		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Lindane	mg/kg	0.1	<0.1	<0.1	-	-
		Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	105
		Aldrin	mg/kg	0.1	0.2	<0.1	0.2	107
		Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	96
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Dieldrin	mg/kg	0.2	0.2	<0.2	0.2	109
		Endrin	mg/kg	0.2	0.2	<0.2	0.2	114
		o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	98

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.

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131705.004	LB064691.009	Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
		Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
		Mirex	mg/kg	0.1	<0.1	<0.1	-	-
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)		mg/kg	-	0.16	0.15	-

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131674.005	LB064690.009	Dichlorvos	mg/kg	0.5	1.7	<0.5	2	85
		Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
		Diazinon (Dimpylate)	mg/kg	0.5	1.8	<0.5	2	88
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
		Malathion	mg/kg	0.2	<0.2	<0.2	-	-
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.6	<0.2	2	80
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
		Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
		Ethion	mg/kg	0.2	1.5	<0.2	2	77
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	0.5	90
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	0.5	102
SE131705.003	LB064691.008	Dichlorvos	mg/kg	0.5	2.0	<0.5	2	102
		Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
		Diazinon (Dimpylate)	mg/kg	0.5	1.8	<0.5	2	89
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
		Malathion	mg/kg	0.2	<0.2	<0.2	-	-
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.2	<0.2	2	112
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
		Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
		Ethion	mg/kg	0.2	2.2	<0.2	2	108
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	0.5	86
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	0.5	100

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131674.005	LB064690.009	Naphthalene	mg/kg	0.1	3.8	<0.1	4	94
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	4.1	<0.1	4	103
		Acenaphthene	mg/kg	0.1	4.1	<0.1	4	102
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	3.9	<0.1	4	97
		Anthracene	mg/kg	0.1	4.3	<0.1	4	108
		Fluoranthene	mg/kg	0.1	3.3	<0.1	4	82
		Pyrene	mg/kg	0.1	3.9	<0.1	4	96
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
		Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(a)pyrene	mg/kg	0.1	4.3	<0.1	4	107
		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	-	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ	0.2	4.3	<0.2	-	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	4.4	<0.3	-	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	4.4	<0.2	-	-
		Total PAH	mg/kg	0.8	32	<0.8	-	-
Surrogates	d5-nitrobenzene (Surrooate)	mg/kg	-	0.5	0.5	-	90	

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 (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131674.005	LB064690.009	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	90
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	102
SE131705.003	LB064691.008		Naphthalene	mg/kg	0.1	3.5	<0.1	4	88
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			Acenaphthylene	mg/kg	0.1	3.8	0.2	4	91
			Acenaphthene	mg/kg	0.1	3.7	<0.1	4	92
			Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
			Phenanthrene	mg/kg	0.1	3.8	0.6	4	78
			Anthracene	mg/kg	0.1	3.4	0.2	4	80
			Fluoranthene	mg/kg	0.1	4.3	1.2	4	77
			Pyrene	mg/kg	0.1	4.5	1.3	4	80
			Benzo(a)anthracene	mg/kg	0.1	<0.1	1.0	-	-
			Chrysene	mg/kg	0.1	<0.1	0.7	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	1.3	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.3	-	-
			Benzo(a)pyrene	mg/kg	0.1	4.4	0.9	4	88
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0.6	-	-
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	0.6	-	-
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ	0.2	4.4	1.2	-	-
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	4.6	1.3	-	-
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	4.5	1.3	-	-
			Total PAH	mg/kg	0.8	31	8.9	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	-	92
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	86
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	100

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131674.004	LB064690.008	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1260	mg/kg	0.2	0.5	<0.2	0.4	118
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
		Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	103	
SE131705.006	LB064691.010	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1260	mg/kg	0.2	0.5	<0.2	0.4	113
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
		Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	105	

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131717.009	LB064908.017	Total Phenols	mg/kg	0.1	2.3	0.2	2.5	86

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
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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.

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest (continued)

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131666.037	LB064761.004	Arsenic, As	mg/kg	3	52	4	50	95
		Cadmium, Cd	mg/kg	0.3	46	<0.3	50	91
		Chromium, Cr	mg/kg	0.3	52	6.8	50	91
		Copper, Cu	mg/kg	0.5	74	14	50	120
		Lead, Pb	mg/kg	1	59	15	50	88
		Nickel, Ni	mg/kg	0.5	55	6.0	50	99
		Zinc, Zn	mg/kg	0.5	110	31	50	156 ⑨
SE131674.003	LB064762.004	Arsenic, As	mg/kg	3	52	8	50	88
		Cadmium, Cd	mg/kg	0.3	50	1.1	50	98
		Chromium, Cr	mg/kg	0.3	69	23	50	92
		Copper, Cu	mg/kg	0.5	55	3.3	50	103
		Lead, Pb	mg/kg	1	97	69	50	56 ④
		Nickel, Ni	mg/kg	0.5	52	2.9	50	98
		Zinc, Zn	mg/kg	0.5	460	470	50	-11 ⑤
SE131674.022	LB064825.004	Arsenic, As	mg/kg	3	53	7	50	90
		Cadmium, Cd	mg/kg	0.3	48	0.9	50	94
		Chromium, Cr	mg/kg	0.3	68	25	50	85
		Copper, Cu	mg/kg	0.5	65	17	50	96
		Lead, Pb	mg/kg	1	62	22	50	80
		Nickel, Ni	mg/kg	0.5	50	3.9	50	92
		Zinc, Zn	mg/kg	0.5	480	450	50	71

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131674.003	LB064690.007	TRH C10-C14	mg/kg	20	37	<20	40	93
		TRH C15-C28	mg/kg	45	<45	<45	40	100
		TRH C29-C36	mg/kg	45	<45	<45	40	73
		TRH C37-C40	mg/kg	100	<100	<100	-	-
		TRH C10-C36 Total	mg/kg	110	<110	<110	-	-
		TRH C10-C40 Total	mg/kg	210	<210	<210	-	-
		TRH F Bands	mg/kg	25	37	<25	40	93
		TRH >C10-C16 (F2)	mg/kg	25	37	<25	-	-
		TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	37	<25	-	-
		TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	93
SE131705.001	LB064691.008	TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-
		TRH C10-C14	mg/kg	20	45	<20	40	113
		TRH C15-C28	mg/kg	45	160	120	40	103
		TRH C29-C36	mg/kg	45	120	66	40	133
		TRH C37-C40	mg/kg	100	<100	<100	-	-
		TRH C10-C36 Total	mg/kg	110	320	180	-	-
		TRH C10-C40 Total	mg/kg	210	320	<210	-	-
		TRH F Bands	mg/kg	25	50	<25	40	103
		TRH >C10-C16 (F2)	mg/kg	25	50	<25	-	-
		TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	50	<25	-	-
		TRH >C16-C34 (F3)	mg/kg	90	220	170	40	110
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131674.001	LB064655.004	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	-	-
			1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	-	-
			cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	-	-
			trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	-	-
			1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	-	-
		Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	-	-
			Chloromethane	mg/kg	1	<1	<1	-	-
			Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	-	-
			Bromomethane	mg/kg	1	<1	<1	-	-
			Chloroethane	mg/kg	1	<1	<1	-	-
			Trichlorofluoromethane	mg/kg	1	<1	<1	-	-
			Iodomethane	mg/kg	5	<5	<5	-	-
			1,1-dichloroethene	mg/kg	0.1	2.9	<0.1	2.56	113
			Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	-	-
			Allyl chloride	mg/kg	0.1	<0.1	<0.1	-	-

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.

VOC's in Soil (continued)

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131674.001	LB064655.004	Halogenated	trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	-
		Aliphatics	1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	-
			cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	-
			Bromochloromethane	mg/kg	0.1	<0.1	<0.1	-
			1,2-dichloroethane	mg/kg	0.1	2.9	<0.1	2.56
			1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	-
			1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	-
			Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	-
			Dibromomethane	mg/kg	0.1	<0.1	<0.1	-
			Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	2.1	<0.1	2.56
			1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	-
			1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	-
			Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	-
			1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	-
			cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	-
			1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	-
			1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	-
			trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	-
			1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	-
			Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	-
		Halogenated	Chlorobenzene	mg/kg	0.1	2.7	<0.1	2.56
		Aromatics	Bromobenzene	mg/kg	0.1	<0.1	<0.1	-
			2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	-
			4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	-
			1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	-
			1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	-
			1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	-
			1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	-
			1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	-
		Monocyclic	Benzene	mg/kg	0.1	2.6	<0.1	2.9
		Aromatic	Toluene	mg/kg	0.1	2.6	<0.1	2.9
			Ethylbenzene	mg/kg	0.1	2.6	<0.1	2.9
			m/p-xylene	mg/kg	0.2	5.4	<0.2	5.8
			Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	-
			o-xylene	mg/kg	0.1	2.8	<0.1	2.9
			Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	-
			n-propylbenzene	mg/kg	0.1	<0.1	<0.1	-
			1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	-
			tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	-
			1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	-
			sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	-
			p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	-
			n-butylbenzene	mg/kg	0.1	<0.1	<0.1	-
		Nitrogenous	Acrylonitrile	mg/kg	0.1	<0.1	<0.1	-
		Compounds	2-nitropropane	mg/kg	10	<10	<10	-
		Oxygenated	Acetone (2-propanone)	mg/kg	10	<10	<10	-
		Compounds	MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	-
			Vinyl acetate	mg/kg	10	<10	<10	-
			MEK (2-butanone)	mg/kg	10	<10	<10	-
			MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	-
			2-hexanone (MBK)	mg/kg	5	<5	<5	-
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-
		Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5	<0.5	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.6	4.2	5
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.6	4.9	5
			d8-toluene (Surrogate)	mg/kg	-	4.6	3.8	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.2	4.2	5
		Totals	Total Xylenes*	mg/kg	0.3	8.2	<0.3	-
			Total BTEX*	mg/kg	0.6	16	<0.6	-
		Trihalomethanes	Chloroform	mg/kg	0.1	2.2	<0.1	2.56
			Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	-

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.

VOC's in Soil (continued)

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131674.001	LB064655.004	Trihalomethanes	Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	-
			Bromoform	mg/kg	0.1	<0.1	<0.1	-
SE131674.020	LB064657.004	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	-
			1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	-
			cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	-
			trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	-
			1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	-
		Halogenated	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	-
			Chloromethane	mg/kg	1	<1	<1	-
		Aliphatics	Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	-
			Bromomethane	mg/kg	1	<1	<1	-
			Chloroethane	mg/kg	1	<1	<1	-
			Trichlorofluoromethane	mg/kg	1	<1	<1	-
			Iodomethane	mg/kg	5	<5	<5	-
			1,1-dichloroethene	mg/kg	0.1	2.7	<0.1	2.56
			Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	-
			Allyl chloride	mg/kg	0.1	<0.1	<0.1	-
			trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	-
			1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	-
			cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	-
			Bromochloromethane	mg/kg	0.1	<0.1	<0.1	-
			1,2-dichloroethane	mg/kg	0.1	3.1	<0.1	2.56
			1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	-
			1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	-
			Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	-
			Dibromomethane	mg/kg	0.1	<0.1	<0.1	-
			Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	2.9	<0.1	2.56
			1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	-
			1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	-
			Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	-
			1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	-
			cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	-
			1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	-
			1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	-
			trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	-
			1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	-
			Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	-
		Halogenated Aromatics	Chlorobenzene	mg/kg	0.1	3.3	<0.1	2.56
			Bromobenzene	mg/kg	0.1	<0.1	<0.1	-
			2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	-
			4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	-
			1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	-
			1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	-
			1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	-
			1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	-
			1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	-
		Monocyclic Aromatic	Benzene	mg/kg	0.1	2.3	<0.1	2.9
			Toluene	mg/kg	0.1	3.1	<0.1	2.9
			Ethylbenzene	mg/kg	0.1	3.3	<0.1	2.9
			m/p-xylene	mg/kg	0.2	6.6	<0.2	5.8
			Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	-
			o-xylene	mg/kg	0.1	3.2	<0.1	2.9
			Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	-
			n-propylbenzene	mg/kg	0.1	<0.1	<0.1	-
			1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	-
			tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	-
			1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	-
			sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	-
			p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	-
			n-butylbenzene	mg/kg	0.1	<0.1	<0.1	-
		Nitrogenous	Acrylonitrile	mg/kg	0.1	<0.1	<0.1	-

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.

VOC's in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE131674.020	LB064657.004	Nitrogenous	2-nitropropane	mg/kg	10	<10	<10	-	-	
			Oxygenated	Acetone (2-propanone)	mg/kg	10	<10	<10	-	-
		Compounds	MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	-	-	
			Vinyl acetate	mg/kg	10	<10	<10	-	-	
			MEK (2-butanone)	mg/kg	10	<10	<10	-	-	
			MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	-	-	
			2-hexanone (MBK)	mg/kg	5	<5	<5	-	-	
			Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5	<0.5	-	-	
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.9	3.6	5	97	
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.1	4.6	5	103	
			d8-toluene (Surrogate)	mg/kg	-	4.5	3.8	5	89	
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.3	4.1	5	106	
			Totals	Total Xylenes*	mg/kg	0.3	9.7	<0.3	-	-
		Total BTEX*		mg/kg	0.6	18	<0.6	-	-	
		nes	Trihalometha	Chloroform	mg/kg	0.1	2.4	<0.1	2.56	93
				Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	-	-
				Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	-	-
				Bromoform	mg/kg	0.1	<0.1	<0.1	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE131674.001	LB064655.004	TRH C6-C10	mg/kg	25	<25	<25	24.65	93	
		TRH C6-C9	mg/kg	20	21	<20	23.2	89	
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.4	4.6	5	88
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.8	4.9	5	96
			d8-toluene (Surrogate)	mg/kg	-	4.4	4.1	5	87
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.5	3.7	5	90
		VPH F	Benzene (F0)	mg/kg	0.1	2.6	<0.1	-	-
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	95
		SE131674.020	LB064657.004	TRH C6-C10	mg/kg	25	<25	<25	24.65
TRH C6-C9	mg/kg			20	21	<20	23.2	89	
Surrogates	Dibromofluoromethane (Surrogate)			mg/kg	-	5.0	4.0	5	101
	d4-1,2-dichloroethane (Surrogate)			mg/kg	-	4.0	4.5	5	80
	d8-toluene (Surrogate)			mg/kg	-	4.4	4.3	5	88
	Bromofluorobenzene (Surrogate)			mg/kg	-	5.1	4.4	5	101
VPH F	Benzene (F0)			mg/kg	0.1	2.3	<0.1	-	-
	TRH C6-C10 minus BTEX (F1)			mg/kg	25	<25	<25	7.25	57 +

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.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.005	LB064690.010	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	-
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	-
		Lindane	mg/kg	0.1	<0.1	<0.1	200	-
		Heptachlor	mg/kg	0.1	0.2	0.2	79	9
		Aldrin	mg/kg	0.1	0.2	0.2	77	10
		Beta BHC	mg/kg	0.1	<0.1	<0.1	200	-
		Delta BHC	mg/kg	0.1	0.2	0.2	80	10
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	-
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	-
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	-
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	-
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	-
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	-
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	-
		Dieldrin	mg/kg	0.2	0.2	0.2	77	12
		Endrin	mg/kg	0.2	0.2	0.2	76	10
		o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	-
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	-
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	-
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	-
		p,p'-DDT	mg/kg	0.1	0.2	0.2	87	13
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	-
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	-
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	-
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	-
		Isodrin	mg/kg	0.1	<0.1	<0.1	200	-
		Mirex	mg/kg	0.1	<0.1	<0.1	200	-
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.15	30	7
SE131705.004	LB064691.010	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	-
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	-
		Lindane	mg/kg	0.1	<0.1	<0.1	200	-
		Heptachlor	mg/kg	0.1	0.2	0.2	78	0
		Aldrin	mg/kg	0.1	0.2	0.2	77	0
		Beta BHC	mg/kg	0.1	<0.1	<0.1	200	-
		Delta BHC	mg/kg	0.1	0.2	0.2	82	1
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	-
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	-
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	-
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	-
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	-
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	-
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	-
		Dieldrin	mg/kg	0.2	0.2	0.2	76	1
		Endrin	mg/kg	0.2	0.2	0.2	74	1
		o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	-
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	-
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	-
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	-
		p,p'-DDT	mg/kg	0.1	0.2	0.2	80	4
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	-
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	-
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	-
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	-
		Isodrin	mg/kg	0.1	<0.1	<0.1	200	-
		Mirex	mg/kg	0.1	<0.1	<0.1	200	-
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16	30	1

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.

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.005	LB064690.010	Dichlorvos	mg/kg	0.5	1.7	1.6	60	4
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	-
		Diazinon (Dimpylate)	mg/kg	0.5	1.8	1.9	57	6
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	-
		Malathion	mg/kg	0.2	<0.2	<0.2	200	-
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.6	2.0	142	21
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	-
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	-
		Methodathion	mg/kg	0.5	<0.5	<0.5	200	-
		Ethion	mg/kg	0.2	1.5	1.5	43	5
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	-
		Surrogates						
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
SE131705.003	LB064691.009	Dichlorvos	mg/kg	0.5	2.0	2.1	54	1
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	-
		Diazinon (Dimpylate)	mg/kg	0.5	1.8	1.7	59	5
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	-
		Malathion	mg/kg	0.2	<0.2	<0.2	200	-
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.2	2.2	119	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	-
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	-
		Methodathion	mg/kg	0.5	<0.5	<0.5	200	-
		Ethion	mg/kg	0.2	2.2	2.3	39	6
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	-
		Surrogates						
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	0
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR
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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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.005	LB064690.010	Naphthalene	mg/kg	0.1	3.8	3.7	33	1
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	-
		Acenaphthylene	mg/kg	0.1	4.1	3.9	32	5
		Acenaphthene	mg/kg	0.1	4.1	4.0	32	2
		Fluorene	mg/kg	0.1	<0.1	<0.1	200	-
		Phenanthrene	mg/kg	0.1	3.9	3.9	33	0
		Anthracene	mg/kg	0.1	4.3	4.3	32	1
		Fluoranthene	mg/kg	0.1	3.3	3.1	33	6
		Pyrene	mg/kg	0.1	3.9	3.9	33	0
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	-
		Chrysene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(a)pyrene	mg/kg	0.1	4.3	4.3	32	1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	-
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ	0.2	4.3	4.3	15	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	4.4	4.5	17	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	4.4	4.4	15	-
		Total PAH	mg/kg	0.8	32	31	33	-
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	0
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
SE131705.003	LB064691.009	Naphthalene	mg/kg	0.1	3.5	3.5	33	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	-
		Acenaphthylene	mg/kg	0.1	3.8	3.8	33	0
		Acenaphthene	mg/kg	0.1	3.7	3.6	33	2
		Fluorene	mg/kg	0.1	<0.1	<0.1	200	-
		Phenanthrene	mg/kg	0.1	3.8	4.4	32	17
		Anthracene	mg/kg	0.1	3.4	3.4	33	0
		Fluoranthene	mg/kg	0.1	4.3	4.8	32	17
		Pyrene	mg/kg	0.1	4.5	4.8	32	9
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	-
		Chrysene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(a)pyrene	mg/kg	0.1	4.4	4.8	32	11
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	-
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ	0.2	4.4	4.8	14	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	4.6	5.0	16	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	4.5	4.9	14	-
		Total PAH	mg/kg	0.8	31	33	32	-
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	2
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	0
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR
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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.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131674.004	LB064690.009	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1260	mg/kg	0.2	0.5	0.5	73	4
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	-
		Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	-
SE131705.006	LB064691.011	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	30	3
		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1260	mg/kg	0.2	0.5	0.5	74	2
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	-
SE131705.001	LB064691.009	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	30	1

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE131674.003	LB064690.008	TRH C10-C14	mg/kg	20	37	36	85	3	
		TRH C15-C28	mg/kg	45	<45	<45	141	2	
		TRH C29-C36	mg/kg	45	<45	<45	183	3	
		TRH C37-C40	mg/kg	100	<100	<100	200	-	
		TRH C10-C36 Total	mg/kg	110	<110	<110	133	-	
		TRH C10-C40 Total	mg/kg	210	<210	<210	200	-	
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	37	37	98	0
		TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	37	37	98	-	
		TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	3	
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	-	
SE131705.001	LB064691.009	TRH C10-C14	mg/kg	20	45	39	78	14	
		TRH C15-C28	mg/kg	45	160	170	58	16	
		TRH C29-C36	mg/kg	45	120	99	71	47	
		TRH C37-C40	mg/kg	100	<100	<100	200	-	
		TRH C10-C36 Total	mg/kg	110	320	300	65	-	
		TRH C10-C40 Total	mg/kg	210	320	300	97	-	
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	50	46	82	10
		TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	50	46	82	-	
		TRH >C16-C34 (F3)	mg/kg	90	220	220	71	5	
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	-	



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.sgs.com.au/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.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.
- ⑩ LOR was raised due to high conductivity of the sample (required dilution).
- † Refer to Analytical Report comments for further information.

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Project **E22317 - 75 Mary St, St Peters NSW**
Order Number **E22317**
Samples 16
Date Started 01 Oct 2014

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SGS Reference **SE131743 R0**
Report Number 0000092654
Date Reported 08 Oct 2014
Date Received 29 Sep 2014

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all samples using trace analysis technique
Sample #3 : 1-4mm length fibre bundles x4 found loose in sample.
Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES



Andy Sutton
Senior Organic Chemist



Dong Liang
Metals/Inorganics Team Leader



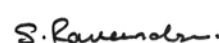
Huong Crawford
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Metals Chemist



Ly Kim Ha
Organic Section Head



Ravee Sivasubramaniam
Asbestos Analyst



ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.001	SE131743.002	SE131743.003	SE131743.004
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		24 Sep 2014	24 Sep 2014	23 Sep 2014	23 Sep 2014
	Sample Name		BH1-1	BH1-2	BH2-1	BH2-2
Units	LOR					

VOC's in Soil Method: AN433/AN434

Fumigants

2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	<1	<1
Chloromethane	mg/kg	1	<1	<1	<1	<1
Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromomethane	mg/kg	1	<1	<1	<1	<1
Chloroethane	mg/kg	1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	1	<1	<1	<1	<1
Iodomethane	mg/kg	5	<5	<5	<5	<5
1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Allyl chloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromochloromethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1



ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.001	SE131743.002	SE131743.003	SE131743.004
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		24 Sep 2014	24 Sep 2014	23 Sep 2014	23 Sep 2014
	Sample Name		BH1-1	BH1-2	BH2-1	BH2-2
	Units	LOR				

VOC's in Soil Method: AN433/AN434 (continued)

Halogenated Aromatics

Chlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Monocyclic Aromatic Hydrocarbons

Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	0.5	0.3
Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	<0.1	0.5
n-propylbenzene	mg/kg	0.1	<0.1	0.3	<0.1	0.6
1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
n-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	8.6

Nitrogenous Compounds

Acrylonitrile	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-nitropropane	mg/kg	10	<10	<10	<10	<10



ANALYTICAL REPORT

SE131743 R0

Parameter	Units	LOR
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Sample Number	SE131743.001	SE131743.002	SE131743.003	SE131743.004
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24 Sep 2014	24 Sep 2014	23 Sep 2014	23 Sep 2014
Sample Name	BH1-1	BH1-2	BH2-1	BH2-2

VOC's in Soil Method: AN433/AN434 (continued)

Oxygenated Compounds

Acetone (2-propanone)	mg/kg	10	<10	<10	<10	<10
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Vinyl acetate	mg/kg	10	<10	<10	<10	<10
MEK (2-butanone)	mg/kg	10	<10	<10	<10	<10
MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	<1	<1
2-hexanone (MBK)	mg/kg	5	<5	<5	<5	<5

Polycyclic VOCs

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
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Sulphonated Compounds

Carbon disulfide	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
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Surrogates

Dibromofluoromethane (Surrogate)	%	-	74	74	84	91
d4-1,2-dichloroethane (Surrogate)	%	-	92	90	104	111
d8-toluene (Surrogate)	%	-	81	85	98	109
Bromofluorobenzene (Surrogate)	%	-	88	87	100	113

Totals

Total Xylenes*	mg/kg	0.3	<0.3	<0.3	0.5	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Total VOC*	mg/kg	24	-	-	-	-

Trihalomethanes

Chloroform	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromoform	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1



ANALYTICAL REPORT

SE131743 R0

Parameter	Units	LOR	Sample Number	SE131743.001	SE131743.002	SE131743.003	SE131743.004
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	24 Sep 2014	24 Sep 2014	23 Sep 2014	23 Sep 2014
			Sample Name	BH1-1	BH1-2	BH2-1	BH2-2

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410

TRH C6-C10	mg/kg	25	<25	63	<25	<25
TRH C6-C9	mg/kg	20	<20	22	<20	<20

Surrogates

Dibromofluoromethane (Surrogate)	%	-	84	84	99	104
d4-1,2-dichloroethane (Surrogate)	%	-	93	91	105	113
d8-toluene (Surrogate)	%	-	81	91	103	113
Bromofluorobenzene (Surrogate)	%	-	88	88	105	114

VPH F Bands

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	63	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	<20	160	<20	53
TRH C15-C28	mg/kg	45	86	<45	150	140
TRH C29-C36	mg/kg	45	66	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	150	200	150	190
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210

TRH F Bands

TRH >C10-C16 (F2)	mg/kg	25	<25	160	25	77
TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	<25	160	25	77
TRH >C16-C34 (F3)	mg/kg	90	150	<90	160	130
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	0.2	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	0.2	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	1.6	<0.1	0.2	<0.1
Anthracene	mg/kg	0.1	0.4	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	2.5	<0.1	0.4	<0.1
Pyrene	mg/kg	0.1	2.4	<0.1	0.5	<0.1
Benzo(a)anthracene	mg/kg	0.1	1.4	<0.1	0.3	<0.1
Chrysene	mg/kg	0.1	1.0	<0.1	0.3	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	1.6	<0.1	0.4	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	0.4	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	1.2	<0.1	0.3	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.7	<0.1	0.2	<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	0.5	<0.1	0.2	<0.1
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=0*	TEQ	0.2	1.7	<0.2	0.4	<0.2
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR*	TEQ (mg/kg)	0.3	1.7	<0.3	0.5	<0.3
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR/2*	TEQ (mg/kg)	0.2	1.7	<0.2	0.4	<0.2
Total PAH	mg/kg	0.8	14	<0.8	2.8	<0.8



ANALYTICAL REPORT

SE131743 R0

Sample Number	SE131743.001	SE131743.002	SE131743.003	SE131743.004
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24 Sep 2014	24 Sep 2014	23 Sep 2014	23 Sep 2014
Sample Name	BH1-1	BH1-2	BH2-1	BH2-2
Parameter	Units	LOR		

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

Surrogates

d5-nitrobenzene (Surrogate)	%	-	86	102	90	90
2-fluorobiphenyl (Surrogate)	%	-	80	86	82	84
d14-p-terphenyl (Surrogate)	%	-	90	96	96	98

OC Pesticides in Soil Method: AN400/AN420

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	-	<0.1	-
Alpha BHC	mg/kg	0.1	<0.1	-	<0.1	-
Lindane	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor	mg/kg	0.1	<0.1	-	<0.1	-
Aldrin	mg/kg	0.1	<0.1	-	<0.1	-
Beta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Delta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor epoxide	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
Gamma Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
trans-Nonachlor	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Dieldrin	mg/kg	0.2	<0.2	-	<0.2	-
Endrin	mg/kg	0.2	<0.2	-	<0.2	-
o,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Beta Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
p,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Endosulfan sulphate	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Aldehyde	mg/kg	0.1	<0.1	-	<0.1	-
Methoxychlor	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Ketone	mg/kg	0.1	<0.1	-	<0.1	-
Isodrin	mg/kg	0.1	<0.1	-	<0.1	-
Mirex	mg/kg	0.1	<0.1	-	<0.1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	95	-	106	-
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ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.001	SE131743.002	SE131743.003	SE131743.004
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		24 Sep 2014	24 Sep 2014	23 Sep 2014	23 Sep 2014
	Sample Name		BH1-1	BH1-2	BH2-1	BH2-2
Units	LOR					

OP Pesticides in Soil Method: AN400/AN420

Dichlorvos	mg/kg	0.5	<0.5	-	<0.5	-
Dimethoate	mg/kg	0.5	<0.5	-	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	-	<0.5	-
Fenitrothion	mg/kg	0.2	<0.2	-	<0.2	-
Malathion	mg/kg	0.2	<0.2	-	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	-	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	-	<0.2	-
Bromophos Ethyl	mg/kg	0.2	<0.2	-	<0.2	-
Methidathion	mg/kg	0.5	<0.5	-	<0.5	-
Ethion	mg/kg	0.2	<0.2	-	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	<0.2	-

Surrogates

2-fluorobiphenyl (Surrogate)	%	-	80	-	82	-
d14-p-terphenyl (Surrogate)	%	-	90	-	96	-

PCBs in Soil Method: AN400/AN420

Arochlor 1016	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1221	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1232	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1242	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1248	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1254	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1260	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1262	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1268	mg/kg	0.2	<0.2	-	<0.2	-
Total PCBs (Arochlors)	mg/kg	1	<1	-	<1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	95	-	106	-
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ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.001	SE131743.002	SE131743.003	SE131743.004
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		24 Sep 2014	24 Sep 2014	23 Sep 2014	23 Sep 2014
	Sample Name		BH1-1	BH1-2	BH2-1	BH2-2
Units	LOR					

Total Phenolics in Soil Method: AN289

Total Phenols	mg/kg	0.1	<0.1	<0.1	1.4	0.8
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Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320

Arsenic, As	mg/kg	3	11	5	8	10
Cadmium, Cd	mg/kg	0.3	0.5	<0.3	0.9	0.3
Chromium, Cr	mg/kg	0.3	49	12	16	33
Copper, Cu	mg/kg	0.5	41	3.5	51	2.2
Lead, Pb	mg/kg	1	240	20	220	20
Nickel, Ni	mg/kg	0.5	11	0.5	11	1.5
Zinc, Zn	mg/kg	0.5	250	2.7	660	11

Mercury in Soil Method: AN312

Mercury	mg/kg	0.01	0.10	<0.01	0.29	0.03
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Fibre Identification in soil Method: AN602

FibreID

Asbestos Detected	No unit	-	No	-	Yes	-
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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	23	22	24	28
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ANALYTICAL REPORT

SE131743 R0

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE131743.005 Soil 23 Sep 2014 BH2-4	SE131743.006 Soil 25 Sep 2014 BH3-1	SE131743.007 Soil 25 Sep 2014 BH3-2	SE131743.008 Soil 24 Sep 2014 BH4-1
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VOC's in Soil Method: AN433/AN434

Fumigants

2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	<1	<1
Chloromethane	mg/kg	1	<1	<1	<1	<1
Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromomethane	mg/kg	1	<1	<1	<1	<1
Chloroethane	mg/kg	1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	1	<1	<1	<1	<1
Iodomethane	mg/kg	5	<5	<5	<5	<5
1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Allyl chloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromochloromethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Trichloroethene (Trichloroethylene - TCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1



ANALYTICAL REPORT

SE131743 R0

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE131743.005 Soil 23 Sep 2014 BH2-4	SE131743.006 Soil 25 Sep 2014 BH3-1	SE131743.007 Soil 25 Sep 2014 BH3-2	SE131743.008 Soil 24 Sep 2014 BH4-1
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VOC's in Soil Method: AN433/AN434 (continued)

Halogenated Aromatics

Chlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Monocyclic Aromatic Hydrocarbons

Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	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
Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	0.4	<0.1	<0.1
n-propylbenzene	mg/kg	0.1	<0.1	0.7	<0.1	0.1
1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	0.2
sec-butylbenzene	mg/kg	0.1	<0.1	0.5	<0.1	0.1
p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
n-butylbenzene	mg/kg	0.1	1.1	0.5	<0.1	0.1

Nitrogenous Compounds

Acrylonitrile	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-nitropropane	mg/kg	10	<10	<10	<10	<10



ANALYTICAL REPORT

SE131743 R0

Parameter	Units	LOR
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Sample Number	SE131743.005	SE131743.006	SE131743.007	SE131743.008
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	23 Sep 2014	25 Sep 2014	25 Sep 2014	24 Sep 2014
Sample Name	BH2-4	BH3-1	BH3-2	BH4-1

VOC's in Soil Method: AN433/AN434 (continued)

Oxygenated Compounds

Acetone (2-propanone)	mg/kg	10	<10	<10	<10	<10
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Vinyl acetate	mg/kg	10	<10	<10	<10	<10
MEK (2-butanone)	mg/kg	10	<10	<10	<10	<10
MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	<1	<1
2-hexanone (MBK)	mg/kg	5	<5	<5	<5	<5

Polycyclic VOCs

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
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Sulphonated Compounds

Carbon disulfide	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
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Surrogates

Dibromofluoromethane (Surrogate)	%	-	97	83	76	71
d4-1,2-dichloroethane (Surrogate)	%	-	120	102	92	87
d8-toluene (Surrogate)	%	-	112	98	91	85
Bromofluorobenzene (Surrogate)	%	-	110	102	91	92

Totals

Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Total VOC*	mg/kg	24	-	-	-	-

Trihalomethanes

Chloroform	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromoform	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1



ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.005	SE131743.006	SE131743.007	SE131743.008
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		23 Sep 2014	25 Sep 2014	25 Sep 2014	24 Sep 2014
	Sample Name		BH2-4	BH3-1	BH3-2	BH4-1
Units	LOR					

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410

TRH C6-C10	mg/kg	25	<25	71	<25	<25
TRH C6-C9	mg/kg	20	<20	33	<20	<20

Surrogates

Dibromofluoromethane (Surrogate)	%	-	111	95	86	80
d4-1,2-dichloroethane (Surrogate)	%	-	121	104	94	89
d8-toluene (Surrogate)	%	-	121	102	95	88
Bromofluorobenzene (Surrogate)	%	-	117	113	92	94

VPH F Bands

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	71	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	<20	93	<20	24
TRH C15-C28	mg/kg	45	<45	46	<45	47
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	140	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210

TRH F Bands

TRH >C10-C16 (F2)	mg/kg	25	<25	100	<25	<25
TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	<25	100	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	0.5
2-methylnaphthalene	mg/kg	0.1	<0.1	0.2	<0.1	0.3
1-methylnaphthalene	mg/kg	0.1	<0.1	0.2	<0.1	0.2
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	0.4
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	0.6
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	2.2
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	0.7
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	2.3
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	1.9
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	1.0
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	0.8
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	0.9
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	0.3
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.3
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	0.2
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=0*	TEQ	0.2	<0.2	<0.2	<0.2	0.9
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	1.0
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	1.0
Total PAH	mg/kg	0.8	<0.8	<0.8	<0.8	13



ANALYTICAL REPORT

SE131743 R0

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE131743.005 Soil 23 Sep 2014 BH2-4	SE131743.006 Soil 25 Sep 2014 BH3-1	SE131743.007 Soil 25 Sep 2014 BH3-2	SE131743.008 Soil 24 Sep 2014 BH4-1
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PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)

Surrogates

d5-nitrobenzene (Surrogate)	%	-	88	94	90	94
2-fluorobiphenyl (Surrogate)	%	-	80	82	82	84
d14-p-terphenyl (Surrogate)	%	-	94	94	96	96

OC Pesticides in Soil Method: AN400/AN420

Hexachlorobenzene (HCB)	mg/kg	0.1	-	<0.1	-	<0.1
Alpha BHC	mg/kg	0.1	-	<0.1	-	<0.1
Lindane	mg/kg	0.1	-	<0.1	-	<0.1
Heptachlor	mg/kg	0.1	-	<0.1	-	<0.1
Aldrin	mg/kg	0.1	-	<0.1	-	<0.1
Beta BHC	mg/kg	0.1	-	<0.1	-	<0.1
Delta BHC	mg/kg	0.1	-	<0.1	-	<0.1
Heptachlor epoxide	mg/kg	0.1	-	<0.1	-	<0.1
o,p'-DDE	mg/kg	0.1	-	<0.1	-	<0.1
Alpha Endosulfan	mg/kg	0.2	-	<0.2	-	<0.2
Gamma Chlordane	mg/kg	0.1	-	<0.1	-	<0.1
Alpha Chlordane	mg/kg	0.1	-	<0.1	-	<0.1
trans-Nonachlor	mg/kg	0.1	-	<0.1	-	<0.1
p,p'-DDE	mg/kg	0.1	-	<0.1	-	<0.1
Dieldrin	mg/kg	0.2	-	<0.2	-	<0.2
Endrin	mg/kg	0.2	-	<0.2	-	<0.2
o,p'-DDD	mg/kg	0.1	-	<0.1	-	<0.1
o,p'-DDT	mg/kg	0.1	-	<0.1	-	<0.1
Beta Endosulfan	mg/kg	0.2	-	<0.2	-	<0.2
p,p'-DDD	mg/kg	0.1	-	<0.1	-	<0.1
p,p'-DDT	mg/kg	0.1	-	<0.1	-	<0.1
Endosulfan sulphate	mg/kg	0.1	-	<0.1	-	<0.1
Endrin Aldehyde	mg/kg	0.1	-	<0.1	-	<0.1
Methoxychlor	mg/kg	0.1	-	<0.1	-	<0.1
Endrin Ketone	mg/kg	0.1	-	<0.1	-	<0.1
Isodrin	mg/kg	0.1	-	<0.1	-	<0.1
Mirex	mg/kg	0.1	-	<0.1	-	<0.1

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	100	-	101
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ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.005	SE131743.006	SE131743.007	SE131743.008
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		23 Sep 2014	25 Sep 2014	25 Sep 2014	24 Sep 2014
	Sample Name		BH2-4	BH3-1	BH3-2	BH4-1
Units	LOR					

OP Pesticides in Soil Method: AN400/AN420

Dichlorvos	mg/kg	0.5	-	<0.5	-	<0.5
Dimethoate	mg/kg	0.5	-	<0.5	-	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	-	<0.5	-	<0.5
Fenitrothion	mg/kg	0.2	-	<0.2	-	<0.2
Malathion	mg/kg	0.2	-	<0.2	-	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	<0.2	-	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	-	<0.2	-	<0.2
Bromophos Ethyl	mg/kg	0.2	-	<0.2	-	<0.2
Methidathion	mg/kg	0.5	-	<0.5	-	<0.5
Ethion	mg/kg	0.2	-	<0.2	-	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	-	<0.2	-	<0.2

Surrogates

2-fluorobiphenyl (Surrogate)	%	-	-	82	-	84
d14-p-terphenyl (Surrogate)	%	-	-	94	-	96

PCBs in Soil Method: AN400/AN420

Arochlor 1016	mg/kg	0.2	-	<0.2	-	<0.2
Arochlor 1221	mg/kg	0.2	-	<0.2	-	<0.2
Arochlor 1232	mg/kg	0.2	-	<0.2	-	<0.2
Arochlor 1242	mg/kg	0.2	-	<0.2	-	<0.2
Arochlor 1248	mg/kg	0.2	-	<0.2	-	<0.2
Arochlor 1254	mg/kg	0.2	-	<0.2	-	<0.2
Arochlor 1260	mg/kg	0.2	-	<0.2	-	<0.2
Arochlor 1262	mg/kg	0.2	-	<0.2	-	<0.2
Arochlor 1268	mg/kg	0.2	-	<0.2	-	<0.2
Total PCBs (Arochlors)	mg/kg	1	-	<1	-	<1

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	100	-	101
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ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number	SE131743.005	SE131743.006	SE131743.007	SE131743.008
	Sample Matrix	Soil	Soil	Soil	Soil
	Sample Date	23 Sep 2014	25 Sep 2014	25 Sep 2014	24 Sep 2014
	Sample Name	BH2-4	BH3-1	BH3-2	BH4-1
Units		LOR			

Total Phenolics in Soil Method: AN289

Total Phenols	mg/kg	0.1	<0.1	0.2	0.1	0.2
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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	10	12	12
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	2.6	27	21	20
Copper, Cu	mg/kg	0.5	6.9	4.7	3.9	15
Lead, Pb	mg/kg	1	11	26	21	22
Nickel, Ni	mg/kg	0.5	<0.5	1.7	<0.5	1.2
Zinc, Zn	mg/kg	0.5	1.9	23	5.7	8.9

Mercury in Soil Method: AN312

Mercury	mg/kg	0.01	0.01	0.02	<0.01	<0.01
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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	12	29	17	27
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ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.009	SE131743.010	SE131743.011	SE131743.012
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		24 Sep 2014	23 Sep 2014	23 Sep 2014	23 Sep 2014
	Sample Name		BH4-2	BH5-1	BH5-2	BH5-4
Units	LOR					

VOC's in Soil Method: AN433/AN434

Fumigants

2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	<1	<1
Chloromethane	mg/kg	1	<1	<1	<1	<1
Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromomethane	mg/kg	1	<1	<1	<1	<1
Chloroethane	mg/kg	1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	1	<1	<1	<1	<1
Iodomethane	mg/kg	5	<5	<5	<5	<5
1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Allyl chloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromochloromethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Trichloroethene (Trichloroethylene - TCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	0.1	0.1	<0.1	<0.1	<0.1
1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1



ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.009	SE131743.010	SE131743.011	SE131743.012
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		24 Sep 2014	23 Sep 2014	23 Sep 2014	23 Sep 2014
	Sample Name		BH4-2	BH5-1	BH5-2	BH5-4
Units	LOR					

VOC's in Soil Method: AN433/AN434 (continued)

Halogenated Aromatics

Chlorobenzene	mg/kg	0.1	0.7	<0.1	<0.1	<0.1
Bromobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Monocyclic Aromatic Hydrocarbons

Benzene	mg/kg	0.1	0.2	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	1.4	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	0.7	<0.2	<0.2	<0.2
Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isopropylbenzene (Cumene)	mg/kg	0.1	1.4	<0.1	<0.1	<0.1
n-propylbenzene	mg/kg	0.1	2.9	<0.1	<0.1	<0.1
1,3,5-trimethylbenzene	mg/kg	0.1	9.5	0.1	<0.1	<0.1
tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1,2,4-trimethylbenzene	mg/kg	0.1	18	0.3	<0.1	<0.1
sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
n-butylbenzene	mg/kg	0.1	<0.1	0.2	<0.1	<0.1

Nitrogenous Compounds

Acrylonitrile	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-nitropropane	mg/kg	10	<10	<10	<10	<10



ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.009	SE131743.010	SE131743.011	SE131743.012
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		24 Sep 2014	23 Sep 2014	23 Sep 2014	23 Sep 2014
	Sample Name		BH4-2	BH5-1	BH5-2	BH5-4
Units	LOR					

VOC's in Soil Method: AN433/AN434 (continued)

Oxygenated Compounds

Acetone (2-propanone)	mg/kg	10	<10	<10	<10	<10
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Vinyl acetate	mg/kg	10	<10	<10	<10	<10
MEK (2-butanone)	mg/kg	10	<10	<10	<10	<10
MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	<1	<1
2-hexanone (MBK)	mg/kg	5	<5	<5	<5	<5

Polycyclic VOCs

Naphthalene	mg/kg	0.1	0.3	<0.1	<0.1	<0.1
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Sulphonated Compounds

Carbon disulfide	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
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Surrogates

Dibromofluoromethane (Surrogate)	%	-	72	75	78	80
d4-1,2-dichloroethane (Surrogate)	%	-	88	92	82	86
d8-toluene (Surrogate)	%	-	88	89	82	84
Bromofluorobenzene (Surrogate)	%	-	98	92	82	83

Totals

Total Xylenes*	mg/kg	0.3	0.7	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	2.3	<0.6	<0.6	<0.6
Total VOC*	mg/kg	24	-	-	-	-

Trihalomethanes

Chloroform	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Bromoform	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1



ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.009	SE131743.010	SE131743.011	SE131743.012
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		24 Sep 2014	23 Sep 2014	23 Sep 2014	23 Sep 2014
	Sample Name		BH4-2	BH5-1	BH5-2	BH5-4
Units	LOR					

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410

TRH C6-C10	mg/kg	25	74	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20

Surrogates

Dibromofluoromethane (Surrogate)	%	-	82	83	77	87
d4-1,2-dichloroethane (Surrogate)	%	-	89	94	83	87
d8-toluene (Surrogate)	%	-	92	94	84	85
Bromofluorobenzene (Surrogate)	%	-	97	93	85	89

VPH F Bands

Benzene (F0)	mg/kg	0.1	0.2	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	72	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	360	<20	<20	<20
TRH C15-C28	mg/kg	45	88	62	<45	<45
TRH C29-C36	mg/kg	45	<45	51	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	460	110	<110	<110
TRH C10-C40 Total	mg/kg	210	460	<210	<210	<210

TRH F Bands

TRH >C10-C16 (F2)	mg/kg	25	300	<25	<25	<25
TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	300	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	110	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	0.8	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	0.6	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	0.5	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	0.3	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	0.4	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	1.6	0.2	0.2	<0.1
Anthracene	mg/kg	0.1	0.5	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	1.5	0.3	0.4	<0.1
Pyrene	mg/kg	0.1	1.5	0.4	0.4	<0.1
Benzo(a)anthracene	mg/kg	0.1	0.8	0.3	0.3	<0.1
Chrysene	mg/kg	0.1	0.6	0.3	0.2	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	0.8	0.5	0.4	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	0.2	0.1	0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	0.6	0.3	0.3	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.3	0.3	0.2	<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	0.2	0.3	0.1	<0.1
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=0*	TEQ	0.2	0.8	0.4	0.4	<0.2
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR*	TEQ (mg/kg)	0.3	0.9	0.5	0.5	<0.3
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR/2*	TEQ (mg/kg)	0.2	0.8	0.5	0.4	<0.2
Total PAH	mg/kg	0.8	11	3.1	2.6	<0.8



ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.009	SE131743.010	SE131743.011	SE131743.012
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		24 Sep 2014	23 Sep 2014	23 Sep 2014	23 Sep 2014
	Sample Name		BH4-2	BH5-1	BH5-2	BH5-4
Units	LOR					

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

Surrogates

d5-nitrobenzene (Surrogate)	%	-	100	86	88	88
2-fluorobiphenyl (Surrogate)	%	-	84	80	82	80
d14-p-terphenyl (Surrogate)	%	-	96	94	98	96

OC Pesticides in Soil Method: AN400/AN420

Hexachlorobenzene (HCB)	mg/kg	0.1	-	<0.1	<0.1	-
Alpha BHC	mg/kg	0.1	-	<0.1	<0.1	-
Lindane	mg/kg	0.1	-	<0.1	<0.1	-
Heptachlor	mg/kg	0.1	-	<0.1	<0.1	-
Aldrin	mg/kg	0.1	-	<0.1	<0.1	-
Beta BHC	mg/kg	0.1	-	<0.1	<0.1	-
Delta BHC	mg/kg	0.1	-	<0.1	<0.1	-
Heptachlor epoxide	mg/kg	0.1	-	<0.1	<0.1	-
o,p'-DDE	mg/kg	0.1	-	<0.1	<0.1	-
Alpha Endosulfan	mg/kg	0.2	-	<0.2	<0.2	-
Gamma Chlordane	mg/kg	0.1	-	<0.1	<0.1	-
Alpha Chlordane	mg/kg	0.1	-	<0.1	<0.1	-
trans-Nonachlor	mg/kg	0.1	-	<0.1	<0.1	-
p,p'-DDE	mg/kg	0.1	-	0.3	<0.1	-
Dieldrin	mg/kg	0.2	-	<0.2	<0.2	-
Endrin	mg/kg	0.2	-	<0.2	<0.2	-
o,p'-DDD	mg/kg	0.1	-	0.2	<0.1	-
o,p'-DDT	mg/kg	0.1	-	<0.1	<0.1	-
Beta Endosulfan	mg/kg	0.2	-	<0.2	<0.2	-
p,p'-DDD	mg/kg	0.1	-	0.5	<0.1	-
p,p'-DDT	mg/kg	0.1	-	<0.1	<0.1	-
Endosulfan sulphate	mg/kg	0.1	-	<0.1	<0.1	-
Endrin Aldehyde	mg/kg	0.1	-	<0.1	<0.1	-
Methoxychlor	mg/kg	0.1	-	<0.1	<0.1	-
Endrin Ketone	mg/kg	0.1	-	<0.1	<0.1	-
Isodrin	mg/kg	0.1	-	<0.1	<0.1	-
Mirex	mg/kg	0.1	-	<0.1	<0.1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	96	100	-
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ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.009	SE131743.010	SE131743.011	SE131743.012
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		24 Sep 2014	23 Sep 2014	23 Sep 2014	23 Sep 2014
	Sample Name		BH4-2	BH5-1	BH5-2	BH5-4
Units	LOR					

OP Pesticides in Soil Method: AN400/AN420

Dichlorvos	mg/kg	0.5	-	<0.5	<0.5	-
Dimethoate	mg/kg	0.5	-	<0.5	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	-	<0.5	<0.5	-
Fenitrothion	mg/kg	0.2	-	<0.2	<0.2	-
Malathion	mg/kg	0.2	-	<0.2	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	<0.2	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-	<0.2	<0.2	-
Bromophos Ethyl	mg/kg	0.2	-	<0.2	<0.2	-
Methidathion	mg/kg	0.5	-	<0.5	<0.5	-
Ethion	mg/kg	0.2	-	<0.2	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-	<0.2	<0.2	-

Surrogates

2-fluorobiphenyl (Surrogate)	%	-	-	80	82	-
d14-p-terphenyl (Surrogate)	%	-	-	94	98	-

PCBs in Soil Method: AN400/AN420

Arochlor 1016	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1221	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1232	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1242	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1248	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1254	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1260	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1262	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1268	mg/kg	0.2	-	<0.2	<0.2	-
Total PCBs (Arochlors)	mg/kg	1	-	<1	<1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	96	100	-
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ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number	SE131743.009	SE131743.010	SE131743.011	SE131743.012
	Sample Matrix	Soil	Soil	Soil	Soil
	Sample Date	24 Sep 2014	23 Sep 2014	23 Sep 2014	23 Sep 2014
	Sample Name	BH4-2	BH5-1	BH5-2	BH5-4
Units		LOR			

Total Phenolics in Soil Method: AN289

Total Phenols	mg/kg	0.1	0.3	<0.1	0.1	0.2
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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	5	10	<3
Cadmium, Cd	mg/kg	0.3	<0.3	0.4	0.9	<0.3
Chromium, Cr	mg/kg	0.3	5.9	27	25	9.6
Copper, Cu	mg/kg	0.5	4.0	34	11	3.0
Lead, Pb	mg/kg	1	14	320	200	17
Nickel, Ni	mg/kg	0.5	<0.5	34	7.9	<0.5
Zinc, Zn	mg/kg	0.5	1.8	210	550	4.7

Mercury in Soil Method: AN312

Mercury	mg/kg	0.01	<0.01	0.27	0.05	<0.01
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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	23	11	19	17
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ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.013	SE131743.014	SE131743.015	SE131743.016
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		25 Sep 2014	25 Sep 2014	25 Sep 2014	25 Sep 2014
	Sample Name		BH6-1	BH6-3	BH20-1	TS
Units	LOR					

VOC's in Soil Method: AN433/AN434

Fumigants

2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	-
1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	-
cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	-
trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	-
1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	<0.1	-

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	<1	-
Chloromethane	mg/kg	1	<1	<1	<1	-
Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	<0.1	-
Bromomethane	mg/kg	1	<1	<1	<1	-
Chloroethane	mg/kg	1	<1	<1	<1	-
Trichlorofluoromethane	mg/kg	1	<1	<1	<1	-
Iodomethane	mg/kg	5	<5	<5	<5	-
1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	<0.5	-
Allyl chloride	mg/kg	0.1	<0.1	<0.1	<0.1	-
trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	-
1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	-
cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Bromochloromethane	mg/kg	0.1	<0.1	<0.1	<0.1	-
1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	-
1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	-
1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	<0.1	-
Dibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	-
Trichloroethene (Trichloroethylene - TCE)	mg/kg	0.1	<0.1	<0.1	<0.1	-
1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	-
1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	-
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	<0.1	-
1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	-
cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	-
1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	-
1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	-
trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	-
1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	-
Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	<0.1	-



ANALYTICAL REPORT

SE131743 R0

Parameter	Units	LOR	Sample Number	SE131743.013	SE131743.014	SE131743.015	SE131743.016
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	25 Sep 2014	25 Sep 2014	25 Sep 2014	25 Sep 2014
			Sample Name	BH6-1	BH6-3	BH20-1	TS

VOC's in Soil Method: AN433/AN434 (continued)

Halogenated Aromatics

Chlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Bromobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-

Monocyclic Aromatic Hydrocarbons

Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[93%]
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[94%]
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[92%]
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	[94%]
Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[94%]
Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
n-propylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
n-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-

Nitrogenous Compounds

Acrylonitrile	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
2-nitropropane	mg/kg	10	<10	<10	<10	<10	-



ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.013	SE131743.014	SE131743.015	SE131743.016
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		25 Sep 2014	25 Sep 2014	25 Sep 2014	25 Sep 2014
	Sample Name		BH6-1	BH6-3	BH20-1	TS
Units	LOR					

VOC's in Soil Method: AN433/AN434 (continued)

Oxygenated Compounds

Acetone (2-propanone)	mg/kg	10	<10	<10	<10	-
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	<0.1	-
Vinyl acetate	mg/kg	10	<10	<10	<10	-
MEK (2-butanone)	mg/kg	10	<10	<10	<10	-
MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	<1	-
2-hexanone (MBK)	mg/kg	5	<5	<5	<5	-

Polycyclic VOCs

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-
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Sulphonated Compounds

Carbon disulfide	mg/kg	0.5	<0.5	<0.5	<0.5	-
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Surrogates

Dibromofluoromethane (Surrogate)	%	-	81	74	71	109
d4-1,2-dichloroethane (Surrogate)	%	-	90	93	88	99
d8-toluene (Surrogate)	%	-	79	86	85	106
Bromofluorobenzene (Surrogate)	%	-	81	82	83	97

Totals

Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	-
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	-
Total VOC*	mg/kg	24	-	-	-	-

Trihalomethanes

Chloroform	mg/kg	0.1	<0.1	<0.1	<0.1	-
Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	<0.1	-
Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	-
Bromoform	mg/kg	0.1	<0.1	<0.1	<0.1	-



ANALYTICAL REPORT

SE131743 R0

Parameter	Units	LOR	Sample Number	SE131743.013	SE131743.014	SE131743.015	SE131743.016
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	25 Sep 2014	25 Sep 2014	25 Sep 2014	25 Sep 2014
			Sample Name	BH6-1	BH6-3	BH20-1	TS

Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410

TRH C6-C10	mg/kg	25	<25	<25	<25	-
TRH C6-C9	mg/kg	20	<20	<20	<20	-

Surrogates

Dibromofluoromethane (Surrogate)	%	-	89	84	80	-
d4-1,2-dichloroethane (Surrogate)	%	-	97	94	89	-
d8-toluene (Surrogate)	%	-	85	92	85	-
Bromofluorobenzene (Surrogate)	%	-	84	88	85	-

VPH F Bands

Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	-
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	-

TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403

TRH C10-C14	mg/kg	20	<20	<20	<20	-
TRH C15-C28	mg/kg	45	80	<45	<45	-
TRH C29-C36	mg/kg	45	160	<45	<45	-
TRH C37-C40	mg/kg	100	<100	<100	<100	-
TRH C10-C36 Total	mg/kg	110	240	<110	<110	-
TRH C10-C40 Total	mg/kg	210	240	<210	<210	-

TRH F Bands

TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	-
TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	<25	<25	<25	-
TRH >C16-C34 (F3)	mg/kg	90	210	<90	<90	-
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	-

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420

Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-
1-methylnaphthalene	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&j)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	-
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=0*	TEQ	0.2	<0.2	<0.2	<0.2	-
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	-
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	-
Total PAH	mg/kg	0.8	<0.8	<0.8	<0.8	-



ANALYTICAL REPORT

SE131743 R0

Sample Number	SE131743.013	SE131743.014	SE131743.015	SE131743.016
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	25 Sep 2014	25 Sep 2014	25 Sep 2014	25 Sep 2014
Sample Name	BH6-1	BH6-3	BH20-1	TS
Parameter	Units	LOR		

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

Surrogates

d5-nitrobenzene (Surrogate)	%	-	88	88	92	-
2-fluorobiphenyl (Surrogate)	%	-	82	82	84	-
d14-p-terphenyl (Surrogate)	%	-	100	98	102	-

OC Pesticides in Soil Method: AN400/AN420

Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	-	<0.1	-
Alpha BHC	mg/kg	0.1	<0.1	-	<0.1	-
Lindane	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor	mg/kg	0.1	<0.1	-	<0.1	-
Aldrin	mg/kg	0.1	<0.1	-	<0.1	-
Beta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Delta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor epoxide	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
Gamma Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
trans-Nonachlor	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Dieldrin	mg/kg	0.2	<0.2	-	<0.2	-
Endrin	mg/kg	0.2	<0.2	-	<0.2	-
o,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Beta Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
p,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Endosulfan sulphate	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Aldehyde	mg/kg	0.1	<0.1	-	<0.1	-
Methoxychlor	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Ketone	mg/kg	0.1	<0.1	-	<0.1	-
Isodrin	mg/kg	0.1	<0.1	-	<0.1	-
Mirex	mg/kg	0.1	<0.1	-	<0.1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	102	-	101	-
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ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.013	SE131743.014	SE131743.015	SE131743.016
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		25 Sep 2014	25 Sep 2014	25 Sep 2014	25 Sep 2014
	Sample Name		BH6-1	BH6-3	BH20-1	TS
Units	LOR					

OP Pesticides in Soil Method: AN400/AN420

Dichlorvos	mg/kg	0.5	<0.5	-	<0.5	-
Dimethoate	mg/kg	0.5	<0.5	-	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	-	<0.5	-
Fenitrothion	mg/kg	0.2	<0.2	-	<0.2	-
Malathion	mg/kg	0.2	<0.2	-	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	-	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	-	<0.2	-
Bromophos Ethyl	mg/kg	0.2	<0.2	-	<0.2	-
Methidathion	mg/kg	0.5	<0.5	-	<0.5	-
Ethion	mg/kg	0.2	<0.2	-	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	<0.2	-

Surrogates

2-fluorobiphenyl (Surrogate)	%	-	82	-	84	-
d14-p-terphenyl (Surrogate)	%	-	100	-	102	-

PCBs in Soil Method: AN400/AN420

Arochlor 1016	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1221	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1232	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1242	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1248	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1254	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1260	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1262	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1268	mg/kg	0.2	<0.2	-	<0.2	-
Total PCBs (Arochlors)	mg/kg	1	<1	-	<1	-

Surrogates

Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	102	-	101	-
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ANALYTICAL REPORT

SE131743 R0

Parameter	Sample Number		SE131743.013	SE131743.014	SE131743.015	SE131743.016
	Sample Matrix		Soil	Soil	Soil	Soil
	Sample Date		25 Sep 2014	25 Sep 2014	25 Sep 2014	25 Sep 2014
	Sample Name		BH6-1	BH6-3	BH20-1	TS
Units	LOR					

Total Phenolics in Soil Method: AN289

Total Phenols	mg/kg	0.1	1.0	0.3	0.2	-
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Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320

Arsenic, As	mg/kg	3	6	<3	7	-
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	-
Chromium, Cr	mg/kg	0.3	14	6.4	18	-
Copper, Cu	mg/kg	0.5	17	5.5	15	-
Lead, Pb	mg/kg	1	100	29	94	-
Nickel, Ni	mg/kg	0.5	5.1	<0.5	4.0	-
Zinc, Zn	mg/kg	0.5	65	2.9	62	-

Mercury in Soil Method: AN312

Mercury	mg/kg	0.01	0.10	<0.01	0.04	-
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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	22	18	27	-
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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 Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB064967	mg/kg	0.01	<0.01	0%	99%	83%

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

Parameter	QC Reference	Units	LOR	DUP %RPD
% Moisture	LB064971	%	0.5	0 - 6%

OC Pesticides in Soil Method: ME-(AU)-[ENV]AN400/AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Hexachlorobenzene (HCB)	LB064766	mg/kg	0.1	<0.1	0%	NA
Alpha BHC	LB064766	mg/kg	0.1	<0.1	0%	NA
Lindane	LB064766	mg/kg	0.1	<0.1	0%	NA
Heptachlor	LB064766	mg/kg	0.1	<0.1	0%	89%
Aldrin	LB064766	mg/kg	0.1	<0.1	0%	86%
Beta BHC	LB064766	mg/kg	0.1	<0.1	0%	NA
Delta BHC	LB064766	mg/kg	0.1	<0.1	0%	80%
Heptachlor epoxide	LB064766	mg/kg	0.1	<0.1	0%	NA
o,p'-DDE	LB064766	mg/kg	0.1	<0.1	0%	NA
Alpha Endosulfan	LB064766	mg/kg	0.2	<0.2	0%	NA
Gamma Chlordane	LB064766	mg/kg	0.1	<0.1	0%	NA
Alpha Chlordane	LB064766	mg/kg	0.1	<0.1	0%	NA
trans-Nonachlor	LB064766	mg/kg	0.1	<0.1	0%	NA
p,p'-DDE	LB064766	mg/kg	0.1	<0.1	7%	NA
Dieldrin	LB064766	mg/kg	0.2	<0.2	0%	81%
Endrin	LB064766	mg/kg	0.2	<0.2	0%	91%
o,p'-DDD	LB064766	mg/kg	0.1	<0.1	4%	NA
o,p'-DDT	LB064766	mg/kg	0.1	<0.1	0%	NA
Beta Endosulfan	LB064766	mg/kg	0.2	<0.2	0%	NA
p,p'-DDD	LB064766	mg/kg	0.1	<0.1	5%	NA
p,p'-DDT	LB064766	mg/kg	0.1	<0.1	0%	81%
Endosulfan sulphate	LB064766	mg/kg	0.1	<0.1	0%	NA
Endrin Aldehyde	LB064766	mg/kg	0.1	<0.1	0%	NA
Methoxychlor	LB064766	mg/kg	0.1	<0.1	0%	NA
Endrin Ketone	LB064766	mg/kg	0.1	<0.1	0%	NA
Isodrin	LB064766	mg/kg	0.1	<0.1	0%	NA
Mirex	LB064766	mg/kg	0.1	<0.1	0%	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB064766	%	-	83%	4%	91%

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.

OP Pesticides in Soil Method: ME-(AU)-[ENV]AN400/AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Dichlorvos	LB064766	mg/kg	0.5	<0.5	0%	89%	115%	0%
Dimethoate	LB064766	mg/kg	0.5	<0.5	0%	NA	NA	NA
Diazinon (Dimpylate)	LB064766	mg/kg	0.5	<0.5	0%	85%	119%	11%
Fenitrothion	LB064766	mg/kg	0.2	<0.2	0%	NA	NA	NA
Malathion	LB064766	mg/kg	0.2	<0.2	0%	NA	NA	NA
Chlorpyrifos (Chlorpyrifos Ethyl)	LB064766	mg/kg	0.2	<0.2	0%	94%	120%	5%
Parathion-ethyl (Parathion)	LB064766	mg/kg	0.2	<0.2	0%	NA	NA	NA
Bromophos Ethyl	LB064766	mg/kg	0.2	<0.2	0%	NA	NA	NA
Methidathion	LB064766	mg/kg	0.5	<0.5	0%	NA	NA	NA
Ethion	LB064766	mg/kg	0.2	<0.2	0%	86%	110%	7%
Azinphos-methyl (Guthion)	LB064766	mg/kg	0.2	<0.2	0%	NA	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
2-fluorobiphenyl (Surrogate)	LB064766	%	-	82%	2 - 5%	84%	84%	2%
d14-p-terphenyl (Surrogate)	LB064766	%	-	84%	2 - 4%	94%	96%	2%

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Naphthalene	LB064766	mg/kg	0.1	<0.1	0%	90%	121%	8%
2-methylnaphthalene	LB064766	mg/kg	0.1	<0.1	0%	NA	NA	NA
1-methylnaphthalene	LB064766	mg/kg	0.1	<0.1	0%	NA	NA	NA
Acenaphthylene	LB064766	mg/kg	0.1	<0.1	0%	95%	126%	10%
Acenaphthene	LB064766	mg/kg	0.1	<0.1	0%	90%	128%	11%
Fluorene	LB064766	mg/kg	0.1	<0.1	0%	NA	NA	NA
Phenanthrene	LB064766	mg/kg	0.1	<0.1	0 - 10%	88%	159%	41%
Anthracene	LB064766	mg/kg	0.1	<0.1	0%	92%	126%	16%
Fluoranthene	LB064766	mg/kg	0.1	<0.1	0 - 22%	86%	137%	40%
Pyrene	LB064766	mg/kg	0.1	<0.1	0 - 13%	91%	147%	36%
Benzo(a)anthracene	LB064766	mg/kg	0.1	<0.1	0 - 9%	NA	NA	NA
Chrysene	LB064766	mg/kg	0.1	<0.1	0 - 8%	NA	NA	NA
Benzo(b&j)fluoranthene	LB064766	mg/kg	0.1	<0.1	0 - 2%	NA	NA	NA
Benzo(k)fluoranthene	LB064766	mg/kg	0.1	<0.1	0 - 8%	NA	NA	NA
Benzo(a)pyrene	LB064766	mg/kg	0.1	<0.1	0 - 3%	102%	144%	17%
Indeno(1,2,3-cd)pyrene	LB064766	mg/kg	0.1	<0.1	0 - 8%	NA	NA	NA
Dibenzo(a&h)anthracene	LB064766	mg/kg	0.1	<0.1	0%	NA	NA	NA
Benzo(ghi)perylene	LB064766	mg/kg	0.1	<0.1	0 - 11%	NA	NA	NA
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=0*	LB064766	TEQ	0.2	<0.2	0 - 2%	NA	NA	NA
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR*	LB064766	TEQ (mg/kg)	0.3	<0.3	0 - 1%	NA	NA	NA
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR/2*	LB064766	TEQ (mg/kg)	0.2	<0.2	0 - 2%	NA	NA	NA
Total PAH	LB064766	mg/kg	0.8	<0.8	0 - 5%	NA	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
d5-nitrobenzene (Surrogate)	LB064766	%	-	96%	2 - 5%	90%	92%	0%
2-fluorobiphenyl (Surrogate)	LB064766	%	-	82%	2 - 5%	84%	84%	2%
d14-p-terphenyl (Surrogate)	LB064766	%	-	84%	2 - 4%	94%	96%	2%

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.

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Arochlor 1016	LB064766	mg/kg	0.2	<0.2	0%	NA
Arochlor 1221	LB064766	mg/kg	0.2	<0.2	0%	NA
Arochlor 1232	LB064766	mg/kg	0.2	<0.2	0%	NA
Arochlor 1242	LB064766	mg/kg	0.2	<0.2	0%	NA
Arochlor 1248	LB064766	mg/kg	0.2	<0.2	0%	NA
Arochlor 1254	LB064766	mg/kg	0.2	<0.2	0%	NA
Arochlor 1260	LB064766	mg/kg	0.2	<0.2	0%	100%
Arochlor 1262	LB064766	mg/kg	0.2	<0.2	0%	NA
Arochlor 1268	LB064766	mg/kg	0.2	<0.2	0%	NA
Total PCBs (Arochlors)	LB064766	mg/kg	1	<1	0%	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB064766	%	-	83%	4%	88%

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Total Phenols	LB064975	mg/kg	0.1	<0.1	0 - 8%	89%	94%

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	LB064965	mg/kg	3	<3	6 - 7%	98%	83%
Cadmium, Cd	LB064965	mg/kg	0.3	<0.3	0%	100%	83%
Chromium, Cr	LB064965	mg/kg	0.3	<0.3	7 - 19%	99%	84%
Copper, Cu	LB064965	mg/kg	0.5	<0.5	5 - 10%	97%	87%
Lead, Pb	LB064965	mg/kg	1	<1	0 - 15%	99%	76%
Nickel, Ni	LB064965	mg/kg	0.5	<0.5	20 - 37%	99%	85%
Zinc, Zn	LB064965	mg/kg	0.5	<0.5	10 - 21%	100%	87%



QC SUMMARY

SE131743 R0

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.

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	LB064766	mg/kg	20	<20	0%	88%	48%
TRH C15-C28	LB064766	mg/kg	45	<45	0 - 6%	93%	105%
TRH C29-C36	LB064766	mg/kg	45	<45	0 - 26%	75%	100%
TRH C37-C40	LB064766	mg/kg	100	<100	0%	NA	NA
TRH C10-C36 Total	LB064766	mg/kg	110	<110	0 - 16%	NA	NA
TRH C10-C40 Total	LB064766	mg/kg	210	<210	0%	NA	NA

TRH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH >C10-C16 (F2)	LB064766	mg/kg	25	<25	0%	88%	53%
TRH >C10-C16 (F2) minus Naphthalene	LB064766	mg/kg	25	<25	0%	NA	NA
TRH >C16-C34 (F3)	LB064766	mg/kg	90	<90	0 - 10%	88%	100%
TRH >C34-C40 (F4)	LB064766	mg/kg	120	<120	0%	80%	NA

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

Fumigants

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
2,2-dichloropropane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,2-dichloropropane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
cis-1,3-dichloropropene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
trans-1,3-dichloropropene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,2-dibromoethane (EDB)	LB064751	mg/kg	0.1	<0.1	0%	NA	NA

Halogenated Aliphatics

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dichlorodifluoromethane (CFC-12)	LB064751	mg/kg	1	<1	0%	NA	NA
Chloromethane	LB064751	mg/kg	1	<1	0%	NA	NA
Vinyl chloride (Chloroethene)	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
Bromomethane	LB064751	mg/kg	1	<1	0%	NA	NA
Chloroethane	LB064751	mg/kg	1	<1	0%	NA	NA
Trichlorofluoromethane	LB064751	mg/kg	1	<1	0%	NA	NA
Iodomethane	LB064751	mg/kg	5	<5	0%	NA	NA
1,1-dichloroethene	LB064751	mg/kg	0.1	<0.1	0%	120%	97%
Dichloromethane (Methylene chloride)	LB064751	mg/kg	0.5	<0.5	0%	NA	NA
Allyl chloride	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
trans-1,2-dichloroethene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,1-dichloroethane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
cis-1,2-dichloroethene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
Bromochloromethane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,2-dichloroethane	LB064751	mg/kg	0.1	<0.1	0%	116%	100%
1,1,1-trichloroethane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,1-dichloropropene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
Carbon tetrachloride	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
Dibromomethane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
Trichloroethene (Trichloroethylene -TCE)	LB064751	mg/kg	0.1	<0.1	0%	69%	77%
1,1,2-trichloroethane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,3-dichloropropane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
Tetrachloroethene (Perchloroethylene,PCE)	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,1,1,2-tetrachloroethane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
cis-1,4-dichloro-2-butene	LB064751	mg/kg	1	<1	0%	NA	NA
1,1,2,2-tetrachloroethane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,2,3-trichloropropane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
trans-1,4-dichloro-2-butene	LB064751	mg/kg	1	<1	0%	NA	NA
1,2-dibromo-3-chloropropane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
Hexachlorobutadiene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA

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)

Halogenated Aromatics

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Chlorobenzene	LB064751	mg/kg	0.1	<0.1	0%	96%	97%
Bromobenzene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
2-chlorotoluene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
4-chlorotoluene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,3-dichlorobenzene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,4-dichlorobenzene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,2-dichlorobenzene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,2,4-trichlorobenzene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,2,3-trichlorobenzene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene	LB064751	mg/kg	0.1	<0.1	0%	88%	79%
Toluene	LB064751	mg/kg	0.1	<0.1	0%	85%	85%
Ethylbenzene	LB064751	mg/kg	0.1	<0.1	0%	89%	88%
m/p-xylene	LB064751	mg/kg	0.2	<0.2	0%	86%	89%
Styrene (Vinyl benzene)	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
o-xylene	LB064751	mg/kg	0.1	<0.1	0%	93%	90%
Isopropylbenzene (Cumene)	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
n-propylbenzene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,3,5-trimethylbenzene	LB064751	mg/kg	0.1	<0.1	0 - 26%	NA	NA
tert-butylbenzene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
1,2,4-trimethylbenzene	LB064751	mg/kg	0.1	<0.1	0 - 91%	NA	NA
sec-butylbenzene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
p-isopropyltoluene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
n-butylbenzene	LB064751	mg/kg	0.1	<0.1	0 - 75%	NA	NA

Nitrogenous Compounds

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Acrylonitrile	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
2-nitropropane	LB064751	mg/kg	10	<10	0%	NA	NA

Oxygenated Compounds

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Acetone (2-propanone)	LB064751	mg/kg	10	<10	0%	NA	NA
MtBE (Methyl-tert-butyl ether)	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
Vinyl acetate	LB064751	mg/kg	10	<10	0%	NA	NA
MEK (2-butanone)	LB064751	mg/kg	10	<10	0%	NA	NA
MIBK (4-methyl-2-pentanone)	LB064751	mg/kg	1	<1	0%	NA	NA
2-hexanone (MBK)	LB064751	mg/kg	5	<5	0%	NA	NA

Polycyclic VOCs

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB064751	mg/kg	0.1	<0.1	0%	NA	NA

Sulphonated Compounds

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Carbon disulfide	LB064751	mg/kg	0.5	<0.5	0%	NA	NA

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	MS %Recovery
Dibromofluoromethane (Surrogate)	LB064751	%	-	90%	2 - 7%	100%	98%
d4-1,2-dichloroethane (Surrogate)	LB064751	%	-	120%	2 - 6%	119%	100%
d8-toluene (Surrogate)	LB064751	%	-	90%	1 - 3%	87%	94%
Bromofluorobenzene (Surrogate)	LB064751	%	-	105%	4%	111%	102%

Totals

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Total Xylenes*	LB064751	mg/kg	0.3	<0.3	0%	NA	NA
Total BTEX*	LB064751	mg/kg	0.6	<0.6	0%	NA	NA

Trihalomethanes

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Chloroform	LB064751	mg/kg	0.1	<0.1	0%	84%	99%
Bromodichloromethane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
Chlorodibromomethane	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
Bromoform	LB064751	mg/kg	0.1	<0.1	0%	NA	NA

Volatile Petroleum Hydrocarbons in Soil Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C6-C10	LB064751	mg/kg	25	<25	0%	91%	92%
TRH C6-C9	LB064751	mg/kg	20	<20	0%	89%	93%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dibromofluoromethane (Surrogate)	LB064751	%	-	106%	2 - 4%	108%	90%
d4-1,2-dichloroethane (Surrogate)	LB064751	%	-	107%	2 - 6%	114%	98%
d8-toluene (Surrogate)	LB064751	%	-	106%	0 - 7%	115%	90%
Bromofluorobenzene (Surrogate)	LB064751	%	-	102%	3%	110%	90%

VPH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene (F0)	LB064751	mg/kg	0.1	<0.1	0%	NA	NA
TRH C6-C10 minus BTEX (F1)	LB064751	mg/kg	25	<25	0%	100%	104%

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.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
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.
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
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
AN400	OC and OP Pesticides by GC-ECD: The determination of organochlorine (OC) and organophosphorus (OP) pesticides and polychlorinated biphenyls (PCBs) in soils, sludges and groundwater. (Based on USEPA methods 3510, 3550, 8140 and 8080.)
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 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
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).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).

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.

AN433/AN434/AN410

VOCs and C6-C9/C6-C10 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

Fibres/material that cannot be unequivocally identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf).

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

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: <http://www.sgs.com.au/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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Project **E22317 - 75 Mary St, St Peters NSW**
 Order Number **E22317**
 Samples 16

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SGS Reference SE131743 R0
 Report Number 0000092656
 Date Reported 08 Oct 2014
 Date Received 29 Sep 2014

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all samples using trace analysis technique
 Sample #3 : 1-4mm length fibre bundles x4 found loose in sample.
 Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES



Andy Sutton
Senior Organic Chemist



Dong Liang
Metals/Inorganics Team Leader



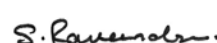
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Asbestos Analyst



ANALYTICAL REPORT

SE131743 R0

RESULTS

Fibre Identification in soil

Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w
SE131743.001	BH1-1	Soil	88g Clay,soil,rocks	24 Sep 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE131743.003	BH2-1	Soil	132g Clay,soil,rocks	23 Sep 2014	Chrysotile Asbestos Found	>0.01
SE131743.006	BH3-1	Soil	83g Clay	25 Sep 2014	No Asbestos Found	<0.01
SE131743.008	BH4-1	Soil	51g Clay,rocks	24 Sep 2014	No Asbestos Found	<0.01
SE131743.010	BH5-1	Soil	84g Clay,sand,soil,r ocks	23 Sep 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE131743.011	BH5-2	Soil	110g Clay,soil,rocks	23 Sep 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE131743.013	BH6-1	Soil	89g Clay,sand,soil,r ocks	25 Sep 2014	No Asbestos Found	<0.01
SE131743.015	BH20-1	Soil	64g Clay sand,soil,rocks	25 Sep 2014	No Asbestos Found	<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	Fibres/material that cannot be unequivocally identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf).
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	**	-	Indicative data, theoretical holding time exceeded.

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.sgs.com.au/~media/Local/Australia/Documents/ Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf](http://www.sgs.com.au/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf)

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STATEMENT OF QA/QC PERFORMANCE

SE131743 R0

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Order Number **E22317**
Samples 16

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SGS Reference SE131743 R0
Report Number 0000092655
Date Reported 08 Oct 2014

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	VOC's in Soil	1 item
Matrix Spike	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	3 items
	TRH (Total Recoverable Hydrocarbons) in Soil	2 items
MSD	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	3 items

SAMPLE SUMMARY

Sample counts by matrix	16 Soils	Type of documentation received	COC
Date documentation received	29/9/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4.0°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
BH1-1	SE131743.001	LB065017	24 Sep 2014	29 Sep 2014	24 Sep 2015	03 Oct 2014	24 Sep 2015	07 Oct 2014
BH2-1	SE131743.003	LB065017	23 Sep 2014	29 Sep 2014	23 Sep 2015	03 Oct 2014	23 Sep 2015	07 Oct 2014
BH3-1	SE131743.006	LB065017	25 Sep 2014	29 Sep 2014	25 Sep 2015	03 Oct 2014	25 Sep 2015	07 Oct 2014
BH4-1	SE131743.008	LB065017	24 Sep 2014	29 Sep 2014	24 Sep 2015	03 Oct 2014	24 Sep 2015	07 Oct 2014
BH5-1	SE131743.010	LB065017	23 Sep 2014	29 Sep 2014	23 Sep 2015	03 Oct 2014	23 Sep 2015	07 Oct 2014
BH5-2	SE131743.011	LB065017	23 Sep 2014	29 Sep 2014	23 Sep 2015	03 Oct 2014	23 Sep 2015	07 Oct 2014
BH6-1	SE131743.013	LB065017	25 Sep 2014	29 Sep 2014	25 Sep 2015	03 Oct 2014	25 Sep 2015	07 Oct 2014
BH20-1	SE131743.015	LB065017	25 Sep 2014	29 Sep 2014	25 Sep 2015	03 Oct 2014	25 Sep 2015	07 Oct 2014

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1-1	SE131743.001	LB064967	24 Sep 2014	29 Sep 2014	22 Oct 2014	03 Oct 2014	22 Oct 2014	08 Oct 2014
BH1-2	SE131743.002	LB064967	24 Sep 2014	29 Sep 2014	22 Oct 2014	03 Oct 2014	22 Oct 2014	08 Oct 2014
BH2-1	SE131743.003	LB064967	23 Sep 2014	29 Sep 2014	21 Oct 2014	03 Oct 2014	21 Oct 2014	08 Oct 2014
BH2-2	SE131743.004	LB064967	23 Sep 2014	29 Sep 2014	21 Oct 2014	03 Oct 2014	21 Oct 2014	08 Oct 2014
BH2-4	SE131743.005	LB064967	23 Sep 2014	29 Sep 2014	21 Oct 2014	03 Oct 2014	21 Oct 2014	08 Oct 2014
BH3-1	SE131743.006	LB064967	25 Sep 2014	29 Sep 2014	23 Oct 2014	03 Oct 2014	23 Oct 2014	08 Oct 2014
BH3-2	SE131743.007	LB064967	25 Sep 2014	29 Sep 2014	23 Oct 2014	03 Oct 2014	23 Oct 2014	08 Oct 2014
BH4-1	SE131743.008	LB064967	24 Sep 2014	29 Sep 2014	22 Oct 2014	03 Oct 2014	22 Oct 2014	08 Oct 2014
BH4-2	SE131743.009	LB064967	24 Sep 2014	29 Sep 2014	22 Oct 2014	03 Oct 2014	22 Oct 2014	08 Oct 2014
BH5-1	SE131743.010	LB064967	23 Sep 2014	29 Sep 2014	21 Oct 2014	03 Oct 2014	21 Oct 2014	08 Oct 2014
BH5-2	SE131743.011	LB064967	23 Sep 2014	29 Sep 2014	21 Oct 2014	03 Oct 2014	21 Oct 2014	08 Oct 2014
BH5-4	SE131743.012	LB064967	23 Sep 2014	29 Sep 2014	21 Oct 2014	03 Oct 2014	21 Oct 2014	08 Oct 2014
BH6-1	SE131743.013	LB064967	25 Sep 2014	29 Sep 2014	23 Oct 2014	03 Oct 2014	23 Oct 2014	08 Oct 2014
BH6-3	SE131743.014	LB064967	25 Sep 2014	29 Sep 2014	23 Oct 2014	03 Oct 2014	23 Oct 2014	08 Oct 2014
BH20-1	SE131743.015	LB064967	25 Sep 2014	29 Sep 2014	23 Oct 2014	03 Oct 2014	23 Oct 2014	08 Oct 2014

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1-1	SE131743.001	LB064971	24 Sep 2014	29 Sep 2014	08 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH1-2	SE131743.002	LB064971	24 Sep 2014	29 Sep 2014	08 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH2-1	SE131743.003	LB064971	23 Sep 2014	29 Sep 2014	07 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH2-2	SE131743.004	LB064971	23 Sep 2014	29 Sep 2014	07 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH2-4	SE131743.005	LB064971	23 Sep 2014	29 Sep 2014	07 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH3-1	SE131743.006	LB064971	25 Sep 2014	29 Sep 2014	09 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH3-2	SE131743.007	LB064971	25 Sep 2014	29 Sep 2014	09 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH4-1	SE131743.008	LB064971	24 Sep 2014	29 Sep 2014	08 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH4-2	SE131743.009	LB064971	24 Sep 2014	29 Sep 2014	08 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH5-1	SE131743.010	LB064971	23 Sep 2014	29 Sep 2014	07 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH5-2	SE131743.011	LB064971	23 Sep 2014	29 Sep 2014	07 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH5-4	SE131743.012	LB064971	23 Sep 2014	29 Sep 2014	07 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH6-1	SE131743.013	LB064971	25 Sep 2014	29 Sep 2014	09 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH6-3	SE131743.014	LB064971	25 Sep 2014	29 Sep 2014	09 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014
BH20-1	SE131743.015	LB064971	25 Sep 2014	29 Sep 2014	09 Oct 2014	03 Oct 2014	08 Oct 2014	03 Oct 2014

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1-1	SE131743.001	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH1-2	SE131743.002	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-1	SE131743.003	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-2	SE131743.004	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-4	SE131743.005	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-1	SE131743.006	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-2	SE131743.007	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-1	SE131743.008	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-2	SE131743.009	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-1	SE131743.010	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-2	SE131743.011	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-4	SE131743.012	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-1	SE131743.013	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-3	SE131743.014	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014

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.

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH20-1	SE131743.015	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1-1	SE131743.001	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH1-2	SE131743.002	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-1	SE131743.003	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-2	SE131743.004	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-4	SE131743.005	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-1	SE131743.006	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-2	SE131743.007	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-1	SE131743.008	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-2	SE131743.009	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-1	SE131743.010	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-2	SE131743.011	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-4	SE131743.012	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-1	SE131743.013	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-3	SE131743.014	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH20-1	SE131743.015	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014

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
BH1-1	SE131743.001	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH1-2	SE131743.002	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-1	SE131743.003	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-2	SE131743.004	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-4	SE131743.005	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-1	SE131743.006	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-2	SE131743.007	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-1	SE131743.008	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-2	SE131743.009	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-1	SE131743.010	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-2	SE131743.011	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-4	SE131743.012	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-1	SE131743.013	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-3	SE131743.014	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH20-1	SE131743.015	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1-1	SE131743.001	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH1-2	SE131743.002	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-1	SE131743.003	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-2	SE131743.004	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-4	SE131743.005	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-1	SE131743.006	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-2	SE131743.007	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-1	SE131743.008	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-2	SE131743.009	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-1	SE131743.010	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-2	SE131743.011	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-4	SE131743.012	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-1	SE131743.013	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-3	SE131743.014	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH20-1	SE131743.015	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1-1	SE131743.001	LB064975	24 Sep 2014	29 Sep 2014	08 Oct 2014	03 Oct 2014	08 Oct 2014	07 Oct 2014
BH1-2	SE131743.002	LB064975	24 Sep 2014	29 Sep 2014	08 Oct 2014	03 Oct 2014	08 Oct 2014	07 Oct 2014
BH2-1	SE131743.003	LB064975	23 Sep 2014	29 Sep 2014	07 Oct 2014	03 Oct 2014	07 Oct 2014	07 Oct 2014
BH2-2	SE131743.004	LB064975	23 Sep 2014	29 Sep 2014	07 Oct 2014	03 Oct 2014	07 Oct 2014	07 Oct 2014

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.

Total Phenolics in Soil (continued)

Method: ME-(AU)-[ENV]AN289

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2-4	SE131743.005	LB064975	23 Sep 2014	29 Sep 2014	07 Oct 2014	03 Oct 2014	07 Oct 2014	07 Oct 2014
BH3-1	SE131743.006	LB064975	25 Sep 2014	29 Sep 2014	09 Oct 2014	03 Oct 2014	09 Oct 2014	07 Oct 2014
BH3-2	SE131743.007	LB064975	25 Sep 2014	29 Sep 2014	09 Oct 2014	03 Oct 2014	09 Oct 2014	07 Oct 2014
BH4-1	SE131743.008	LB064975	24 Sep 2014	29 Sep 2014	08 Oct 2014	03 Oct 2014	08 Oct 2014	07 Oct 2014
BH4-2	SE131743.009	LB064975	24 Sep 2014	29 Sep 2014	08 Oct 2014	03 Oct 2014	08 Oct 2014	07 Oct 2014
BH5-1	SE131743.010	LB064975	23 Sep 2014	29 Sep 2014	07 Oct 2014	03 Oct 2014	07 Oct 2014	07 Oct 2014
BH5-2	SE131743.011	LB064975	23 Sep 2014	29 Sep 2014	07 Oct 2014	03 Oct 2014	07 Oct 2014	07 Oct 2014
BH5-4	SE131743.012	LB064975	23 Sep 2014	29 Sep 2014	07 Oct 2014	03 Oct 2014	07 Oct 2014	07 Oct 2014
BH6-1	SE131743.013	LB064975	25 Sep 2014	29 Sep 2014	09 Oct 2014	03 Oct 2014	09 Oct 2014	07 Oct 2014
BH6-3	SE131743.014	LB064975	25 Sep 2014	29 Sep 2014	09 Oct 2014	03 Oct 2014	09 Oct 2014	07 Oct 2014
BH20-1	SE131743.015	LB064975	25 Sep 2014	29 Sep 2014	09 Oct 2014	03 Oct 2014	09 Oct 2014	07 Oct 2014

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
BH1-1	SE131743.001	LB064965	24 Sep 2014	29 Sep 2014	23 Mar 2015	03 Oct 2014	23 Mar 2015	07 Oct 2014
BH1-2	SE131743.002	LB064965	24 Sep 2014	29 Sep 2014	23 Mar 2015	03 Oct 2014	23 Mar 2015	07 Oct 2014
BH2-1	SE131743.003	LB064965	23 Sep 2014	29 Sep 2014	22 Mar 2015	03 Oct 2014	22 Mar 2015	07 Oct 2014
BH2-2	SE131743.004	LB064965	23 Sep 2014	29 Sep 2014	22 Mar 2015	03 Oct 2014	22 Mar 2015	07 Oct 2014
BH2-4	SE131743.005	LB064965	23 Sep 2014	29 Sep 2014	22 Mar 2015	03 Oct 2014	22 Mar 2015	07 Oct 2014
BH3-1	SE131743.006	LB064965	25 Sep 2014	29 Sep 2014	24 Mar 2015	03 Oct 2014	24 Mar 2015	07 Oct 2014
BH3-2	SE131743.007	LB064965	25 Sep 2014	29 Sep 2014	24 Mar 2015	03 Oct 2014	24 Mar 2015	07 Oct 2014
BH4-1	SE131743.008	LB064965	24 Sep 2014	29 Sep 2014	23 Mar 2015	03 Oct 2014	23 Mar 2015	07 Oct 2014
BH4-2	SE131743.009	LB064965	24 Sep 2014	29 Sep 2014	23 Mar 2015	03 Oct 2014	23 Mar 2015	07 Oct 2014
BH5-1	SE131743.010	LB064965	23 Sep 2014	29 Sep 2014	22 Mar 2015	03 Oct 2014	22 Mar 2015	07 Oct 2014
BH5-2	SE131743.011	LB064965	23 Sep 2014	29 Sep 2014	22 Mar 2015	03 Oct 2014	22 Mar 2015	07 Oct 2014
BH5-4	SE131743.012	LB064965	23 Sep 2014	29 Sep 2014	22 Mar 2015	03 Oct 2014	22 Mar 2015	07 Oct 2014
BH6-1	SE131743.013	LB064965	25 Sep 2014	29 Sep 2014	24 Mar 2015	03 Oct 2014	24 Mar 2015	07 Oct 2014
BH6-3	SE131743.014	LB064965	25 Sep 2014	29 Sep 2014	24 Mar 2015	03 Oct 2014	24 Mar 2015	07 Oct 2014
BH20-1	SE131743.015	LB064965	25 Sep 2014	29 Sep 2014	24 Mar 2015	03 Oct 2014	24 Mar 2015	07 Oct 2014

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
BH1-1	SE131743.001	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH1-2	SE131743.002	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-1	SE131743.003	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-2	SE131743.004	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-4	SE131743.005	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-1	SE131743.006	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-2	SE131743.007	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-1	SE131743.008	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-2	SE131743.009	LB064766	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-1	SE131743.010	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-2	SE131743.011	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-4	SE131743.012	LB064766	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-1	SE131743.013	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-3	SE131743.014	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH20-1	SE131743.015	LB064766	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1-1	SE131743.001	LB064751	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH1-2	SE131743.002	LB064751	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-1	SE131743.003	LB064751	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-2	SE131743.004	LB064751	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-4	SE131743.005	LB064751	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-1	SE131743.006	LB064751	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-2	SE131743.007	LB064751	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-1	SE131743.008	LB064751	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-2	SE131743.009	LB064751	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-1	SE131743.010	LB064751	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-2	SE131743.011	LB064751	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014



HOLDING TIME SUMMARY

SE131743 R0

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
BH5-4	SE131743.012	LB064751	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-1	SE131743.013	LB064751	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-3	SE131743.014	LB064751	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH20-1	SE131743.015	LB064751	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
TS	SE131743.016	LB064751	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1-1	SE131743.001	LB064751	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH1-2	SE131743.002	LB064751	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-1	SE131743.003	LB064751	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-2	SE131743.004	LB064751	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH2-4	SE131743.005	LB064751	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-1	SE131743.006	LB064751	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH3-2	SE131743.007	LB064751	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-1	SE131743.008	LB064751	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH4-2	SE131743.009	LB064751	24 Sep 2014	29 Sep 2014	08 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-1	SE131743.010	LB064751	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-2	SE131743.011	LB064751	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH5-4	SE131743.012	LB064751	23 Sep 2014	29 Sep 2014	07 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-1	SE131743.013	LB064751	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH6-3	SE131743.014	LB064751	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
BH20-1	SE131743.015	LB064751	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014
TS	SE131743.016	LB064751	25 Sep 2014	29 Sep 2014	09 Oct 2014	30 Sep 2014	09 Nov 2014	07 Oct 2014

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.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1-1	SE131743.001	%	60 - 130%	95
	BH2-1	SE131743.003	%	60 - 130%	106
	BH3-1	SE131743.006	%	60 - 130%	100
	BH4-1	SE131743.008	%	60 - 130%	101
	BH5-1	SE131743.010	%	60 - 130%	96
	BH5-2	SE131743.011	%	60 - 130%	100
	BH6-1	SE131743.013	%	60 - 130%	102
	BH20-1	SE131743.015	%	60 - 130%	101

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1-1	SE131743.001	%	60 - 130%	80
	BH2-1	SE131743.003	%	60 - 130%	82
	BH3-1	SE131743.006	%	60 - 130%	82
	BH4-1	SE131743.008	%	60 - 130%	84
	BH5-1	SE131743.010	%	60 - 130%	80
	BH5-2	SE131743.011	%	60 - 130%	82
	BH6-1	SE131743.013	%	60 - 130%	82
	BH20-1	SE131743.015	%	60 - 130%	84
d14-p-terphenyl (Surrogate)	BH1-1	SE131743.001	%	60 - 130%	90
	BH2-1	SE131743.003	%	60 - 130%	96
	BH3-1	SE131743.006	%	60 - 130%	94
	BH4-1	SE131743.008	%	60 - 130%	96
	BH5-1	SE131743.010	%	60 - 130%	94
	BH5-2	SE131743.011	%	60 - 130%	98
	BH6-1	SE131743.013	%	60 - 130%	100
	BH20-1	SE131743.015	%	60 - 130%	102

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1-1	SE131743.001	%	70 - 130%	80
	BH1-2	SE131743.002	%	70 - 130%	86
	BH2-1	SE131743.003	%	70 - 130%	82
	BH2-2	SE131743.004	%	70 - 130%	84
	BH2-4	SE131743.005	%	70 - 130%	80
	BH3-1	SE131743.006	%	70 - 130%	82
	BH3-2	SE131743.007	%	70 - 130%	82
	BH4-1	SE131743.008	%	70 - 130%	84
	BH4-2	SE131743.009	%	70 - 130%	84
	BH5-1	SE131743.010	%	70 - 130%	80
	BH5-2	SE131743.011	%	70 - 130%	82
	BH5-4	SE131743.012	%	70 - 130%	80
	BH6-1	SE131743.013	%	70 - 130%	82
	BH6-3	SE131743.014	%	70 - 130%	82
	BH20-1	SE131743.015	%	70 - 130%	84
d14-p-terphenyl (Surrogate)	BH1-1	SE131743.001	%	70 - 130%	90
	BH1-2	SE131743.002	%	70 - 130%	96
	BH2-1	SE131743.003	%	70 - 130%	96
	BH2-2	SE131743.004	%	70 - 130%	98
	BH2-4	SE131743.005	%	70 - 130%	94
	BH3-1	SE131743.006	%	70 - 130%	94
	BH3-2	SE131743.007	%	70 - 130%	96
	BH4-1	SE131743.008	%	70 - 130%	96
	BH4-2	SE131743.009	%	70 - 130%	96
	BH5-1	SE131743.010	%	70 - 130%	94
	BH5-2	SE131743.011	%	70 - 130%	98
	BH5-4	SE131743.012	%	70 - 130%	96
	BH6-1	SE131743.013	%	70 - 130%	100
	BH6-3	SE131743.014	%	70 - 130%	98
	BH20-1	SE131743.015	%	70 - 130%	102
d5-nitrobenzene (Surrogate)	BH1-1	SE131743.001	%	70 - 130%	86
	BH1-2	SE131743.002	%	70 - 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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d5-nitrobenzene (Surrogate)	BH2-1	SE131743.003	%	70 - 130%	90
	BH2-2	SE131743.004	%	70 - 130%	90
	BH2-4	SE131743.005	%	70 - 130%	88
	BH3-1	SE131743.006	%	70 - 130%	94
	BH3-2	SE131743.007	%	70 - 130%	90
	BH4-1	SE131743.008	%	70 - 130%	94
	BH4-2	SE131743.009	%	70 - 130%	100
	BH5-1	SE131743.010	%	70 - 130%	86
	BH5-2	SE131743.011	%	70 - 130%	88
	BH5-4	SE131743.012	%	70 - 130%	88
	BH6-1	SE131743.013	%	70 - 130%	88
	BH6-3	SE131743.014	%	70 - 130%	88
	BH20-1	SE131743.015	%	70 - 130%	92

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1-1	SE131743.001	%	60 - 130%	95
	BH2-1	SE131743.003	%	60 - 130%	106
	BH3-1	SE131743.006	%	60 - 130%	100
	BH4-1	SE131743.008	%	60 - 130%	101
	BH5-1	SE131743.010	%	60 - 130%	96
	BH5-2	SE131743.011	%	60 - 130%	100
	BH6-1	SE131743.013	%	60 - 130%	102
	BH20-1	SE131743.015	%	60 - 130%	101

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1-1	SE131743.001	%	60 - 130%	88
	BH1-2	SE131743.002	%	60 - 130%	87
	BH2-1	SE131743.003	%	60 - 130%	100
	BH2-2	SE131743.004	%	60 - 130%	113
	BH2-4	SE131743.005	%	60 - 130%	110
	BH3-1	SE131743.006	%	60 - 130%	102
	BH3-2	SE131743.007	%	60 - 130%	91
	BH4-1	SE131743.008	%	60 - 130%	92
	BH4-2	SE131743.009	%	60 - 130%	98
	BH5-1	SE131743.010	%	60 - 130%	92
	BH5-2	SE131743.011	%	60 - 130%	82
	BH5-4	SE131743.012	%	60 - 130%	83
	BH6-1	SE131743.013	%	60 - 130%	81
	BH6-3	SE131743.014	%	60 - 130%	82
	BH20-1	SE131743.015	%	60 - 130%	83
	TS	SE131743.016	%	60 - 130%	97
d4-1,2-dichloroethane (Surrogate)	BH1-1	SE131743.001	%	60 - 130%	92
	BH1-2	SE131743.002	%	60 - 130%	90
	BH2-1	SE131743.003	%	60 - 130%	104
	BH2-2	SE131743.004	%	60 - 130%	111
	BH2-4	SE131743.005	%	60 - 130%	120
	BH3-1	SE131743.006	%	60 - 130%	102
	BH3-2	SE131743.007	%	60 - 130%	92
	BH4-1	SE131743.008	%	60 - 130%	87
	BH4-2	SE131743.009	%	60 - 130%	88
	BH5-1	SE131743.010	%	60 - 130%	92
	BH5-2	SE131743.011	%	60 - 130%	82
	BH5-4	SE131743.012	%	60 - 130%	86
	BH6-1	SE131743.013	%	60 - 130%	90
	BH6-3	SE131743.014	%	60 - 130%	93
	BH20-1	SE131743.015	%	60 - 130%	88
	TS	SE131743.016	%	60 - 130%	99
d8-toluene (Surrogate)	BH1-1	SE131743.001	%	60 - 130%	81
	BH1-2	SE131743.002	%	60 - 130%	85
	BH2-1	SE131743.003	%	60 - 130%	98

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)	BH2-2	SE131743.004	%	60 - 130%	109
	BH2-4	SE131743.005	%	60 - 130%	112
	BH3-1	SE131743.006	%	60 - 130%	98
	BH3-2	SE131743.007	%	60 - 130%	91
	BH4-1	SE131743.008	%	60 - 130%	85
	BH4-2	SE131743.009	%	60 - 130%	88
	BH5-1	SE131743.010	%	60 - 130%	89
	BH5-2	SE131743.011	%	60 - 130%	82
	BH5-4	SE131743.012	%	60 - 130%	84
	BH6-1	SE131743.013	%	60 - 130%	79
	BH6-3	SE131743.014	%	60 - 130%	86
	BH20-1	SE131743.015	%	60 - 130%	85
	TS	SE131743.016	%	60 - 130%	106
Dibromofluoromethane (Surrogate)	BH1-1	SE131743.001	%	60 - 130%	74
	BH1-2	SE131743.002	%	60 - 130%	74
	BH2-1	SE131743.003	%	60 - 130%	84
	BH2-2	SE131743.004	%	60 - 130%	91
	BH2-4	SE131743.005	%	60 - 130%	97
	BH3-1	SE131743.006	%	60 - 130%	83
	BH3-2	SE131743.007	%	60 - 130%	76
	BH4-1	SE131743.008	%	60 - 130%	71
	BH4-2	SE131743.009	%	60 - 130%	72
	BH5-1	SE131743.010	%	60 - 130%	75
	BH5-2	SE131743.011	%	60 - 130%	78
	BH5-4	SE131743.012	%	60 - 130%	80
	BH6-1	SE131743.013	%	60 - 130%	81
	BH6-3	SE131743.014	%	60 - 130%	74
	BH20-1	SE131743.015	%	60 - 130%	71
	TS	SE131743.016	%	60 - 130%	109

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1-1	SE131743.001	%	60 - 130%	88
	BH1-2	SE131743.002	%	60 - 130%	88
	BH2-1	SE131743.003	%	60 - 130%	105
	BH2-2	SE131743.004	%	60 - 130%	114
	BH2-4	SE131743.005	%	60 - 130%	117
	BH3-1	SE131743.006	%	60 - 130%	113
	BH3-2	SE131743.007	%	60 - 130%	92
	BH4-1	SE131743.008	%	60 - 130%	94
	BH4-2	SE131743.009	%	60 - 130%	97
	BH5-1	SE131743.010	%	60 - 130%	93
	BH5-2	SE131743.011	%	60 - 130%	85
	BH5-4	SE131743.012	%	60 - 130%	89
	BH6-1	SE131743.013	%	60 - 130%	84
	BH6-3	SE131743.014	%	60 - 130%	88
	BH20-1	SE131743.015	%	60 - 130%	85
d4-1,2-dichloroethane (Surrogate)	BH1-1	SE131743.001	%	60 - 130%	93
	BH1-2	SE131743.002	%	60 - 130%	91
	BH2-1	SE131743.003	%	60 - 130%	105
	BH2-2	SE131743.004	%	60 - 130%	113
	BH2-4	SE131743.005	%	60 - 130%	121
	BH3-1	SE131743.006	%	60 - 130%	104
	BH3-2	SE131743.007	%	60 - 130%	94
	BH4-1	SE131743.008	%	60 - 130%	89
	BH4-2	SE131743.009	%	60 - 130%	89
	BH5-1	SE131743.010	%	60 - 130%	94
	BH5-2	SE131743.011	%	60 - 130%	83
	BH5-4	SE131743.012	%	60 - 130%	87
	BH6-1	SE131743.013	%	60 - 130%	97
	BH6-3	SE131743.014	%	60 - 130%	94

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.

Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d4-1,2-dichloroethane (Surrogate)	BH20-1	SE131743.015	%	60 - 130%	89
	BH1-1	SE131743.001	%	60 - 130%	81
d8-toluene (Surrogate)	BH1-2	SE131743.002	%	60 - 130%	91
	BH2-1	SE131743.003	%	60 - 130%	103
	BH2-2	SE131743.004	%	60 - 130%	113
	BH2-4	SE131743.005	%	60 - 130%	121
	BH3-1	SE131743.006	%	60 - 130%	102
	BH3-2	SE131743.007	%	60 - 130%	95
	BH4-1	SE131743.008	%	60 - 130%	88
	BH4-2	SE131743.009	%	60 - 130%	92
	BH5-1	SE131743.010	%	60 - 130%	94
	BH5-2	SE131743.011	%	60 - 130%	84
	BH5-4	SE131743.012	%	60 - 130%	85
	BH6-1	SE131743.013	%	60 - 130%	85
	BH6-3	SE131743.014	%	60 - 130%	92
	BH20-1	SE131743.015	%	60 - 130%	85
Dibromofluoromethane (Surrogate)	BH1-1	SE131743.001	%	60 - 130%	84
	BH1-2	SE131743.002	%	60 - 130%	84
	BH2-1	SE131743.003	%	60 - 130%	99
	BH2-2	SE131743.004	%	60 - 130%	104
	BH2-4	SE131743.005	%	60 - 130%	111
	BH3-1	SE131743.006	%	60 - 130%	95
	BH3-2	SE131743.007	%	60 - 130%	86
	BH4-1	SE131743.008	%	60 - 130%	80
	BH4-2	SE131743.009	%	60 - 130%	82
	BH5-1	SE131743.010	%	60 - 130%	83
	BH5-2	SE131743.011	%	60 - 130%	77
	BH5-4	SE131743.012	%	60 - 130%	87
	BH6-1	SE131743.013	%	60 - 130%	89
	BH6-3	SE131743.014	%	60 - 130%	84
	BH20-1	SE131743.015	%	60 - 130%	80



METHOD BLANKS

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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.

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB064967.001	Mercury	mg/kg	0.01	<0.01

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result
LB064766.001	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
	Alpha BHC	mg/kg	0.1	<0.1
	Lindane	mg/kg	0.1	<0.1
	Heptachlor	mg/kg	0.1	<0.1
	Aldrin	mg/kg	0.1	<0.1
	Beta BHC	mg/kg	0.1	<0.1
	Delta BHC	mg/kg	0.1	<0.1
	Heptachlor epoxide	mg/kg	0.1	<0.1
	Alpha Endosulfan	mg/kg	0.2	<0.2
	Gamma Chlordane	mg/kg	0.1	<0.1
	Alpha Chlordane	mg/kg	0.1	<0.1
	p,p'-DDE	mg/kg	0.1	<0.1
	Dieldrin	mg/kg	0.2	<0.2
	Endrin	mg/kg	0.2	<0.2
	Beta Endosulfan	mg/kg	0.2	<0.2
	p,p'-DDD	mg/kg	0.1	<0.1
	p,p'-DDT	mg/kg	0.1	<0.1
	Endosulfan sulphate	mg/kg	0.1	<0.1
	Endrin Aldehyde	mg/kg	0.1	<0.1
	Methoxychlor	mg/kg	0.1	<0.1
	Endrin Ketone	mg/kg	0.1	<0.1
Surrogates	Isodrin	mg/kg	0.1	<0.1
	Mirex	mg/kg	0.1	<0.1
	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	83

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result
LB064766.001	Dichlorvos	mg/kg	0.5	<0.5
	Dimethoate	mg/kg	0.5	<0.5
	Diazinon (Dimpylate)	mg/kg	0.5	<0.5
	Fenitrothion	mg/kg	0.2	<0.2
	Malathion	mg/kg	0.2	<0.2
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
	Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
	Bromophos Ethyl	mg/kg	0.2	<0.2
	Methidathion	mg/kg	0.5	<0.5
	Ethion	mg/kg	0.2	<0.2
	Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
Surrogates	2-fluorobiphenyl (Surrogate)	%	-	82
	d14-p-terphenyl (Surrogate)	%	-	84

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB064766.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	<0.1

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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Sample Number	Parameter	Units	LOR	Result
LB064766.001	Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
	Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
	Benzo(ghi)perylene	mg/kg	0.1	<0.1
	Total PAH	mg/kg	0.8	<0.8
	Surrogates			
	d5-nitrobenzene (Surrogate)	%	-	96
	2-fluorobiphenyl (Surrogate)	%	-	82
	d14-p-terphenyl (Surrogate)	%	-	84

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result
LB064766.001	Arochlor 1016	mg/kg	0.2	<0.2
	Arochlor 1221	mg/kg	0.2	<0.2
	Arochlor 1232	mg/kg	0.2	<0.2
	Arochlor 1242	mg/kg	0.2	<0.2
	Arochlor 1248	mg/kg	0.2	<0.2
	Arochlor 1254	mg/kg	0.2	<0.2
	Arochlor 1260	mg/kg	0.2	<0.2
	Arochlor 1262	mg/kg	0.2	<0.2
	Arochlor 1268	mg/kg	0.2	<0.2
	Total PCBs (Arochlors)	mg/kg	1	<1
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	83

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result
LB064975.001	Total Phenols	mg/kg	0.1	<0.1

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Number	Parameter	Units	LOR	Result
LB064965.001	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
LB064766.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB064751.001	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1
		1,2-dichloropropane	mg/kg	0.1	<0.1
		cis-1,3-dichloropropene	mg/kg	0.1	<0.1
		trans-1,3-dichloropropene	mg/kg	0.1	<0.1
		1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1
		Chloromethane	mg/kg	1	<1
		Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1
		Bromomethane	mg/kg	1	<1
		Chloroethane	mg/kg	1	<1
		Trichlorofluoromethane	mg/kg	1	<1
		Iodomethane	mg/kg	5	<5
		1,1-dichloroethene	mg/kg	0.1	<0.1
		Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5
		Allyl chloride	mg/kg	0.1	<0.1

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.

VOC's in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB064751.001	Halogenated Aliphatics	trans-1,2-dichloroethene	mg/kg	0.1	<0.1
		1,1-dichloroethane	mg/kg	0.1	<0.1
		cis-1,2-dichloroethene	mg/kg	0.1	<0.1
		Bromochloromethane	mg/kg	0.1	<0.1
		1,2-dichloroethane	mg/kg	0.1	<0.1
		1,1,1-trichloroethane	mg/kg	0.1	<0.1
		1,1-dichloropropene	mg/kg	0.1	<0.1
		Carbon tetrachloride	mg/kg	0.1	<0.1
		Dibromomethane	mg/kg	0.1	<0.1
		Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1
		1,1,2-trichloroethane	mg/kg	0.1	<0.1
		1,3-dichloropropane	mg/kg	0.1	<0.1
		Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1
		1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1
		cis-1,4-dichloro-2-butene	mg/kg	1	<1
		1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1
		1,2,3-trichloropropane	mg/kg	0.1	<0.1
		trans-1,4-dichloro-2-butene	mg/kg	1	<1
		1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1
		Hexachlorobutadiene	mg/kg	0.1	<0.1
	Halogenated Aromatics	Chlorobenzene	mg/kg	0.1	<0.1
		Bromobenzene	mg/kg	0.1	<0.1
		2-chlorotoluene	mg/kg	0.1	<0.1
		4-chlorotoluene	mg/kg	0.1	<0.1
		1,3-dichlorobenzene	mg/kg	0.1	<0.1
		1,4-dichlorobenzene	mg/kg	0.1	<0.1
		1,2-dichlorobenzene	mg/kg	0.1	<0.1
		1,2,4-trichlorobenzene	mg/kg	0.1	<0.1
	Monocyclic Aromatic Hydrocarbons	1,2,3-trichlorobenzene	mg/kg	0.1	<0.1
		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
		Styrene (Vinyl benzene)	mg/kg	0.1	<0.1
		o-xylene	mg/kg	0.1	<0.1
		Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1
		n-propylbenzene	mg/kg	0.1	<0.1
		1,3,5-trimethylbenzene	mg/kg	0.1	<0.1
		tert-butylbenzene	mg/kg	0.1	<0.1
		1,2,4-trimethylbenzene	mg/kg	0.1	<0.1
		sec-butylbenzene	mg/kg	0.1	<0.1
		p-isopropyltoluene	mg/kg	0.1	<0.1
		n-butylbenzene	mg/kg	0.1	<0.1
	Nitrogenous Compounds	Acrylonitrile	mg/kg	0.1	<0.1
		2-nitropropane	mg/kg	10	<10
	Oxygenated Compounds	Acetone (2-propanone)	mg/kg	10	<10
		MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1
		Vinyl acetate	mg/kg	10	<10
		MEK (2-butanone)	mg/kg	10	<10
		MIBK (4-methyl-2-pentanone)	mg/kg	1	<1
	Polycyclic VOCs	2-hexanone (MBK)	mg/kg	5	<5
		Naphthalene	mg/kg	0.1	<0.1
	Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	90
		d4-1,2-dichloroethane (Surrogate)	%	-	120
		d8-toluene (Surrogate)	%	-	90
		Bromofluorobenzene (Surrogate)	%	-	105
	Totals	Total BTEX*	mg/kg	0.6	<0.6
	Trihalomethanes	Chloroform	mg/kg	0.1	<0.1
		Bromodichloromethane	mg/kg	0.1	<0.1
		Chlorodibromomethane	mg/kg	0.1	<0.1



METHOD BLANKS

SE131743 R0

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.

VOC's in Soil (continued)

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

Sample Number	Parameter	Units	LOR	Result
LB064751.001	Trihalomethanes	Bromoform	mg/kg	0.1
				<0.1

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result
LB064751.001	TRH C6-C9	mg/kg	20	<20
	Surrogates			
	Dibromofluoromethane (Surrogate)	%	-	106
	d4-1,2-dichloroethane (Surrogate)	%	-	107
	d8-toluene (Surrogate)	%	-	106

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.

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131743.009	LB064967.014	Mercury	mg/kg	0.01	<0.01	<0.01	200	0

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131743.009	LB064971.011	% Moisture	%w/w	0.5	23	23	34	0
SE131766.040	LB064971.019	% Moisture	%	0.5	3.4	3.2	61	6

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131743.010	LB064766.014	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Lindane	mg/kg	0.1	<0.1	<0.1	200	0
		Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
		Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
		Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
		p,p'-DDE	mg/kg	0.1	0.3	0.3	68	7
		Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
		Endrin	mg/kg	0.2	<0.2	<0.2	200	0
		o,p'-DDD	mg/kg	0.1	0.2	0.2	77	4
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
		p,p'-DDD	mg/kg	0.1	0.5	0.5	50	5
		p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
		Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
		Mirex	mg/kg	0.1	<0.1	<0.1	200	0
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.15	30	4	

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131743.010	LB064766.016	Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
		Malathion	mg/kg	0.2	<0.2	<0.2	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
		Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
		Ethion	mg/kg	0.2	<0.2	<0.2	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	5
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
		Malathion	mg/kg	0.2	<0.2	<0.2	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.

OP Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131743.015	LB064766.022	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
		Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
		Ethion	mg/kg	0.2	<0.2	<0.2	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131743.010	LB064766.016	Naphthalene	mg/kg	0.1	<0.1	<0.1	163	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	155	0
		1-methylnaphthalene	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	0.2	0.2	78	10
		Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluoranthene	mg/kg	0.1	0.3	0.4	58	22
		Pyrene	mg/kg	0.1	0.4	0.4	57	13
		Benzo(a)anthracene	mg/kg	0.1	0.3	0.3	61	9
		Chrysene	mg/kg	0.1	0.3	0.3	68	8
		Benzo(b&j)fluoranthene	mg/kg	0.1	0.5	0.5	49	2
		Benzo(k)fluoranthene	mg/kg	0.1	0.1	0.1	110	8
		Benzo(a)pyrene	mg/kg	0.1	0.3	0.3	62	3
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.3	0.2	70	8
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(ghi)perylene	mg/kg	0.1	0.3	0.3	68	11
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	0.4	0.4	55	2
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	0.5	0.5	66	1
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	0.5	0.5	51	2
		Total PAH	mg/kg	0.8	3.1	3.2	55	5
		d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	30	5
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	5
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
SE131743.015	LB064766.022	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		1-methylnaphthalene	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&j)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
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	<0.3	<0.3	134	0
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	175	0
		Total PAH	mg/kg	0.8	<0.8	<0.8	200	0
		d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	2
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

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.

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131743.010	LB064766.014	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
		Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	4	

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131743.001	LB064975.004	Total Phenols	mg/kg	0.1	<0.1	<0.1	123	0
SE131743.011	LB064975.016	Total Phenols	mg/kg	0.1	0.1	0.1	90	8

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 %
SE131743.009	LB064965.014	Arsenic, As	mg/kg	3	<3	3	64	7
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	5.9	6.3	38	7
		Copper, Cu	mg/kg	0.5	4.0	4.2	42	5
		Lead, Pb	mg/kg	1	14	16	37	15
		Nickel, Ni	mg/kg	0.5	<0.5	0.7	115	37
		Zinc, Zn	mg/kg	0.5	1.8	2.5	124	21
SE131748.002	LB064965.023	Arsenic, As	mg/kg	3	5.39882170615.7467167137		48	6
		Cadmium, Cd	mg/kg	0.3	0.20842381560.2463236555		162	0
		Chromium, Cr	mg/kg	0.3	19.62266376796.2359783063		33	19
		Copper, Cu	mg/kg	0.5	36.72123427097.3305732192		31	10
		Lead, Pb	mg/kg	1	79.10650906778.5393330971		31	0
		Nickel, Ni	mg/kg	0.5	5.34771558106.5452885068		38	20
		Zinc, Zn	mg/kg	0.5	52.17575407168.6364506461		31	10

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131743.010	LB064766.016	TRH C10-C14	mg/kg	20	<20	<20	200	0
		TRH C15-C28	mg/kg	45	62	66	100	6
		TRH C29-C36	mg/kg	45	51	66	107	26
		TRH C37-C40	mg/kg	100	<100	<100	200	0
		TRH C10-C36 Total	mg/kg	110	110	130	120	16
		TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
		TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	<25	<25	200	0
		TRH >C16-C34 (F3)	mg/kg	90	110	120	108	10
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE131743.015	LB064766.022	TRH C10-C14	mg/kg	20	<20	<20	200	0
		TRH C15-C28	mg/kg	45	<45	<45	200	0
		TRH C29-C36	mg/kg	45	<45	<45	200	0
		TRH C37-C40	mg/kg	100	<100	<100	200	0
		TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
		TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
		TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	<25	<25	200	0
		TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's 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.

VOC's in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE131743.010	LB064751.014	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0	
			1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0	
			cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0	
			trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0	
			1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	200	0	
		Halogenated	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	200	0	
			Aliphatics	Chloromethane	mg/kg	1	<1	<1	200	0
		Vinyl chloride (Chloroethene)		mg/kg	0.1	<0.1	<0.1	200	0	
		Bromomethane		mg/kg	1	<1	<1	200	0	
		Chloroethane		mg/kg	1	<1	<1	200	0	
		Trichlorofluoromethane		mg/kg	1	<1	<1	200	0	
		Iodomethane		mg/kg	5	<5	<5	200	0	
		1,1-dichloroethene		mg/kg	0.1	<0.1	<0.1	200	0	
		Dichloromethane (Methylene chloride)		mg/kg	0.5	<0.5	<0.5	200	0	
		Allyl chloride		mg/kg	0.1	<0.1	<0.1	200	0	
		trans-1,2-dichloroethene		mg/kg	0.1	<0.1	<0.1	200	0	
		1,1-dichloroethane		mg/kg	0.1	<0.1	<0.1	200	0	
		cis-1,2-dichloroethene		mg/kg	0.1	<0.1	<0.1	200	0	
		Bromochloromethane		mg/kg	0.1	<0.1	<0.1	200	0	
		1,2-dichloroethane		mg/kg	0.1	<0.1	<0.1	200	0	
		1,1,1-trichloroethane		mg/kg	0.1	<0.1	<0.1	200	0	
		1,1-dichloropropene		mg/kg	0.1	<0.1	<0.1	200	0	
		Carbon tetrachloride		mg/kg	0.1	<0.1	<0.1	200	0	
		Dibromomethane		mg/kg	0.1	<0.1	<0.1	200	0	
		Trichloroethene (Trichloroethylene -TCE)		mg/kg	0.1	<0.1	<0.1	200	0	
		1,1,2-trichloroethane		mg/kg	0.1	<0.1	<0.1	200	0	
		1,3-dichloropropane		mg/kg	0.1	<0.1	<0.1	200	0	
		Tetrachloroethene (Perchloroethylene,PCE)		mg/kg	0.1	<0.1	<0.1	200	0	
		1,1,1,2-tetrachloroethane		mg/kg	0.1	<0.1	<0.1	200	0	
		cis-1,4-dichloro-2-butene		mg/kg	1	<1	<1	200	0	
		1,1,2,2-tetrachloroethane		mg/kg	0.1	<0.1	<0.1	200	0	
		1,2,3-trichloropropane		mg/kg	0.1	<0.1	<0.1	200	0	
		trans-1,4-dichloro-2-butene		mg/kg	1	<1	<1	200	0	
		1,2-dibromo-3-chloropropane		mg/kg	0.1	<0.1	<0.1	200	0	
		Hexachlorobutadiene		mg/kg	0.1	<0.1	<0.1	200	0	
		Halogenated Aromatics		Chlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
				Bromobenzene	mg/kg	0.1	<0.1	<0.1	200	0
				2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	200	0
				4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	200	0
				1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
				1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
				1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
				1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
				1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
		Monocyclic Aromatic		Benzene	mg/kg	0.1	<0.1	<0.1	200	0
				Toluene	mg/kg	0.1	<0.1	<0.1	200	0
				Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
				m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
				Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	200	0
				o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
				Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	200	0
			n-propylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			1,3,5-trimethylbenzene	mg/kg	0.1	0.1	<0.1	141	26	
			tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			1,2,4-trimethylbenzene	mg/kg	0.1	0.3	0.1	75	91 ☹	
			sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
			p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	200	0	
			n-butylbenzene	mg/kg	0.1	0.2	<0.1	101	75	
			Nitrogenous	Acrylonitrile	mg/kg	0.1	<0.1	<0.1	200	0
			Compounds	2-nitropropane	mg/kg	10	<10	<10	200	0
		Oxygenated	Acetone (2-propanone)	mg/kg	10	<10	<10	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.

VOC's in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE131743.010	LB064751.014	Oxygenated Compounds	MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	200	0	
			Vinyl acetate	mg/kg	10	<10	<10	200	0	
			MEK (2-butanone)	mg/kg	10	<10	<10	200	0	
			MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	200	0	
			2-hexanone (MBK)	mg/kg	5	<5	<5	200	0	
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0	
		Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5	<0.5	200	0	
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.8	3.5	50	7	
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.6	4.3	50	6	
			d8-toluene (Surrogate)	mg/kg	-	4.5	4.3	50	3	
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.6	4.4	50	4	
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0	
			Total BTEX*	mg/kg	0.6	<0.6	<0.6	200	0	
		Trihalomethanes	Chloroform	mg/kg	0.1	<0.1	<0.1	200	0	
			Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	200	0	
			Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	200	0	
			Bromoform	mg/kg	0.1	<0.1	<0.1	200	0	
SE131743.014	LB064751.019	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0	
			1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0	
			cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0	
			trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0	
			1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	200	0	
		Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	200	0	
			Chloromethane	mg/kg	1	<1	<1	200	0	
			Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	200	0	
			Bromomethane	mg/kg	1	<1	<1	200	0	
			Chloroethane	mg/kg	1	<1	<1	200	0	
			Trichlorofluoromethane	mg/kg	1	<1	<1	200	0	
			Iodomethane	mg/kg	5	<5	<5	200	0	
			1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	200	0	
			Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	200	0	
			Allyl chloride	mg/kg	0.1	<0.1	<0.1	200	0	
			trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	200	0	
			1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	200	0	
			cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	200	0	
			Bromochloromethane	mg/kg	0.1	<0.1	<0.1	200	0	
			1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	200	0	
			1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	200	0	
			1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0	
			Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	200	0	
			Dibromomethane	mg/kg	0.1	<0.1	<0.1	200	0	
			Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1	<0.1	200	0	
			1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	200	0	
			1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0	
			Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	200	0	
			1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	200	0	
			cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	200	0	
			1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	200	0	
			1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	200	0	
			trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	200	0	
			1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	200	0	
			Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	200	0	
			Halogenated Aromatics	Chlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
				Bromobenzene	mg/kg	0.1	<0.1	<0.1	200	0
				2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	200	0
		4-chlorotoluene		mg/kg	0.1	<0.1	<0.1	200	0	
		1,3-dichlorobenzene		mg/kg	0.1	<0.1	<0.1	200	0	
		1,4-dichlorobenzene		mg/kg	0.1	<0.1	<0.1	200	0	
		1,2-dichlorobenzene		mg/kg	0.1	<0.1	<0.1	200	0	
		1,2,4-trichlorobenzene		mg/kg	0.1	<0.1	<0.1	200	0	
		1,2,3-trichlorobenzene		mg/kg	0.1	<0.1	<0.1	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.

VOC's in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131743.014	LB064751.019	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			Toluene	mg/kg	0.1	<0.1	<0.1	200	0
		Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
		m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0	
		Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	200	0	
		o-xylene	mg/kg	0.1	<0.1	<0.1	200	0	
		Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	200	0	
		n-propylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
		1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
		tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
		1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
		sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
		p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	200	0	
		n-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0	
		Nitrogenous Compounds	Acrylonitrile	mg/kg	0.1	<0.1	<0.1	200	0
		Oxygenated Compounds	2-nitropropane	mg/kg	10	<10	<10	200	0
			Acetone (2-propanone)	mg/kg	10	<10	<10	200	0
		Compounds	MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	200	0
			Vinyl acetate	mg/kg	10	<10	<10	200	0
			MEK (2-butanone)	mg/kg	10	<10	<10	200	0
			MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	200	0
			2-hexanone (MBK)	mg/kg	5	<5	<5	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5	<0.5	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.7	3.6	50	2
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.6	4.6	50	2
			d8-toluene (Surrogate)	mg/kg	-	4.3	4.3	50	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	4.3	50	4
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX*	mg/kg	0.6	<0.6	<0.6	200	0
		Trihalomethanes	Chloroform	mg/kg	0.1	<0.1	<0.1	200	0
			Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	200	0
			Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	200	0
			Bromoform	mg/kg	0.1	<0.1	<0.1	200	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE131743.010	LB064751.014	TRH C6-C10	mg/kg	25	<25	<25	200	0	
		TRH C6-C9	mg/kg	20	<20	<20	200	0	
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.2	4.0	30	4
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	4.4	30	6
			d8-toluene (Surrogate)	mg/kg	-	4.7	4.4	30	7
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	4.6	30	3
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE131743.014	LB064751.019	TRH C6-C10	mg/kg	25	<25	<25	200	0	
		TRH C6-C9	mg/kg	20	<20	<20	200	0	
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.2	4.1	30	2
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	4.6	30	2
			d8-toluene (Surrogate)	mg/kg	-	4.6	4.6	30	0
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.4	4.5	30	3
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0



LABORATORY CONTROL SAMPLES

SE131743 R0

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 %
LB064967.002	Mercury	mg/kg	0.01	0.20	0.2	70 - 130	99

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064766.002	Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	89
	Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	86
	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	80
	Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	81
	Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	91
	p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	81
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.15	40 - 130	91

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064766.002	Dichlorvos	mg/kg	0.5	1.8	2	60 - 140	89
	Diazinon (Dimpylate)	mg/kg	0.5	1.7	2	60 - 140	85
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.9	2	60 - 140	94
	Ethion	mg/kg	0.2	1.7	2	60 - 140	86
	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	84
Surrogates	d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064766.002	Naphthalene	mg/kg	0.1	3.6	4	60 - 140	90
	Acenaphthylene	mg/kg	0.1	3.8	4	60 - 140	95
	Acenaphthene	mg/kg	0.1	3.6	4	60 - 140	90
	Phenanthrene	mg/kg	0.1	3.5	4	60 - 140	88
	Anthracene	mg/kg	0.1	3.7	4	60 - 140	92
	Fluoranthene	mg/kg	0.1	3.5	4	60 - 140	86
	Pyrene	mg/kg	0.1	3.6	4	60 - 140	91
	Benzo(a)pyrene	mg/kg	0.1	4.1	4	60 - 140	102
	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	90
	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	84
Surrogates	d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064766.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	100

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064975.002	Total Phenols	mg/kg	0.1	2.2	2.5	70 - 130	89

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064965.002	Arsenic, As	mg/kg	3	49	50	80 - 120	98
	Cadmium, Cd	mg/kg	0.3	50	50	80 - 120	100
	Chromium, Cr	mg/kg	0.3	49	50	80 - 120	99
	Copper, Cu	mg/kg	0.5	49	50	80 - 120	97
	Lead, Pb	mg/kg	1	49	50	80 - 120	99
	Nickel, Ni	mg/kg	0.5	49	50	80 - 120	99
	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 %
LB064766.002	TRH C10-C14	mg/kg	20	35	40	60 - 140	88
	TRH C15-C28	mg/kg	45	<45	40	60 - 140	93
	TRH C29-C36	mg/kg	45	<45	40	60 - 140	75

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064766.002	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	35	40	60 - 140 88
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140 88
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140 80

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064751.002	Halogenated	1,1-dichloroethene	mg/kg	0.1	3.1	2.56	60 - 140 120
	Aliphatics	1,2-dichloroethane	mg/kg	0.1	3.0	2.56	60 - 140 116
		Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	1.8	2.56	60 - 140 69
	Halogenated	Chlorobenzene	mg/kg	0.1	2.5	2.56	60 - 140 96
	Monocyclic	Benzene	mg/kg	0.1	2.5	2.9	60 - 140 88
	Aromatic	Toluene	mg/kg	0.1	2.5	2.9	60 - 140 85
		Ethylbenzene	mg/kg	0.1	2.6	2.9	60 - 140 89
		m/p-xylene	mg/kg	0.2	5.0	5.8	60 - 140 86
		o-xylene	mg/kg	0.1	2.7	2.9	60 - 140 93
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.0	5	60 - 140 100
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.9	5	60 - 140 119
		d8-toluene (Surrogate)	mg/kg	-	4.4	5	60 - 140 87
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.5	5	60 - 140 111
	Trihalomethan	Chloroform	mg/kg	0.1	2.2	2.56	60 - 140 84

Volatile Petroleum Hydrocarbons in Soil
Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064751.002	TRH C6-C10	TRH C6-C10	mg/kg	25	<25	24.65	60 - 140 91
		TRH C6-C9	mg/kg	20	21	23.2	60 - 140 89
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.4	5	60 - 140 108
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.7	5	60 - 140 114
		d8-toluene (Surrogate)	mg/kg	-	5.7	5	60 - 140 115
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.5	5	60 - 140 110
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140 100

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%
SE131735.001	LB064967.004	Mercury	mg/kg	0.01	0.20	<0.05	0.2	83

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131743.001	LB064766.004	Dichlorvos	mg/kg	0.5	2.3	<0.5	2	115
		Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
		Diazinon (Dimpylate)	mg/kg	0.5	2.4	<0.5	2	119
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
		Malathion	mg/kg	0.2	<0.2	<0.2	-	-
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.4	<0.2	2	120
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
		Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
		Ethion	mg/kg	0.2	2.2	<0.2	2	110
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
		Surrogates						
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	0.5	84
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	0.5	96

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131743.001	LB064766.004	Naphthalene	mg/kg	0.1	5.0	0.1	4	121
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	5.3	0.2	4	126
		Acenaphthene	mg/kg	0.1	5.1	<0.1	4	128
		Fluorene	mg/kg	0.1	<0.1	0.2	-	-
		Phenanthrene	mg/kg	0.1	7.9	1.6	4	159
		Anthracene	mg/kg	0.1	5.4	0.4	4	126
		Fluoranthene	mg/kg	0.1	7.9	2.5	4	137
		Pyrene	mg/kg	0.1	8.3	2.4	4	147
		Benzo(a)anthracene	mg/kg	0.1	<0.1	1.4	-	-
		Chrysene	mg/kg	0.1	<0.1	1.0	-	-
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	1.6	-	-
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.4	-	-
		Benzo(a)pyrene	mg/kg	0.1	6.9	1.2	4	144
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0.7	-	-
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	0.1	-	-
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	0.5	-	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ	0.2	6.9	1.7	-	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	7.0	1.7	-	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	7.0	1.7	-	-
		Total PAH	mg/kg	0.8	52	14	-	-
		Surrogates						
		d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.4	-	92
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	84
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	96

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131743.015	LB064975.020	Total Phenols	mg/kg	0.1	2.6	0.2	2.5	94

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%
SE131735.001	LB064965.004	Arsenic, As	mg/kg	3	47	5	50	83
		Cadmium, Cd	mg/kg	0.3	42	<0.3	50	83
		Chromium, Cr	mg/kg	0.3	58	16	50	84
		Copper, Cu	mg/kg	0.5	59	16	50	87
		Lead, Pb	mg/kg	1	65	27	50	76
		Nickel, Ni	mg/kg	0.5	50	7.8	50	85

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.

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Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest (continued)

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131735.001	LB064965.004	Zinc, Zn	mg/kg	0.5	98	54	50	87

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131743.002	LB064766.006	TRH C10-C14	mg/kg	20	180	160	40	48 Ⓢ
		TRH C15-C28	mg/kg	45	81	<45	40	105
		TRH C29-C36	mg/kg	45	<45	<45	40	100
		TRH C37-C40	mg/kg	100	<100	<100	-	-
		TRH C10-C36 Total	mg/kg	110	300	200	-	-
		TRH C10-C40 Total	mg/kg	210	300	<210	-	-
		TRH >C10-C16 (F2)	mg/kg	25	180	160	40	53 Ⓢ
		TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	180	160	-	-
		TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	100
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE131743.001	LB064751.004	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	-	-	
			1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	-	-	
			cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	-	-	
			trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	-	-	
			1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	-	-	
		Halogenated	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	-	-	
			Aliphatics	Chloromethane	mg/kg	1	<1	<1	-	-
		Vinyl chloride (Chloroethene)		mg/kg	0.1	<0.1	<0.1	-	-	
		Bromomethane		mg/kg	1	<1	<1	-	-	
		Chloroethane		mg/kg	1	<1	<1	-	-	
		Trichlorofluoromethane		mg/kg	1	<1	<1	-	-	
		Iodomethane		mg/kg	5	<5	<5	-	-	
		1,1-dichloroethene		mg/kg	0.1	2.5	<0.1	2.56	97	
		Dichloromethane (Methylene chloride)		mg/kg	0.5	<0.5	<0.5	-	-	
		Allyl chloride		mg/kg	0.1	<0.1	<0.1	-	-	
		trans-1,2-dichloroethene		mg/kg	0.1	<0.1	<0.1	-	-	
		1,1-dichloroethane		mg/kg	0.1	<0.1	<0.1	-	-	
		cis-1,2-dichloroethene		mg/kg	0.1	<0.1	<0.1	-	-	
		Bromochloromethane		mg/kg	0.1	<0.1	<0.1	-	-	
		1,2-dichloroethane		mg/kg	0.1	2.6	<0.1	2.56	100	
		1,1,1-trichloroethane		mg/kg	0.1	<0.1	<0.1	-	-	
		1,1-dichloropropene		mg/kg	0.1	<0.1	<0.1	-	-	
		Carbon tetrachloride		mg/kg	0.1	<0.1	<0.1	-	-	
		Dibromomethane		mg/kg	0.1	<0.1	<0.1	-	-	
		Trichloroethene (Trichloroethylene -TCE)		mg/kg	0.1	2.0	<0.1	2.56	77	
		1,1,2-trichloroethane		mg/kg	0.1	<0.1	<0.1	-	-	
		1,3-dichloropropane		mg/kg	0.1	<0.1	<0.1	-	-	
		Tetrachloroethene (Perchloroethylene,PCE)		mg/kg	0.1	<0.1	<0.1	-	-	
		1,1,1,2-tetrachloroethane		mg/kg	0.1	<0.1	<0.1	-	-	
		cis-1,4-dichloro-2-butene		mg/kg	1	<1	<1	-	-	
		1,1,2,2-tetrachloroethane		mg/kg	0.1	<0.1	<0.1	-	-	
		1,2,3-trichloropropane		mg/kg	0.1	<0.1	<0.1	-	-	
		trans-1,4-dichloro-2-butene		mg/kg	1	<1	<1	-	-	
		1,2-dibromo-3-chloropropane		mg/kg	0.1	<0.1	<0.1	-	-	
		Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	-	-		
		Halogenated	Aromatics	Chlorobenzene	mg/kg	0.1	2.5	<0.1	2.56	97
				Bromobenzene	mg/kg	0.1	<0.1	<0.1	-	-
		2-chlorotoluene		mg/kg	0.1	<0.1	<0.1	-	-	
		4-chlorotoluene		mg/kg	0.1	<0.1	<0.1	-	-	
		1,3-dichlorobenzene		mg/kg	0.1	<0.1	<0.1	-	-	
		1,4-dichlorobenzene		mg/kg	0.1	<0.1	<0.1	-	-	
		1,2-dichlorobenzene		mg/kg	0.1	<0.1	<0.1	-	-	
		1,2,4-trichlorobenzene		mg/kg	0.1	0.2	<0.1	-	-	
		1,2,3-trichlorobenzene		mg/kg	0.1	<0.1	<0.1	-	-	
		Monocyclic		Benzene	mg/kg	0.1	2.3	<0.1	2.9	79

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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.

VOC's in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131743.001	LB064751.004	Monocyclic Aromatic	Toluene	mg/kg	0.1	2.5	<0.1	2.9	85
			Ethylbenzene	mg/kg	0.1	2.6	<0.1	2.9	88
		m/p-xylene	mg/kg	0.2	5.1	<0.2	5.8	89	
		Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	-	-	
		o-xylene	mg/kg	0.1	2.6	<0.1	2.9	90	
		Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	-	-	
		n-propylbenzene	mg/kg	0.1	<0.1	<0.1	-	-	
		1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	-	-	
		tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	-	-	
		1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	-	-	
		sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	-	-	
		p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	-	-	
		n-butylbenzene	mg/kg	0.1	<0.1	<0.1	-	-	
		Nitrogenous Compounds	Acrylonitrile	mg/kg	0.1	<0.1	<0.1	-	-
			2-nitropropane	mg/kg	10	<10	<10	-	-
		Oxygenated Compounds	Acetone (2-propanone)	mg/kg	10	<10	<10	-	-
			MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Vinyl acetate	mg/kg	10	<10	<10	-	-
			MEK (2-butanone)	mg/kg	10	<10	<10	-	-
			MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	-	-
			2-hexanone (MBK)	mg/kg	5	<5	<5	-	-
			Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-
		Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5	<0.5	-	-
			Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.9	3.7	5
		d4-1,2-dichloroethane (Surrogate)		mg/kg	-	5.0	4.6	5	100
		d8-toluene (Surrogate)		mg/kg	-	4.7	4.1	5	94
		Bromofluorobenzene (Surrogate)		mg/kg	-	5.1	4.4	5	102
		Totals	Total Xylenes*	mg/kg	0.3	7.8	<0.3	-	-
			Total BTEX*	mg/kg	0.6	15	<0.6	-	-
		Trihalomethanes	Chloroform	mg/kg	0.1	2.5	<0.1	2.56	99
			Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	-	-
			Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	-	-
			Bromoform	mg/kg	0.1	<0.1	<0.1	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE131743.001	LB064751.004	TRH C6-C10	mg/kg	25	<25	<25	24.65	92	
		TRH C6-C9	mg/kg	20	22	<20	23.2	93	
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	4.2	5	90
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.9	4.7	5	98
			d8-toluene (Surrogate)	mg/kg	-	4.5	4.0	5	90
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.5	4.4	5	90
		VPH F	Benzene (F0)	mg/kg	0.1	2.3	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	104

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.

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131743.001	LB064766.005	Dichlorvos	mg/kg	0.5	2.3	2.3	52	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	-
		Diazinon (Dimpylate)	mg/kg	0.5	2.4	2.1	52	11
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	-
		Malathion	mg/kg	0.2	<0.2	<0.2	200	-
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.4	2.3	116	5
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	-
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	-
		Methidathion	mg/kg	0.5	<0.5	<0.5	200	-
		Ethion	mg/kg	0.2	2.2	2.4	39	7
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	-
		Surrogates						
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131743.001	LB064766.005	Naphthalene	mg/kg	0.1	5.0	4.6	32	8
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	-
		Acenaphthylene	mg/kg	0.1	5.3	4.8	32	10
		Acenaphthene	mg/kg	0.1	5.1	4.6	32	11
		Fluorene	mg/kg	0.1	<0.1	<0.1	200	-
		Phenanthrene	mg/kg	0.1	7.9	5.8	31	41 ↑
		Anthracene	mg/kg	0.1	5.4	4.7	32	16
		Fluoranthene	mg/kg	0.1	7.9	6.1	31	40 ↑
		Pyrene	mg/kg	0.1	8.3	6.5	31	38 ↑
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	-
		Chrysene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(a)pyrene	mg/kg	0.1	6.9	6.0	32	17
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	-
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ	0.2	6.9	6.0	13	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	7.0	6.2	15	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	7.0	6.1	13	-
		Total PAH	mg/kg	0.8	52	43	32	-
		Surrogates						
		d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	0
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

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.sgs.com.au/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.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.
- ⑩ LOR was raised due to high conductivity of the sample (required dilution).
- † Refer to Analytical Report comments for further information.

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CERTIFICATE OF ANALYSIS

116738

Client:

Environmental Investigations

Suite 6.01, 55 Miller Street
Pyrmont
NSW 2009

Attention: E Short

Sample log in details:

Your Reference:	<u>E22317, St Peters</u>
No. of samples:	1 Soil
Date samples received / completed instructions received	25/09/14 / 25/09/14

Analysis Details:

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

Report Details:

Date results requested by: / Issue Date:	2/10/14 / 1/10/14
Date of Preliminary Report:	Not Issued

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

Results Approved By:



Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference:	UNITS	116738-1
Your Reference	-----	l1
Date Sampled	-----	23/09/2014
Type of sample		Soil
Date extracted	-	26/09/2014
Date analysed	-	27/09/2014
TRHC ₆ - C ₉	mg/kg	<25
TRHC ₆ - C ₁₀	mg/kg	<25
vTPHC ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	114

svTRH (C10-C40) in Soil		
Our Reference:	UNITS	116738-1
Your Reference	-----	I1
Date Sampled	-----	23/09/2014
Type of sample		Soil
Date extracted	-	26/09/2014
Date analysed	-	26/09/2014
TRHC ₁₀ - C ₁₄	mg/kg	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100
TRHC ₂₉ - C ₃₆	mg/kg	<100
TRH>C ₁₀ -C ₁₆	mg/kg	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH>C ₁₆ -C ₃₄	mg/kg	<100
TRH>C ₃₄ -C ₄₀	mg/kg	<100
Surrogate o-Terphenyl	%	79

Acid Extractable metals in soil		
Our Reference:	UNITS	116738-1
Your Reference	-----	I1
Date Sampled	-----	23/09/2014
Type of sample		Soil
Date digested	-	26/09/2014
Date analysed	-	26/09/2014
Arsenic	mg/kg	8
Cadmium	mg/kg	0.4
Chromium	mg/kg	27
Copper	mg/kg	10
Lead	mg/kg	24
Mercury	mg/kg	0.2
Nickel	mg/kg	3
Zinc	mg/kg	360

Moisture		
Our Reference:	UNITS	116738-1
Your Reference	-----	11
Date Sampled	-----	23/09/2014
Type of sample		Soil
Date prepared	-	26/09/2014
Date analysed	-	29/09/2014
Moisture	%	16

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

Client Reference: E22317, St Peters

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Soil						Base II Duplicate II %RPD		
Date extracted	-			26/09/2014	[NT]	[NT]	LCS-1	26/09/2014
Date analysed	-			26/09/2014	[NT]	[NT]	LCS-1	27/09/2014
TRHC ₆ - C ₉	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-1	98%
TRHC ₆ - C ₁₀	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-1	98%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-1	98%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-1	91%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-1	108%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-1	96%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-1	97%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	108	[NT]	[NT]	LCS-1	92%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH(C10-C40) in Soil						Base II Duplicate II %RPD		
Date extracted	-			26/09/2014	[NT]	[NT]	LCS-1	26/09/2014
Date analysed	-			26/09/2014	[NT]	[NT]	LCS-1	26/09/2014
TRHC ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	105%
TRHC ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	104%
TRHC ₂₈ - C ₃₆	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	88%
TRH>C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	105%
TRH>C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	104%
TRH>C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	88%
Surrogate o-Terphenyl	%		Org-003	84	[NT]	[NT]	LCS-1	91%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			26/09/2014	[NT]	[NT]	LCS-6	26/09/2014
Date analysed	-			26/09/2014	[NT]	[NT]	LCS-6	26/09/2014
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-6	100%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	LCS-6	106%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-6	104%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-6	105%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-6	102%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-6	110%

Client Reference: E22317, St Peters

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-6	102%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-6	102%

Report Comments:

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

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

Quality Control Definitions

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

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

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

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

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

Laboratory Acceptance Criteria

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

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

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

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

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

CLIENT DETAILS

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 Client **Environmental Investigations**
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Project **SE131695 E22317-75 Mary St, St. Peters**
 Order Number **(Not specified)**
 Samples **10**
 Date Started **30 Sep 2014**

LABORATORY DETAILS

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SGS Reference **CE111920 R0**
 Report Number **0000020444**
 Date Reported **01 Oct 2014**
 Date Received **29 Sep 2014**

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(3146)

SIGNATORIES



Anthony Nilsson
Operations Manager



Jon Dicker
Manager Northern QLD



ANALYTICAL REPORT

CE111920 R0

Parameter	Units	LOR	Sample Number	CE111920.001	CE111920.002	CE111920.003	CE111920.004
			Sample Matrix	Soil	Soil	Soil	Soil
			Sample Date	23 Sep 2014	23 Sep 2014	23 Sep 2014	23 Sep 2014
			Sample Name	ASS2-1	ASS2-2	ASS5-1	ASS5-2

Moisture Content Method: AN002

% Moisture	%	0.5	25	19	19	17
------------	---	-----	----	----	----	----

TAA (Titratable Actual Acidity) Method: AN219

pH KCl	pH Units	-	4.1	3.8	6.2	3.8
Titratable Actual Acidity	kg H ₂ SO ₄ /T	0.25	6.0	5.6	<0.25	7.2
Titratable Actual Acidity (TAA) moles H+/tonne	moles H+/T	5	122	115	<5	147
Titratable Actual Acidity (TAA) S%w/w	%w/w S	0.01	0.20	0.18	<0.01	0.24
Sulphur (SKCl)	%w/w	0.005	<0.005	<0.005	<0.005	0.021
Calcium (CaKCl)	%w/w	0.005	0.079	0.020	0.21	<0.005
Magnesium (MgKCl)	%w/w	0.005	0.025	0.015	0.059	0.014

TPA (Titratable Peroxide Acidity) Method: AN218

Peroxide pH (pH Ox)	pH Units	-	5.2	5.2	7.1	4.4
TPA as kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /T	0.25	6.1	6.2	<0.25	7.2
TPA as moles H+/tonne	moles H+/T	5	125	126	<5	147
TPA as S % W/W	%w/w S	0.01	0.20	0.20	<0.01	0.24
Titratable Sulfidic Acidity as moles H+/tonne	moles H+/T	5	<5	11	<5	<5
Titratable Sulfidic Acidity as kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /T	0.25	<0.25	0.55	<0.25	<0.25
Titratable Sulfidic Acidity as S % W/W	%w/w S	0.01	<0.01	0.02	<0.01	<0.01
ANCE as % CaCO ₃	% CaCO ₃	0.01	<0.01	<0.01	0.28	<0.01
ANCE as moles H+/tonne	moles H+/T	5	<5	<5	55	<5
ANCE as S % W/W	%w/w S	0.01	<0.01	<0.01	0.09	<0.01
Peroxide Oxidisable Sulphur (Spos)	%w/w	0.005	0.011	0.013	0.022	0.008
Peroxide Oxidisable Sulphur as moles H+/tonne	moles H+/T	5	7	8	14	5
Sulphur (Sp)	%w/w	0.005	0.011	0.013	0.022	0.030
Calcium (Cap)	%w/w	0.005	0.092	0.021	0.28	<0.005
Reacted Calcium (CaA)	%w/w	0.005	0.013	<0.005	0.064	<0.005
Reacted Calcium (CaA)	moles H+/T	5	6	<5	32	<5
Magnesium (Mgp)	%w/w	0.005	0.027	0.016	0.073	0.014
Reacted Magnesium (MgA)	%w/w	0.005	<0.005	<0.005	0.014	<0.005
Reacted Magnesium (MgA)	moles H+/T	5	<5	<5	12	<5
Net Acid Soluble Sulphur as % w/w	%w/w	0.005	0.010	0.013	-	0.016
Net Acid Soluble Sulphur as moles H+/tonne	moles H+/T	5	7	8	-	10

SPOCAS Net Acidity Calculations Method: AN220

s-Net Acidity	%w/w S	0.01	0.21	0.20	<0.01	0.25
a-Net Acidity	moles H+/T	5	130	120	<5	160
Liming Rate	kg CaCO ₃ /T	0.1	9.7	9.3	<0.1	12
Verification s-Net Acidity	%w/w S	-20	NA	NA	NA	NA
a-Net Acidity without ANCE	moles H+/T	5	130	130	18	160
Liming Rate without ANCE	kg CaCO ₃ /T	0.1	10	9.7	NA	12

HCl Extractable S, Ca and Mg in Soil ICP OES Method: AN014

Acid Soluble Sulphur (SHCl)	%w/w	0.005	0.010	0.013	-	0.037
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ANALYTICAL REPORT

CE111920 R0

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	CE111920.005 Soil 24 Sep 2014 ASS1-1	CE111920.006 Soil 24 Sep 2014 ASS1-2	CE111920.007 Soil 24 Sep 2014 ASS4-1	CE111920.008 Soil 24 Sep 2014 ASS4-2
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Moisture Content Method: AN002

% Moisture	%	0.5	25	17	23	24
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TAA (Titrateable Actual Acidity) Method: AN219

pH KCl	pH Units	-	3.9	4.0	3.9	4.1
Titrateable Actual Acidity	kg H ₂ SO ₄ /T	0.25	5.6	5.1	6.0	5.6
Titrateable Actual Acidity (TAA) moles H+/tonne	moles H+/T	5	115	105	122	115
Titrateable Actual Acidity (TAA) S%w/w	%w/w S	0.01	0.18	0.17	0.20	0.18
Sulphur (SKCl)	%w/w	0.005	<0.005	0.020	<0.005	<0.005
Calcium (CaKCl)	%w/w	0.005	0.10	0.055	0.036	0.043
Magnesium (MgKCl)	%w/w	0.005	0.052	0.023	0.022	0.022

TPA (Titrateable Peroxide Acidity) Method: AN218

Peroxide pH (pH Ox)	pH Units	-	4.8	4.6	4.1	4.2
TPA as kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /T	0.25	5.0	4.8	7.2	6.1
TPA as moles H+/tonne	moles H+/T	5	101	99	146	125
TPA as S % W/W	%w/w S	0.01	0.16	0.16	0.23	0.20
Titrateable Sulfidic Acidity as moles H+/tonne	moles H+/T	5	<5	<5	24	10
Titrateable Sulfidic Acidity as kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /T	0.25	<0.25	<0.25	1.2	0.49
Titrateable Sulfidic Acidity as S % W/W	%w/w S	0.01	<0.01	<0.01	0.04	0.02
ANCE as % CaCO ₃	% CaCO ₃	0.01	<0.01	<0.01	<0.01	<0.01
ANCE as moles H+/tonne	moles H+/T	5	<5	<5	<5	<5
ANCE as S % W/W	%w/w S	0.01	<0.01	<0.01	<0.01	<0.01
Peroxide Oxidisable Sulphur (Spos)	%w/w	0.005	<0.005	0.017	0.039	0.041
Peroxide Oxidisable Sulphur as moles H+/tonne	moles H+/T	5	<5	11	25	26
Sulphur (Sp)	%w/w	0.005	<0.005	0.037	0.041	0.044
Calcium (Cap)	%w/w	0.005	0.10	0.058	0.052	0.059
Reacted Calcium (CaA)	%w/w	0.005	<0.005	<0.005	0.016	0.016
Reacted Calcium (CaA)	moles H+/T	5	<5	<5	8	8
Magnesium (Mgp)	%w/w	0.005	0.054	0.024	0.027	0.027
Reacted Magnesium (MgA)	%w/w	0.005	<0.005	<0.005	0.005	<0.005
Reacted Magnesium (MgA)	moles H+/T	5	<5	<5	<5	<5
Net Acid Soluble Sulphur as % w/w	%w/w	0.005	0.005	0.017	0.016	0.013
Net Acid Soluble Sulphur as moles H+/tonne	moles H+/T	5	<5	11	10	8

SPOCAS Net Acidity Calculations Method: AN220

s-Net Acidity	%w/w S	0.01	0.19	0.19	0.22	0.21
a-Net Acidity	moles H+/T	5	120	120	140	130
Liming Rate	kg CaCO ₃ /T	0.1	8.9	8.7	10	9.7
Verification s-Net Acidity	%w/w S	-20	NA	NA	0.01	0.01
a-Net Acidity without ANCE	moles H+/T	5	120	120	150	150
Liming Rate without ANCE	kg CaCO ₃ /T	0.1	9.0	9.3	12	11

HCl Extractable S, Ca and Mg in Soil ICP OES Method: AN014

Acid Soluble Sulphur (SHCl)	%w/w	0.005	0.005	0.037	0.018	0.016
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ANALYTICAL REPORT

CE111920 R0

		Sample Number	CE111920.009	CE111920.010
		Sample Matrix	Soil	Soil
		Sample Date	25 Sep 2014	25 Sep 2014
		Sample Name	ASS3-1	ASS3-2
Parameter	Units	LOR		

Moisture Content Method: AN002

% Moisture	%	0.5	25	16
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TAA (Titratable Actual Acidity) Method: AN219

pH KCl	pH Units	-	4.0	4.0
Titratable Actual Acidity	kg H ₂ SO ₄ /T	0.25	5.5	7.7
Titratable Actual Acidity (TAA) moles H+/tonne	moles H+/T	5	112	157
Titratable Actual Acidity (TAA) S%w/w	%w/w S	0.01	0.18	0.25
Sulphur (SKCl)	%w/w	0.005	<0.005	<0.005
Calcium (CaKCl)	%w/w	0.005	0.062	<0.005
Magnesium (MgKCl)	%w/w	0.005	0.029	0.016

TPA (Titratable Peroxide Acidity) Method: AN218

Peroxide pH (pH Ox)	pH Units	-	4.3	4.9
TPA as kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /T	0.25	6.4	7.8
TPA as moles H+/tonne	moles H+/T	5	131	158
TPA as S % W/W	%w/w S	0.01	0.21	0.25
Titratable Sulfidic Acidity as moles H+/tonne	moles H+/T	5	19	<5
Titratable Sulfidic Acidity as kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /T	0.25	0.92	<0.25
Titratable Sulfidic Acidity as S % W/W	%w/w S	0.01	0.03	<0.01
ANCE as % CaCO ₃	% CaCO ₃	0.01	<0.01	<0.01
ANCE as moles H+/tonne	moles H+/T	5	<5	<5
ANCE as S % W/W	%w/w S	0.01	<0.01	<0.01
Peroxide Oxidisable Sulphur (Spos)	%w/w	0.005	0.047	<0.005
Peroxide Oxidisable Sulphur as moles H+/tonne	moles H+/T	5	29	<5
Sulphur (Sp)	%w/w	0.005	0.052	0.006
Calcium (Cap)	%w/w	0.005	0.065	<0.005
Reacted Calcium (CaA)	%w/w	0.005	<0.005	<0.005
Reacted Calcium (CaA)	moles H+/T	5	<5	<5
Magnesium (Mgp)	%w/w	0.005	0.031	0.017
Reacted Magnesium (MgA)	%w/w	0.005	<0.005	<0.005
Reacted Magnesium (MgA)	moles H+/T	5	<5	<5
Net Acid Soluble Sulphur as % w/w	%w/w	0.005	0.016	<0.005
Net Acid Soluble Sulphur as moles H+/tonne	moles H+/T	5	10	<5

SPOCAS Net Acidity Calculations Method: AN220

s-Net Acidity	%w/w S	0.01	0.21	0.26
a-Net Acidity	moles H+/T	5	130	160
Liming Rate	kg CaCO ₃ /T	0.1	9.7	12
Verification s-Net Acidity	%w/w S	-20	0.02	NA
a-Net Acidity without ANCE	moles H+/T	5	150	160
Liming Rate without ANCE	kg CaCO ₃ /T	0.1	11	12

HCl Extractable S, Ca and Mg in Soil ICP OES Method: AN014

Acid Soluble Sulphur (SHCl)	%w/w	0.005	0.020	0.005
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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.

TAA (Titratable Actual Acidity) Method: ME-(AU)-[ENV]AN219

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
pH KCl	LB020426	pH Units	-	5.8	0 - 1%	98%
Titratable Actual Acidity	LB020426	kg H ₂ SO ₄ /T	0.25	<0.25	0 - 1%	NA
Titratable Actual Acidity (TAA) moles H+/tonne	LB020426	moles H+/T	5	<5	0 - 1%	87%
Titratable Actual Acidity (TAA) S%w/w	LB020426	%w/w S	0.01	<0.01	0 - 1%	87%
Sulphur (SKCl)	LB020426	%w/w	0.005	<0.005	0%	94%
Calcium (CaKCl)	LB020426	%w/w	0.005	<0.005	2 - 3%	108%
Magnesium (MgKCl)	LB020426	%w/w	0.005	<0.005	0%	96%

TPA (Titratable Peroxide Acidity) Method: ME-(AU)-[ENV]AN218

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Peroxide pH (pH Ox)	LB020425	pH Units	-	6.5	0 - 2%	100%
TPA as kg H ₂ SO ₄ /tonne	LB020425	kg H ₂ SO ₄ /T	0.25	<0.25	0 - 3%	105%
TPA as moles H+/tonne	LB020425	moles H+/T	5	<5	0 - 3%	105%
TPA as S % W/W	LB020425	%w/w S	0.01	<0.01	0 - 3%	105%
ANCE as % CaCO ₃	LB020425	% CaCO ₃	0.01	<0.01	0%	
ANCE as moles H+/tonne	LB020425	moles H+/T	5	<5	0%	
ANCE as S % W/W	LB020425	%w/w S	0.01	<0.01	0%	
Sulphur (Sp)	LB020425	%w/w	0.005	<0.005	6 - 11%	108%
Calcium (Cap)	LB020425	%w/w	0.005	<0.005	0 - 4%	
Magnesium (Mgp)	LB020425	%w/w	0.005	<0.005	0 - 1%	

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.
AN004	Soils, sediments and sludges are pulverised using an LM2 ringmill. The dry sample is pulverised to a particle size of >90% passing through a -75µm sieve.
AN014	This method is for the determination of soluble sulphate (SO ₄ -S) by extraction with hydrochloric acid. Sulphides should not react and would normally be expelled. Sulphur is determined by ICP.
AN218	Soil samples are subjected to extreme oxidising conditions using hydrogen peroxide. Continuous application of heat and peroxide ensure all sulphide is converted to sulphuric acid. Excess peroxide is broken down by a copper catalyst prior to titration for acidity. Calcium, magnesium, and sulphur are determined by ICP-OES. Also included is a carbonate modification step which, depending on pH after the initial oxidation, gives a measure of ANC.
AN219	Dried pulped sample is extracted for 4 hours in a 1 M KCl solution. The ratio of sample to solution is 1:40. The extract is titrated for acidity. Calcium, magnesium, and sulphur are determined by ICP-AES.
AN220	SPOCAS Suite: Scheme for the calculation of net acidities and liming rates using a Fineness Factor of 1.5.

FOOTNOTES

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

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

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

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
[http://www.sgs.com.au/~media/Local/Australia/Documents/ Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf](http://www.sgs.com.au/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf)

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STATEMENT OF QA/QC PERFORMANCE

CE111920 R0

CLIENT DETAILS

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Order Number (Not specified)
Samples 10

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SGS Reference CE111920 R0
Report Number 0000021276
Date Reported 10 Nov 2014

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 (within the SGS Cairns Environmental laboratory).

SAMPLE SUMMARY

Sample counts by matrix	10 Soils	Type of documentation received	COC
Date documentation received	29/9/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	Chilled
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	Number of eskies/boxes received	1



HOLDING TIME SUMMARY

CE111920 R0

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.

Moisture Content

Method: ME-(AU)-[ENV]JAN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
ASS2-1	CE111920.001	LB020375	23 Sep 2014	29 Sep 2014	07 Oct 2014	29 Sep 2014	04 Oct 2014	30 Sep 2014
ASS2-2	CE111920.002	LB020375	23 Sep 2014	29 Sep 2014	07 Oct 2014	29 Sep 2014	04 Oct 2014	30 Sep 2014
ASS5-1	CE111920.003	LB020375	23 Sep 2014	29 Sep 2014	07 Oct 2014	29 Sep 2014	04 Oct 2014	30 Sep 2014
ASS5-2	CE111920.004	LB020375	23 Sep 2014	29 Sep 2014	07 Oct 2014	29 Sep 2014	04 Oct 2014	30 Sep 2014
ASS1-1	CE111920.005	LB020375	24 Sep 2014	29 Sep 2014	08 Oct 2014	29 Sep 2014	04 Oct 2014	30 Sep 2014
ASS1-2	CE111920.006	LB020375	24 Sep 2014	29 Sep 2014	08 Oct 2014	29 Sep 2014	04 Oct 2014	30 Sep 2014
ASS4-1	CE111920.007	LB020375	24 Sep 2014	29 Sep 2014	08 Oct 2014	29 Sep 2014	04 Oct 2014	30 Sep 2014
ASS4-2	CE111920.008	LB020375	24 Sep 2014	29 Sep 2014	08 Oct 2014	29 Sep 2014	04 Oct 2014	30 Sep 2014
ASS3-1	CE111920.009	LB020375	25 Sep 2014	29 Sep 2014	09 Oct 2014	29 Sep 2014	04 Oct 2014	30 Sep 2014
ASS3-2	CE111920.010	LB020375	25 Sep 2014	29 Sep 2014	09 Oct 2014	29 Sep 2014	04 Oct 2014	30 Sep 2014

SPOCAS Net Acidity Calculations

Method: ME-(AU)-[ENV]JAN202

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
ASS2-1	CE111920.001	LB020427	23 Sep 2014	29 Sep 2014	22 Nov 2014	01 Oct 2014	22 Nov 2014	01 Oct 2014
ASS2-2	CE111920.002	LB020427	23 Sep 2014	29 Sep 2014	22 Nov 2014	01 Oct 2014	22 Nov 2014	01 Oct 2014
ASS5-1	CE111920.003	LB020427	23 Sep 2014	29 Sep 2014	22 Nov 2014	01 Oct 2014	22 Nov 2014	01 Oct 2014
ASS5-2	CE111920.004	LB020427	23 Sep 2014	29 Sep 2014	22 Nov 2014	01 Oct 2014	22 Nov 2014	01 Oct 2014
ASS1-1	CE111920.005	LB020427	24 Sep 2014	29 Sep 2014	23 Nov 2014	01 Oct 2014	23 Nov 2014	01 Oct 2014
ASS1-2	CE111920.006	LB020427	24 Sep 2014	29 Sep 2014	23 Nov 2014	01 Oct 2014	23 Nov 2014	01 Oct 2014
ASS4-1	CE111920.007	LB020427	24 Sep 2014	29 Sep 2014	23 Nov 2014	01 Oct 2014	23 Nov 2014	01 Oct 2014
ASS4-2	CE111920.008	LB020427	24 Sep 2014	29 Sep 2014	23 Nov 2014	01 Oct 2014	23 Nov 2014	01 Oct 2014
ASS3-1	CE111920.009	LB020427	25 Sep 2014	29 Sep 2014	24 Nov 2014	01 Oct 2014	24 Nov 2014	01 Oct 2014
ASS3-2	CE111920.010	LB020427	25 Sep 2014	29 Sep 2014	24 Nov 2014	01 Oct 2014	24 Nov 2014	01 Oct 2014

TAA (Titratable Actual Acidity)

Method: ME-(AU)-[ENV]JAN219

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
ASS2-1	CE111920.001	LB020426	23 Sep 2014	29 Sep 2014	22 Dec 2014	01 Oct 2014	22 Dec 2014	01 Oct 2014
ASS2-2	CE111920.002	LB020426	23 Sep 2014	29 Sep 2014	22 Dec 2014	01 Oct 2014	22 Dec 2014	01 Oct 2014
ASS5-1	CE111920.003	LB020426	23 Sep 2014	29 Sep 2014	22 Dec 2014	01 Oct 2014	22 Dec 2014	01 Oct 2014
ASS5-2	CE111920.004	LB020426	23 Sep 2014	29 Sep 2014	22 Dec 2014	01 Oct 2014	22 Dec 2014	01 Oct 2014
ASS1-1	CE111920.005	LB020426	24 Sep 2014	29 Sep 2014	23 Dec 2014	01 Oct 2014	23 Dec 2014	01 Oct 2014
ASS1-2	CE111920.006	LB020426	24 Sep 2014	29 Sep 2014	23 Dec 2014	01 Oct 2014	23 Dec 2014	01 Oct 2014
ASS4-1	CE111920.007	LB020426	24 Sep 2014	29 Sep 2014	23 Dec 2014	01 Oct 2014	23 Dec 2014	01 Oct 2014
ASS4-2	CE111920.008	LB020426	24 Sep 2014	29 Sep 2014	23 Dec 2014	01 Oct 2014	23 Dec 2014	01 Oct 2014
ASS3-1	CE111920.009	LB020426	25 Sep 2014	29 Sep 2014	24 Dec 2014	01 Oct 2014	24 Dec 2014	01 Oct 2014
ASS3-2	CE111920.010	LB020426	25 Sep 2014	29 Sep 2014	24 Dec 2014	01 Oct 2014	24 Dec 2014	01 Oct 2014

TPA (Titratable Peroxide Acidity)

Method: ME-(AU)-[ENV]JAN218

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
ASS2-1	CE111920.001	LB020425	23 Sep 2014	29 Sep 2014	22 Dec 2014	01 Oct 2014	22 Dec 2014	01 Oct 2014
ASS2-2	CE111920.002	LB020425	23 Sep 2014	29 Sep 2014	22 Dec 2014	01 Oct 2014	22 Dec 2014	01 Oct 2014
ASS5-1	CE111920.003	LB020425	23 Sep 2014	29 Sep 2014	22 Dec 2014	01 Oct 2014	22 Dec 2014	01 Oct 2014
ASS5-2	CE111920.004	LB020425	23 Sep 2014	29 Sep 2014	22 Dec 2014	01 Oct 2014	22 Dec 2014	01 Oct 2014
ASS1-1	CE111920.005	LB020425	24 Sep 2014	29 Sep 2014	23 Dec 2014	01 Oct 2014	23 Dec 2014	01 Oct 2014
ASS1-2	CE111920.006	LB020425	24 Sep 2014	29 Sep 2014	23 Dec 2014	01 Oct 2014	23 Dec 2014	01 Oct 2014
ASS4-1	CE111920.007	LB020425	24 Sep 2014	29 Sep 2014	23 Dec 2014	01 Oct 2014	23 Dec 2014	01 Oct 2014
ASS4-2	CE111920.008	LB020425	24 Sep 2014	29 Sep 2014	23 Dec 2014	01 Oct 2014	23 Dec 2014	01 Oct 2014
ASS3-1	CE111920.009	LB020425	25 Sep 2014	29 Sep 2014	24 Dec 2014	01 Oct 2014	24 Dec 2014	01 Oct 2014
ASS3-2	CE111920.010	LB020425	25 Sep 2014	29 Sep 2014	24 Dec 2014	01 Oct 2014	24 Dec 2014	01 Oct 2014



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.

No surrogates were required for this job.



METHOD BLANKS

CE111920 R0

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.

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

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: $MAD = 100 \times \frac{SDL}{Mean} + LR$

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.

TAA (Titratable Actual Acidity)

Method: ME-(AU)-[ENV]AN219

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
CE111920.001	LB020426.013	pH KCl	pH Units	-	4.1	4.1	30	0
		Titratable Actual Acidity	kg H ₂ SO ₄ /T	0.25	6.0	5.9	34	1
		Titratable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	122	121	34	1
		Titratable Actual Acidity (TAA) S%w/w	%w/w S	0.01	0.20	0.19	35	1
		Sulphur (SKCl)	%w/w	0.005	<0.005	<0.005	200	0
		Calcium (CaKCl)	%w/w	0.005	0.079	0.077	36	2
CE111923.001	LB020426.024	Magnesium (MgKCl)	%w/w	0.005	0.025	0.025	50	0
		pH KCl	pH Units	-	7.5	7.4	30	1
		Titratable Actual Acidity	kg H ₂ SO ₄ /T	0.25	<0.25	<0.25	200	0
		Titratable Actual Acidity (TAA) moles H ⁺ /tonne	moles H ⁺ /T	5	<5	<5	200	0
		Titratable Actual Acidity (TAA) S%w/w	%w/w S	0.01	<0.01	<0.01	200	0
		Sulphur (SKCl)	%w/w	0.005	<0.005	<0.005	200	0
		Calcium (CaKCl)	%w/w	0.005	0.066	0.068	37	3
		Magnesium (MgKCl)	%w/w	0.005	<0.005	<0.005	200	0

TPA (Titratable Peroxide Acidity)

Method: ME-(AU)-[ENV]AN219

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
CE111920.001	LB020425.013	Peroxide pH (pH Ox)	pH Units	-	5.2	5.2	30	0
		TPA as kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /T	0.25	6.1	5.9	34	3
		TPA as moles H ⁺ /tonne	moles H ⁺ /T	5	125	121	34	3
		TPA as S % W/W	%w/w S	0.01	0.20	0.19	35	3
		Sulphur (Sp)	%w/w	0.005	0.011	0.010	79	11
		Calcium (Cap)	%w/w	0.005	0.092	0.088	36	4
CE111923.001	LB020425.025	Magnesium (Mgp)	%w/w	0.005	0.027	0.026	49	1
		Peroxide pH (pH Ox)	pH Units	-	6.3	6.2	30	2
		TPA as kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /T	0.25	<0.25	<0.25	200	0
		TPA as moles H ⁺ /tonne	moles H ⁺ /T	5	<5	<5	200	0
		TPA as S % W/W	%w/w S	0.01	<0.01	<0.01	200	0
		ANCE as % CaCO ₃	% CaCO ₃	0.01	<0.01	<0.01	200	0
		ANCE as moles H ⁺ /tonne	moles H ⁺ /T	5	<5	<5	200	0
		ANCE as S % W/W	%w/w S	0.01	<0.01	<0.01	200	0
		Sulphur (Sp)	%w/w	0.005	0.009	0.009	86	6
		Calcium (Cap)	%w/w	0.005	0.079	0.079	36	0
		Magnesium (Mgp)	%w/w	0.005	<0.005	<0.005	155	0



LABORATORY CONTROL SAMPLES

CE111920 R0

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.

TAA (Titratable Actual Acidity)

Method: ME-(AU)-[ENV]AN219

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB020426.002	pH KCl	pH Units	-	3.6	3.68	90 - 110	98
	Titratable Actual Acidity (TAA) moles H+/tonne	moles H+/T	5	47	54.42	80 - 120	87
	Titratable Actual Acidity (TAA) S%w/w	%w/w S	0.01	0.08	0.087	80 - 120	87
	Sulphur (SKCl)	%w/w	0.005	0.22	0.237	80 - 120	94
	Calcium (CaKCl)	%w/w	0.005	0.098	0.09	80 - 120	108
	Magnesium (MgKCl)	%w/w	0.005	0.097	0.101	80 - 120	96

TPA (Titratable Peroxide Acidity)

Method: ME-(AU)-[ENV]AN218

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB020425.002	Peroxide pH (pH Ox)	pH Units	-	2.2	2.19	90 - 110	100
	TPA as kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /T	0.25	25	24.06	80 - 120	105
	TPA as moles H+/tonne	moles H+/T	5	514	490.5	80 - 120	105
	TPA as S % W/W	%w/w S	0.01	0.82	0.787	80 - 120	105
	Sulphur (Sp)	%w/w	0.005	1.1	0.994	80 - 120	108
	Magnesium (Mgp)	%w/w	0.005	0.099	0.096	80 - 120	103



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.

No matrix spikes were required for this job.



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.sgs.com.au/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.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 Low surrogate recovery due to the sample emulsifying during extraction.
- ⑩ Legionella Test Result <10 cfu/mL
Control Strategy (1)
Maintain Monthly Program or at least 3-monthly monitoring. Maintain water treatment program
- ⑪ Legionella Test Result <1000 cfu/mL
Control Strategy (2)
Investigate problem. Review water treatment program. Take necessary remedial action (including immediate online disinfection) and undertake control strategy 3.
- ⑫ Control Strategy (3)
Retest water within 3 to 7 days of plant operation. If not detected, continue to retest water every 3 to 7 days until 2 consecutive samples return readings of 'not detected', then repeat control strategy (1).
If detected at <100 cfu/mL, repeat control strategy (2).
If detected at >100 cfu/mL, investigate the problem and review water treatment program, and immediately carry out online decontamination.
If detected at >1000 cfu/mL, undertake control strategy (4).
- ⑬ Legionella Test Result >1000 cfu/mL
Control Strategy (4)
Investigate problem. Review water treatment program.
Take necessary remedial action (including immediate online decontamination) and undertake control strategy (5).
- ⑭ Control Strategy (5)
Retest water within 3 to 7 days of plant operation. If not detected, continue to retest water every 3 to 7 days until 2 consecutive samples return readings of 'not detected', then repeat control strategy (1).
If detected at <100 cfu/mL, repeat control strategy (1)
If detected at >100 and <1000 cfu/mL, investigate the problem and review water treatment program, immediately carry out online decontamination, and repeat control strategy (5).
If detected at >1000 cfu/mL, investigate and review the water treatment program, immediately carry out system decontamination and repeat control strategy (5).
- ⑮ HPC - Test Result < 100 000 cfu/mL
Control Strategy (1)
Maintain Monthly Program. Maintain water treatment program.



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.sgs.com.au/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

- ⑯ HPC Test Result > 100 000 cfu/mL <5 000 000 cfu/mL
Control Strategy (2)
Investigate problem. Review water treatment program. Take necessary remedial action (including immediate online disinfection)
and undertake control strategy 3.
- ⑰ Control Strategy (3)
Retest water within 3 to 7 days of plant operation. If the test result is <100 000 cfu/mL, repeat control strategy (1)
If the test result is >100 000 cfu/mL but <5 000 000 cfu/mL, undertake control strategy (2).
If the test result is >5 000 000 cfu/mL, undertake control strategy (4).
- ⑱ HPC Test Result >5 000 000 cfu/mL
Control Strategy (4)
Investigate problem. Review water treatment program. Take necessary remedial action (including immediate online disinfection)
and undertake control strategy (5).
- ⑲ Control Strategy (5)
Retest water within 3 to 7 days of plant operation. If the test result is <100 000 cfu/mL, repeat control strategy (1)
If the test result is >100 000 cfu/mL but <5 000 000 cfu/mL, undertake control strategy (4).
If the test result is >5 000 000 cfu/mL, investigate the problem.
review the water treatment program, and carry out immediate online decontamination.
- ⑳ Enterococci - Median result should not exceed 230 cfu/100mL
(maximum number in any one sample: 450-700 cfu/100mL)
Sourced from NHMRC (National Health and Medical Research Council)
& NWQMS (National Water Quality Management Strategy)
-Australian Guidelines for Recreational Use of Water. Version Oct 2000.
- † Refer to Analytical Report comments for further information.

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Order Number **E22317**
Samples 8
Date Started 10 Oct 2014

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SGS Reference **SE131994 R0**
Report Number 0000093318
Date Reported 16 Oct 2014
Date Received 08 Oct 2014

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

VOC/VPH - The Limit of Reporting (LOR) has been raised due to interferences from the sample matrix.

SIGNATORIES



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ANALYTICAL REPORT

SE131994 R0

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE131994.001 Water 08 Oct 2014 MW1-1	SE131994.002 Water 08 Oct 2014 MW2-1	SE131994.003 Water 08 Oct 2014 MW3-1	SE131994.004 Water 08 Oct 2014 MW4-1
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VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
1,2-dichloropropane	µg/L	0.5	4.2	<0.5	<0.5	<2.5 †
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	<25 †
Chloromethane	µg/L	5	<5	<5	<5	<25 †
Vinyl chloride (Chloroethene)	µg/L	0.3	57	<0.3	<0.3	<1.5 †
Bromomethane	µg/L	10	<10	<10	<10	<50 †
Chloroethane	µg/L	5	<5	<5	<5	<25 †
Trichlorofluoromethane	µg/L	1	<1	<1	<1	<5 †
Iodomethane	µg/L	5	<5	<5	<5	<25 †
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	23
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	<5	<25 †
Allyl chloride	µg/L	2	<2	<2	<2	<10 †
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
1,1-dichloroethane	µg/L	0.5	3.3	<0.5	<0.5	34
cis-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
1,2-dichloroethane	µg/L	0.5	3600	1.8	<0.5	<2.5 †
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	0.6	<0.5	<0.5	<2.5 †
1,1,2-trichloroethane	µg/L	0.5	41	<0.5	<0.5	<2.5 †
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	<5 †
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	<5 †
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †

Halogenated Aromatics

Chlorobenzene	µg/L	0.5	23	<0.5	<0.5	270
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	<15 †
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †



ANALYTICAL REPORT

SE131994 R0

	Sample Number	SE131994.001	SE131994.002	SE131994.003	SE131994.004
	Sample Matrix	Water	Water	Water	Water
	Sample Date	08 Oct 2014	08 Oct 2014	08 Oct 2014	08 Oct 2014
	Sample Name	MW1-1	MW2-1	MW3-1	MW4-1
Parameter	Units	LOR			

VOCs in Water Method: AN433/AN434 (continued)

Monocyclic Aromatic Hydrocarbons

Benzene	µg/L	0.5	2.7	<0.5	<0.5	710
Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	250
m/p-xylene	µg/L	1	<1	<1	<1	150
o-xylene	µg/L	0.5	1.2	<0.5	<0.5	190
Styrene (Vinyl benzene)	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	2.4	<0.5	63
n-propylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	50
1,3,5-trimethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	140
tert-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
1,2,4-trimethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	590
sec-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
p-isopropyltoluene	µg/L	0.5	<0.5	<0.5	<0.5	4.8
n-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †

Nitrogenous Compounds

Acrylonitrile	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
2-nitropropane	µg/L	100	<100	<100	<100	<500 †

Oxygenated Compounds

Acetone (2-propanone)	µg/L	10	<10	<10	<10	<50 †
MIBE (Methyl-tert-butyl ether)	µg/L	2	<2	<2	<2	<10 †
Vinyl acetate	µg/L	10	<10	<10	<10	<50 †
MEK (2-butanone)	µg/L	10	<10	<10	<10	<50 †
MIBK (4-methyl-2-pentanone)	µg/L	5	<5	<5	<5	<25 †
2-hexanone (MBK)	µg/L	5	<5	<5	<5	<25 †

Polycyclic VOCs

Naphthalene	µg/L	0.5	<0.5	<0.5	<0.5	27
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Sulphonated Compounds

Carbon disulfide	µg/L	2	<2	<2	<2	<10 †
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ANALYTICAL REPORT

SE131994 R0

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE131994.001 Water 08 Oct 2014 MW1-1	SE131994.002 Water 08 Oct 2014 MW2-1	SE131994.003 Water 08 Oct 2014 MW3-1	SE131994.004 Water 08 Oct 2014 MW4-1
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VOCs in Water Method: AN433/AN434 (continued)

Surrogates

Dibromofluoromethane (Surrogate)	%	-	125	80	84	99
d4-1,2-dichloroethane (Surrogate)	%	-	111	106	113	101
d8-toluene (Surrogate)	%	-	99	84	82	84
Bromofluorobenzene (Surrogate)	%	-	104	107	92	104

Totals

Total Xylenes	µg/L	1.5	<1.5	<1.5	<1.5	350
Total BTEX	µg/L	3	4	<3	<3	1300
Total VOC	µg/L	10	-	-	-	-

Trihalomethanes

Chloroform (THM)	µg/L	0.5	180	1.1	<0.5	<2.5 †
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	<2.5 †

Volatile Petroleum Hydrocarbons in Water Method: AN433/AN434/AN410

TRH C6-C10	µg/L	50	12000	<50	<50	1000
TRH C6-C9	µg/L	40	8800	<40	<40	440

Surrogates

Dibromofluoromethane (Surrogate)	%	-	118	77	77	95
d4-1,2-dichloroethane (Surrogate)	%	-	104	79	77	97
d8-toluene (Surrogate)	%	-	97	81	87	83
Bromofluorobenzene (Surrogate)	%	-	77	95	85	108

VPH F Bands

Benzene (F0)	µg/L	0.5	2.7	<0.5	<0.5	710
TRH C6-C10 minus BTEX (F1)	µg/L	50	12000	<50	<50	<250 †



ANALYTICAL REPORT

SE131994 R0

Parameter	Sample Number		SE131994.001	SE131994.002	SE131994.003	SE131994.004
	Sample Matrix		Water	Water	Water	Water
	Sample Date		08 Oct 2014	08 Oct 2014	08 Oct 2014	08 Oct 2014
	Sample Name		MW1-1	MW2-1	MW3-1	MW4-1
Units	LOR					

TRH (Total Recoverable Hydrocarbons) in Water Method: AN403

TRH C10-C14	µg/L	50	71	<50	370	2000
TRH C15-C28	µg/L	200	<200	<200	570	530
TRH C29-C36	µg/L	200	<200	<200	<200	<200
TRH C37-C40	µg/L	200	<200	<200	<200	<200
TRH C10-C36	µg/L	450	<450	<450	940	2500
TRH C10-C40	µg/L	650	<650	<650	940	2500

TRH F Bands

TRH >C10-C16 (F2)	µg/L	60	63	<60	480	1600
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500	<500

PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: AN420

Naphthalene	µg/L	0.1	0.2	0.1	<0.1	60
2-methylnaphthalene	µg/L	0.1	0.1	0.1	<0.1	3.3
1-methylnaphthalene	µg/L	0.1	<0.1	0.1	0.2	2.8
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	0.1	0.1	0.4
Fluorene	µg/L	0.1	<0.1	0.2	<0.1	0.4
Phenanthrene	µg/L	0.1	<0.1	0.3	<0.1	0.6
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1	0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	<1	1	<1	67

Surrogates

d5-nitrobenzene (Surrogate)	%	-	94	90	88	86
2-fluorobiphenyl (Surrogate)	%	-	90	84	78	78
d14-p-terphenyl (Surrogate)	%	-	90	84	78	84

Total Phenolics in Water Method: AN289

Total Phenols	mg/L	0.01	<0.01	<0.01	0.01	0.06
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Trace Metals (Dissolved) in Water by ICPMS Method: AN318

Arsenic, As	µg/L	1	<1	<1	<1	<1
Cadmium, Cd	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
Chromium, Cr	µg/L	1	<1	<1	<1	<1
Copper, Cu	µg/L	1	3	3	4	2
Lead, Pb	µg/L	1	<1	<1	<1	<1
Nickel, Ni	µg/L	1	38	34	11	11
Zinc, Zn	µg/L	5	99	100	38	39

Mercury (dissolved) in Water Method: AN311/AN312

Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
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ANALYTICAL REPORT

SE131994 R0

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE131994.005 Water 08 Oct 2014 MW5-1	SE131994.006 Water 08 Oct 2014 B1	SE131994.007 Water 08 Oct 2014 RB-1	SE131994.008 Water 08 Oct 2014 TB-1
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VOCs in Water Method: AN433/AN434

Fumigants

2,2-dichloropropane	µg/L	0.5	<0.5	-	-	-
1,2-dichloropropane	µg/L	0.5	<0.5	-	-	-
cis-1,3-dichloropropene	µg/L	0.5	<0.5	-	-	-
trans-1,3-dichloropropene	µg/L	0.5	<0.5	-	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	-	-	-

Halogenated Aliphatics

Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	-	-	-
Chloromethane	µg/L	5	<5	-	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	-	-	-
Bromomethane	µg/L	10	<10	-	-	-
Chloroethane	µg/L	5	<5	-	-	-
Trichlorofluoromethane	µg/L	1	<1	-	-	-
Iodomethane	µg/L	5	<5	-	-	-
1,1-dichloroethene	µg/L	0.5	34	-	-	-
Dichloromethane (Methylene chloride)	µg/L	5	<5	-	-	-
Allyl chloride	µg/L	2	<2	-	-	-
trans-1,2-dichloroethene	µg/L	0.5	<0.5	-	-	-
1,1-dichloroethane	µg/L	0.5	6.4	-	-	-
cis-1,2-dichloroethene	µg/L	0.5	<0.5	-	-	-
Bromochloromethane	µg/L	0.5	<0.5	-	-	-
1,2-dichloroethane	µg/L	0.5	0.7	-	-	-
1,1,1-trichloroethane	µg/L	0.5	<0.5	-	-	-
1,1-dichloropropene	µg/L	0.5	<0.5	-	-	-
Carbon tetrachloride	µg/L	0.5	<0.5	-	-	-
Dibromomethane	µg/L	0.5	<0.5	-	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	-	-	-
1,1,2-trichloroethane	µg/L	0.5	<0.5	-	-	-
1,3-dichloropropane	µg/L	0.5	<0.5	-	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	-	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	-	-	-
cis-1,4-dichloro-2-butene	µg/L	1	<1	-	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	-	-	-
1,2,3-trichloropropane	µg/L	0.5	<0.5	-	-	-
trans-1,4-dichloro-2-butene	µg/L	1	<1	-	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	-	-	-
Hexachlorobutadiene	µg/L	0.5	<0.5	-	-	-

Halogenated Aromatics

Chlorobenzene	µg/L	0.5	<0.5	-	-	-
Bromobenzene	µg/L	0.5	<0.5	-	-	-
2-chlorotoluene	µg/L	0.5	<0.5	-	-	-
4-chlorotoluene	µg/L	0.5	<0.5	-	-	-
1,3-dichlorobenzene	µg/L	0.5	<0.5	-	-	-
1,4-dichlorobenzene	µg/L	0.3	<0.3	-	-	-
1,2-dichlorobenzene	µg/L	0.5	<0.5	-	-	-
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	-	-	-
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	-	-	-



ANALYTICAL REPORT

SE131994 R0

	Sample Number	SE131994.005	SE131994.006	SE131994.007	SE131994.008
	Sample Matrix	Water	Water	Water	Water
	Sample Date	08 Oct 2014	08 Oct 2014	08 Oct 2014	08 Oct 2014
	Sample Name	MW5-1	B1	RB-1	TB-1
Parameter	Units	LOR			

VOCs in Water Method: AN433/AN434 (continued)

Monocyclic Aromatic Hydrocarbons

Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
m/p-xylene	µg/L	1	<1	<1	<1	<1
o-xylene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
Styrene (Vinyl benzene)	µg/L	0.5	<0.5	-	-	-
Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	-	-	-
n-propylbenzene	µg/L	0.5	<0.5	-	-	-
1,3,5-trimethylbenzene	µg/L	0.5	<0.5	-	-	-
tert-butylbenzene	µg/L	0.5	<0.5	-	-	-
1,2,4-trimethylbenzene	µg/L	0.5	<0.5	-	-	-
sec-butylbenzene	µg/L	0.5	<0.5	-	-	-
p-isopropyltoluene	µg/L	0.5	<0.5	-	-	-
n-butylbenzene	µg/L	0.5	<0.5	-	-	-

Nitrogenous Compounds

Acrylonitrile	µg/L	0.5	<0.5	-	-	-
2-nitropropane	µg/L	100	<100	-	-	-

Oxygenated Compounds

Acetone (2-propanone)	µg/L	10	<10	-	-	-
MIBE (Methyl-tert-butyl ether)	µg/L	2	<2	-	-	-
Vinyl acetate	µg/L	10	<10	-	-	-
MEK (2-butanone)	µg/L	10	<10	-	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	<5	-	-	-
2-hexanone (MBK)	µg/L	5	<5	-	-	-

Polycyclic VOCs

Naphthalene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
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Sulphonated Compounds

Carbon disulfide	µg/L	2	<2	-	-	-
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ANALYTICAL REPORT

SE131994 R0

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE131994.005 Water 08 Oct 2014 MW5-1	SE131994.006 Water 08 Oct 2014 B1	SE131994.007 Water 08 Oct 2014 RB-1	SE131994.008 Water 08 Oct 2014 TB-1
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VOCs in Water Method: AN433/AN434 (continued)

Surrogates

Dibromofluoromethane (Surrogate)	%	-	118	70	71	80
d4-1,2-dichloroethane (Surrogate)	%	-	118	74	75	85
d8-toluene (Surrogate)	%	-	94	85	85	80
Bromofluorobenzene (Surrogate)	%	-	102	84	84	82

Totals

Total Xylenes	µg/L	1.5	<1.5	<1.5	<1.5	<1.5
Total BTEX	µg/L	3	<3	<3	<3	<3
Total VOC	µg/L	10	-	-	-	-

Trihalomethanes

Chloroform (THM)	µg/L	0.5	0.6	-	-	-
Bromodichloromethane (THM)	µg/L	0.5	<0.5	-	-	-
Dibromochloromethane (THM)	µg/L	0.5	<0.5	-	-	-
Bromoform (THM)	µg/L	0.5	<0.5	-	-	-

Volatile Petroleum Hydrocarbons in Water Method: AN433/AN434/AN410

TRH C6-C10	µg/L	50	<50	<50	<50	<50
TRH C6-C9	µg/L	40	<40	<40	<40	<40

Surrogates

Dibromofluoromethane (Surrogate)	%	-	116	70	71	80
d4-1,2-dichloroethane (Surrogate)	%	-	110	74	75	85
d8-toluene (Surrogate)	%	-	98	85	85	80
Bromofluorobenzene (Surrogate)	%	-	76	84	84	82

VPH F Bands

Benzene (F0)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	<50	<50



ANALYTICAL REPORT

SE131994 R0

Sample Number	SE131994.005	SE131994.006	SE131994.007	SE131994.008
Sample Matrix	Water	Water	Water	Water
Sample Date	08 Oct 2014	08 Oct 2014	08 Oct 2014	08 Oct 2014
Sample Name	MW5-1	B1	RB-1	TB-1
Parameter	Units	LOR		

TRH (Total Recoverable Hydrocarbons) in Water Method: AN403

TRH C10-C14	µg/L	50	<50	<50	<50	-
TRH C15-C28	µg/L	200	<200	<200	<200	-
TRH C29-C36	µg/L	200	<200	<200	<200	-
TRH C37-C40	µg/L	200	<200	<200	<200	-
TRH C10-C36	µg/L	450	<450	<450	<450	-
TRH C10-C40	µg/L	650	<650	<650	<650	-

TRH F Bands

TRH >C10-C16 (F2)	µg/L	60	<60	<60	<60	-
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500	-
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500	-

PAH (Polynuclear Aromatic Hydrocarbons) in Water Method: AN420

Naphthalene	µg/L	0.1	<0.1	-	-	-
2-methylnaphthalene	µg/L	0.1	<0.1	-	-	-
1-methylnaphthalene	µg/L	0.1	<0.1	-	-	-
Acenaphthylene	µg/L	0.1	<0.1	-	-	-
Acenaphthene	µg/L	0.1	<0.1	-	-	-
Fluorene	µg/L	0.1	<0.1	-	-	-
Phenanthrene	µg/L	0.1	<0.1	-	-	-
Anthracene	µg/L	0.1	<0.1	-	-	-
Fluoranthene	µg/L	0.1	<0.1	-	-	-
Pyrene	µg/L	0.1	<0.1	-	-	-
Benzo(a)anthracene	µg/L	0.1	<0.1	-	-	-
Chrysene	µg/L	0.1	<0.1	-	-	-
Benzo(b&j)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 (18)	µg/L	1	<1	-	-	-

Surrogates

d5-nitrobenzene (Surrogate)	%	-	92	-	-	-
2-fluorobiphenyl (Surrogate)	%	-	88	-	-	-
d14-p-terphenyl (Surrogate)	%	-	84	-	-	-

Total Phenolics in Water Method: AN289

Total Phenols	mg/L	0.01	0.09	-	-	-
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Trace Metals (Dissolved) in Water by ICPMS Method: AN318

Arsenic, As	µg/L	1	<1	<1	<1	-
Cadmium, Cd	µg/L	0.1	<0.1	<0.1	<0.1	-
Chromium, Cr	µg/L	1	<1	<1	<1	-
Copper, Cu	µg/L	1	<1	2	<1	-
Lead, Pb	µg/L	1	<1	<1	<1	-
Nickel, Ni	µg/L	1	39	40	<1	-
Zinc, Zn	µg/L	5	70	80	11	-

Mercury (dissolved) in Water Method: AN311/AN312

Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	-
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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 (dissolved) in Water Method: ME-(AU)-[ENV]AN311/AN312

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB065444	mg/L	0.0001	<0.0001	0%	96%	58%

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

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Naphthalene	LB065266	µg/L	0.1	<0.1	88%
2-methylnaphthalene	LB065266	µg/L	0.1	<0.1	NA
1-methylnaphthalene	LB065266	µg/L	0.1	<0.1	NA
Acenaphthylene	LB065266	µg/L	0.1	<0.1	90%
Acenaphthene	LB065266	µg/L	0.1	<0.1	83%
Fluorene	LB065266	µg/L	0.1	<0.1	NA
Phenanthrene	LB065266	µg/L	0.1	<0.1	100%
Anthracene	LB065266	µg/L	0.1	<0.1	89%
Fluoranthene	LB065266	µg/L	0.1	<0.1	77%
Pyrene	LB065266	µg/L	0.1	<0.1	80%
Benzo(a)anthracene	LB065266	µg/L	0.1	<0.1	NA
Chrysene	LB065266	µg/L	0.1	<0.1	NA
Benzo(b&j)fluoranthene	LB065266	µg/L	0.1	<0.1	NA
Benzo(k)fluoranthene	LB065266	µg/L	0.1	<0.1	NA
Benzo(a)pyrene	LB065266	µg/L	0.1	<0.1	110%
Indeno(1,2,3-cd)pyrene	LB065266	µg/L	0.1	<0.1	NA
Dibenzo(a&h)anthracene	LB065266	µg/L	0.1	<0.1	NA
Benzo(ghi)perylene	LB065266	µg/L	0.1	<0.1	NA
Total PAH (18)	LB065266	µg/L	1	<1	

Surrogates

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
d5-nitrobenzene (Surrogate)	LB065266	%	-	102%	104%
2-fluorobiphenyl (Surrogate)	LB065266	%	-	102%	104%
d14-p-terphenyl (Surrogate)	LB065266	%	-	110%	112%



QC SUMMARY

SE131994 R0

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.

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Total Phenols	LB065373	mg/L	0.01	<0.01	1%	97%

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	LB065454	µg/L	1	<1	0%	100%	
Cadmium, Cd	LB065454	µg/L	0.1	<0.1	0 - 2%	102 - 104%	101%
Chromium, Cr	LB065454	µg/L	1	<1	0%	101%	95 - 98%
Copper, Cu	LB065454	µg/L	1	<1	0%	102%	92 - 100%
Lead, Pb	LB065454	µg/L	1	<1	0%	96 - 98%	95 - 97%
Nickel, Ni	LB065454	µg/L	1	<1	0%	99 - 100%	95%
Zinc, Zn	LB065454	µg/L	5	<5	0 - 1%	99 - 102%	97 - 99%

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

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
TRH C10-C14	LB065266	µg/L	50	<50	97%
TRH C15-C28	LB065266	µg/L	200	<200	98%
TRH C29-C36	LB065266	µg/L	200	<200	98%
TRH C37-C40	LB065266	µg/L	200	<200	NA
TRH C10-C36	LB065266	µg/L	450	<450	NA
TRH C10-C40	LB065266	µg/L	650	<650	NA

TRH F Bands

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
TRH >C10-C16 (F2)	LB065266	µg/L	60	<60	97%
TRH >C16-C34 (F3)	LB065266	µg/L	500	<500	98%
TRH >C34-C40 (F4)	LB065266	µg/L	500	<500	101%

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.

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

Fumigants

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
2,2-dichloropropane	LB065269	µg/L	0.5	<0.5	NA
1,2-dichloropropane	LB065269	µg/L	0.5	<0.5	NA
cis-1,3-dichloropropene	LB065269	µg/L	0.5	<0.5	NA
trans-1,3-dichloropropene	LB065269	µg/L	0.5	<0.5	NA
1,2-dibromoethane (EDB)	LB065269	µg/L	0.5	<0.5	NA

Halogenated Aliphatics

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Dichlorodifluoromethane (CFC-12)	LB065269	µg/L	5	<5	NA
Chloromethane	LB065269	µg/L	5	<5	NA
Vinyl chloride (Chloroethene)	LB065269	µg/L	0.3	<0.3	NA
Bromomethane	LB065269	µg/L	10	<10	NA
Chloroethane	LB065269	µg/L	5	<5	NA
Trichlorofluoromethane	LB065269	µg/L	1	<1	NA
Iodomethane	LB065269	µg/L	5	<5	NA
1,1-dichloroethene	LB065269	µg/L	0.5	<0.5	110%
Dichloromethane (Methylene chloride)	LB065269	µg/L	5	<5	NA
Allyl chloride	LB065269	µg/L	2	<2	NA
trans-1,2-dichloroethene	LB065269	µg/L	0.5	<0.5	NA
1,1-dichloroethane	LB065269	µg/L	0.5	<0.5	NA
cis-1,2-dichloroethene	LB065269	µg/L	0.5	<0.5	NA
Bromochloromethane	LB065269	µg/L	0.5	<0.5	NA
1,2-dichloroethane	LB065269	µg/L	0.5	<0.5	110%
1,1,1-trichloroethane	LB065269	µg/L	0.5	<0.5	NA
1,1-dichloropropene	LB065269	µg/L	0.5	<0.5	NA
Carbon tetrachloride	LB065269	µg/L	0.5	<0.5	NA
Dibromomethane	LB065269	µg/L	0.5	<0.5	NA
Trichloroethene (Trichloroethylene,TCE)	LB065269	µg/L	0.5	<0.5	108%
1,1,2-trichloroethane	LB065269	µg/L	0.5	<0.5	NA
1,3-dichloropropane	LB065269	µg/L	0.5	<0.5	NA
Tetrachloroethene (Perchloroethylene,PCE)	LB065269	µg/L	0.5	<0.5	NA
1,1,1,2-tetrachloroethane	LB065269	µg/L	0.5	<0.5	NA
cis-1,4-dichloro-2-butene	LB065269	µg/L	1	<1	NA
1,1,2,2-tetrachloroethane	LB065269	µg/L	0.5	<0.5	NA
1,2,3-trichloropropane	LB065269	µg/L	0.5	<0.5	NA
trans-1,4-dichloro-2-butene	LB065269	µg/L	1	<1	NA
1,2-dibromo-3-chloropropane	LB065269	µg/L	0.5	<0.5	NA
Hexachlorobutadiene	LB065269	µg/L	0.5	<0.5	NA

Halogenated Aromatics

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Chlorobenzene	LB065269	µg/L	0.5	<0.5	108%
Bromobenzene	LB065269	µg/L	0.5	<0.5	NA
2-chlorotoluene	LB065269	µg/L	0.5	<0.5	NA
4-chlorotoluene	LB065269	µg/L	0.5	<0.5	NA
1,3-dichlorobenzene	LB065269	µg/L	0.5	<0.5	NA
1,4-dichlorobenzene	LB065269	µg/L	0.3	<0.3	NA
1,2-dichlorobenzene	LB065269	µg/L	0.5	<0.5	NA
1,2,4-trichlorobenzene	LB065269	µg/L	0.5	<0.5	NA
1,2,3-trichlorobenzene	LB065269	µg/L	0.5	<0.5	NA

Monocyclic Aromatic Hydrocarbons

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.

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

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Benzene	LB065269	µg/L	0.5	<0.5	110%
Toluene	LB065269	µg/L	0.5	<0.5	108%
Ethylbenzene	LB065269	µg/L	0.5	<0.5	108%
m/p-xylene	LB065269	µg/L	1	<1	108%
o-xylene	LB065269	µg/L	0.5	<0.5	108%
Styrene (Vinyl benzene)	LB065269	µg/L	0.5	<0.5	NA
Isopropylbenzene (Cumene)	LB065269	µg/L	0.5	<0.5	NA
n-propylbenzene	LB065269	µg/L	0.5	<0.5	NA
1,3,5-trimethylbenzene	LB065269	µg/L	0.5	<0.5	NA
tert-butylbenzene	LB065269	µg/L	0.5	<0.5	NA
1,2,4-trimethylbenzene	LB065269	µg/L	0.5	<0.5	NA
sec-butylbenzene	LB065269	µg/L	0.5	<0.5	NA
p-isopropyltoluene	LB065269	µg/L	0.5	<0.5	NA
n-butylbenzene	LB065269	µg/L	0.5	<0.5	NA

Nitrogenous Compounds

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Acrylonitrile	LB065269	µg/L	0.5	<0.5	NA

Oxygenated Compounds

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Acetone (2-propanone)	LB065269	µg/L	10	<10	NA
MtBE (Methyl-tert-butyl ether)	LB065269	µg/L	2	<1	NA
Vinyl acetate	LB065269	µg/L	10	<10	NA
MEK (2-butanone)	LB065269	µg/L	10	<10	NA
MIBK (4-methyl-2-pentanone)	LB065269	µg/L	5	<5	NA
2-hexanone (MBK)	LB065269	µg/L	5	<5	NA

Polycyclic VOCs

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Naphthalene	LB065269	µg/L	0.5	<0.5	NA

Sulphonated Compounds

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Carbon disulfide	LB065269	µg/L	2	<2	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Dibromofluoromethane (Surrogate)	LB065269	%	-	110%	99%
d4-1,2-dichloroethane (Surrogate)	LB065269	%	-	115%	94%
d8-toluene (Surrogate)	LB065269	%	-	93%	97%
Bromofluorobenzene (Surrogate)	LB065269	%	-	94%	103%

Totals

Parameter	QC Reference	Units	LOR	MB
Total Xylenes	LB065269	µg/L	1.5	<1.5
Total BTEX	LB065269	µg/L	3	<3

Trihalomethanes

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Chloroform (THM)	LB065269	µg/L	0.5	<0.5	89%
Bromodichloromethane (THM)	LB065269	µg/L	0.5	<0.5	NA

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.

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

				MB	LCS %Recovery
Dibromochloromethane (THM)	LB065269	µg/L	0.5	<0.5	NA
Bromoform (THM)	LB065269	µg/L	0.5	<0.5	NA

Volatile Petroleum Hydrocarbons in Water Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
TRH C6-C10	LB065269	µg/L	50	<50	107%
TRH C6-C9	LB065269	µg/L	40	<40	101%

Surrogates

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Dibromofluoromethane (Surrogate)	LB065269	%	-	116%	99%
d4-1,2-dichloroethane (Surrogate)	LB065269	%	-	115%	99%
d8-toluene (Surrogate)	LB065269	%	-	87%	100%
Bromofluorobenzene (Surrogate)	LB065269	%	-	78%	101%

VPH F Bands

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Benzene (F0)	LB065269	µg/L	0.5	<0.5	NA
TRH C6-C10 minus BTEX (F1)	LB065269	µg/L	50	<50	112%

METHOD

METHODOLOGY SUMMARY

AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN083	Separatory funnels are used for aqueous samples and extracted by transferring an appropriate volume (mass) of liquid into a separatory funnel and adding 3 serial aliquots of dichloromethane. Samples receive a single extraction at pH 7 to recover base / neutral analytes and two extractions at pH < 2 to recover acidic analytes. QC samples are prepared by spiking organic free water with target analytes and extracting as per samples.
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
AN311/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.
AN403	Additionally, the volatile C6-C9/C6-C10 fractions 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).
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.
AN433/AN434/AN410	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.



FOOTNOTES

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

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
[http://www.sgs.com.au/~media/Local/Australia/Documents/ Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf](http://www.sgs.com.au/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf)

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STATEMENT OF QA/QC PERFORMANCE

SE131994 R0

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Order Number **E22317**
Samples 8

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SGS Reference SE131994 R0
Report Number 0000093319
Date Reported 16 Oct 2014

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

Mercury (dissolved) in Water

1 item

SAMPLE SUMMARY

Sample counts by matrix	8 Waters	Type of documentation received	COC
Date documentation received	8/10/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		



HOLDING TIME SUMMARY

SE131994 R0

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.

Mercury (dissolved) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW1-1	SE131994.001	LB065444	08 Oct 2014	08 Oct 2014	05 Nov 2014	14 Oct 2014	05 Nov 2014	14 Oct 2014
MW2-1	SE131994.002	LB065444	08 Oct 2014	08 Oct 2014	05 Nov 2014	14 Oct 2014	05 Nov 2014	14 Oct 2014
MW3-1	SE131994.003	LB065444	08 Oct 2014	08 Oct 2014	05 Nov 2014	14 Oct 2014	05 Nov 2014	14 Oct 2014
MW4-1	SE131994.004	LB065444	08 Oct 2014	08 Oct 2014	05 Nov 2014	14 Oct 2014	05 Nov 2014	14 Oct 2014
MW5-1	SE131994.005	LB065444	08 Oct 2014	08 Oct 2014	05 Nov 2014	14 Oct 2014	05 Nov 2014	14 Oct 2014
B1	SE131994.006	LB065444	08 Oct 2014	08 Oct 2014	05 Nov 2014	14 Oct 2014	05 Nov 2014	14 Oct 2014
RB-1	SE131994.007	LB065444	08 Oct 2014	08 Oct 2014	05 Nov 2014	14 Oct 2014	05 Nov 2014	14 Oct 2014

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
MW1-1	SE131994.001	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
MW2-1	SE131994.002	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
MW3-1	SE131994.003	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
MW4-1	SE131994.004	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
MW5-1	SE131994.005	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
B1	SE131994.006	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
RB-1	SE131994.007	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW1-1	SE131994.001	LB065373	08 Oct 2014	08 Oct 2014	05 Nov 2014	13 Oct 2014	05 Nov 2014	13 Oct 2014
MW2-1	SE131994.002	LB065373	08 Oct 2014	08 Oct 2014	05 Nov 2014	13 Oct 2014	05 Nov 2014	13 Oct 2014
MW3-1	SE131994.003	LB065373	08 Oct 2014	08 Oct 2014	05 Nov 2014	13 Oct 2014	05 Nov 2014	13 Oct 2014
MW4-1	SE131994.004	LB065373	08 Oct 2014	08 Oct 2014	05 Nov 2014	13 Oct 2014	05 Nov 2014	13 Oct 2014
MW5-1	SE131994.005	LB065373	08 Oct 2014	08 Oct 2014	05 Nov 2014	13 Oct 2014	05 Nov 2014	13 Oct 2014

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
MW1-1	SE131994.001	LB065454	08 Oct 2014	08 Oct 2014	06 Apr 2015	14 Oct 2014	06 Apr 2015	15 Oct 2014
MW2-1	SE131994.002	LB065454	08 Oct 2014	08 Oct 2014	06 Apr 2015	14 Oct 2014	06 Apr 2015	15 Oct 2014
MW3-1	SE131994.003	LB065454	08 Oct 2014	08 Oct 2014	06 Apr 2015	14 Oct 2014	06 Apr 2015	15 Oct 2014
MW4-1	SE131994.004	LB065454	08 Oct 2014	08 Oct 2014	06 Apr 2015	14 Oct 2014	06 Apr 2015	15 Oct 2014
MW5-1	SE131994.005	LB065454	08 Oct 2014	08 Oct 2014	06 Apr 2015	14 Oct 2014	06 Apr 2015	15 Oct 2014
B1	SE131994.006	LB065454	08 Oct 2014	08 Oct 2014	06 Apr 2015	14 Oct 2014	06 Apr 2015	15 Oct 2014
RB-1	SE131994.007	LB065454	08 Oct 2014	08 Oct 2014	06 Apr 2015	14 Oct 2014	06 Apr 2015	15 Oct 2014

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
MW1-1	SE131994.001	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
MW2-1	SE131994.002	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
MW3-1	SE131994.003	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
MW4-1	SE131994.004	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
MW5-1	SE131994.005	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
B1	SE131994.006	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
RB-1	SE131994.007	LB065266	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014

VOCs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW1-1	SE131994.001	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	15 Oct 2014
MW2-1	SE131994.002	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	15 Oct 2014
MW3-1	SE131994.003	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	15 Oct 2014
MW4-1	SE131994.004	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	15 Oct 2014
MW5-1	SE131994.005	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	15 Oct 2014
B1	SE131994.006	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	15 Oct 2014
RB-1	SE131994.007	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	15 Oct 2014
TB-1	SE131994.008	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	15 Oct 2014

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW1-1	SE131994.001	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
MW2-1	SE131994.002	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
MW3-1	SE131994.003	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
MW4-1	SE131994.004	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014



HOLDING TIME SUMMARY

SE131994 R0

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 Water (continued)

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW5-1	SE131994.005	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
B1	SE131994.006	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
RB-1	SE131994.007	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014
TB-1	SE131994.008	LB065269	08 Oct 2014	08 Oct 2014	15 Oct 2014	09 Oct 2014	18 Nov 2014	16 Oct 2014

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 Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	MW1-1	SE131994.001	%	40 - 130%	90
	MW2-1	SE131994.002	%	40 - 130%	84
	MW3-1	SE131994.003	%	40 - 130%	78
	MW4-1	SE131994.004	%	40 - 130%	78
	MW5-1	SE131994.005	%	40 - 130%	88
d14-p-terphenyl (Surrogate)	MW1-1	SE131994.001	%	40 - 130%	90
	MW2-1	SE131994.002	%	40 - 130%	84
	MW3-1	SE131994.003	%	40 - 130%	78
	MW4-1	SE131994.004	%	40 - 130%	84
	MW5-1	SE131994.005	%	40 - 130%	84
d5-nitrobenzene (Surrogate)	MW1-1	SE131994.001	%	40 - 130%	94
	MW2-1	SE131994.002	%	40 - 130%	90
	MW3-1	SE131994.003	%	40 - 130%	88
	MW4-1	SE131994.004	%	40 - 130%	86
	MW5-1	SE131994.005	%	40 - 130%	92

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	MW1-1	SE131994.001	%	40 - 130%	104
	MW2-1	SE131994.002	%	40 - 130%	107
	MW3-1	SE131994.003	%	40 - 130%	92
	MW4-1	SE131994.004	%	40 - 130%	104
	MW5-1	SE131994.005	%	40 - 130%	102
	B1	SE131994.006	%	40 - 130%	84
	RB-1	SE131994.007	%	40 - 130%	84
	TB-1	SE131994.008	%	40 - 130%	82
d4-1,2-dichloroethane (Surrogate)	MW1-1	SE131994.001	%	40 - 130%	111
	MW2-1	SE131994.002	%	40 - 130%	106
	MW3-1	SE131994.003	%	40 - 130%	113
	MW4-1	SE131994.004	%	40 - 130%	101
	MW5-1	SE131994.005	%	40 - 130%	118
	B1	SE131994.006	%	40 - 130%	74
	RB-1	SE131994.007	%	40 - 130%	75
	TB-1	SE131994.008	%	40 - 130%	85
d8-toluene (Surrogate)	MW1-1	SE131994.001	%	40 - 130%	99
	MW2-1	SE131994.002	%	40 - 130%	84
	MW3-1	SE131994.003	%	40 - 130%	82
	MW4-1	SE131994.004	%	40 - 130%	84
	MW5-1	SE131994.005	%	40 - 130%	94
	B1	SE131994.006	%	40 - 130%	85
	RB-1	SE131994.007	%	40 - 130%	85
	TB-1	SE131994.008	%	40 - 130%	80
Dibromofluoromethane (Surrogate)	MW1-1	SE131994.001	%	40 - 130%	125
	MW2-1	SE131994.002	%	40 - 130%	80
	MW3-1	SE131994.003	%	40 - 130%	84
	MW4-1	SE131994.004	%	40 - 130%	99
	MW5-1	SE131994.005	%	40 - 130%	118
	B1	SE131994.006	%	40 - 130%	70
	RB-1	SE131994.007	%	40 - 130%	71
	TB-1	SE131994.008	%	40 - 130%	80

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	MW1-1	SE131994.001	%	60 - 130%	77
	MW2-1	SE131994.002	%	60 - 130%	95
	MW3-1	SE131994.003	%	60 - 130%	85
	MW4-1	SE131994.004	%	60 - 130%	108
	MW5-1	SE131994.005	%	60 - 130%	76
	B1	SE131994.006	%	60 - 130%	84
	RB-1	SE131994.007	%	60 - 130%	84
	TB-1	SE131994.008	%	60 - 130%	82
d4-1,2-dichloroethane (Surrogate)	MW1-1	SE131994.001	%	60 - 130%	104

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

Result is shown in **Green** when within suggested criteria or **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 Water (continued)

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d4-1,2-dichloroethane (Surrogate)	MW2-1	SE131994.002	%	60 - 130%	79
	MW3-1	SE131994.003	%	60 - 130%	77
	MW4-1	SE131994.004	%	60 - 130%	97
	MW5-1	SE131994.005	%	60 - 130%	110
	B1	SE131994.006	%	60 - 130%	74
	RB-1	SE131994.007	%	60 - 130%	75
	TB-1	SE131994.008	%	60 - 130%	85
d8-toluene (Surrogate)	MW1-1	SE131994.001	%	60 - 130%	97
	MW2-1	SE131994.002	%	60 - 130%	81
	MW3-1	SE131994.003	%	60 - 130%	87
	MW4-1	SE131994.004	%	60 - 130%	83
	MW5-1	SE131994.005	%	60 - 130%	98
	B1	SE131994.006	%	60 - 130%	85
	RB-1	SE131994.007	%	60 - 130%	85
Dibromofluoromethane (Surrogate)	TB-1	SE131994.008	%	60 - 130%	80
	MW1-1	SE131994.001	%	60 - 130%	118
	MW2-1	SE131994.002	%	60 - 130%	77
	MW3-1	SE131994.003	%	60 - 130%	77
	MW4-1	SE131994.004	%	60 - 130%	95
	MW5-1	SE131994.005	%	60 - 130%	116
	B1	SE131994.006	%	60 - 130%	70
	RB-1	SE131994.007	%	60 - 130%	71
	TB-1	SE131994.008	%	60 - 130%	80



METHOD BLANKS

SE131994 R0

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
LB065444.001	Mercury	mg/L	0.0001	<0.0001

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB065266.001	Naphthalene	µg/L	0.1	<0.1
	2-methylnaphthalene	µg/L	0.1	<0.1
	1-methylnaphthalene	µg/L	0.1	<0.1
	Acenaphthylene	µg/L	0.1	<0.1
	Acenaphthene	µg/L	0.1	<0.1
	Fluorene	µg/L	0.1	<0.1
	Phenanthrene	µg/L	0.1	<0.1
	Anthracene	µg/L	0.1	<0.1
	Fluoranthene	µg/L	0.1	<0.1
	Pyrene	µg/L	0.1	<0.1
	Benzo(a)anthracene	µg/L	0.1	<0.1
	Chrysene	µg/L	0.1	<0.1
	Benzo(a)pyrene	µg/L	0.1	<0.1
	Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
	Dibenzo(a,h)anthracene	µg/L	0.1	<0.1
	Benzo(ghi)perylene	µg/L	0.1	<0.1
Surrogates	d5-nitrobenzene (Surrogate)	%	-	102
	2-fluorobiphenyl (Surrogate)	%	-	102
	d14-p-terphenyl (Surrogate)	%	-	110

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result
LB065373.001	Total Phenols	mg/L	0.01	<0.01

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result
LB065454.001	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	5	<5
LB065454.025	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	5	<5

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB065266.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result
LB065269.001	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5
		1,2-dichloropropane	µg/L	0.5	<0.5
		cis-1,3-dichloropropene	µg/L	0.5	<0.5
		trans-1,3-dichloropropene	µg/L	0.5	<0.5
		1,2-dibromoethane (EDB)	uo/L	0.5	<0.5



METHOD BLANKS

SE131994 R0

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.

VOCs in Water (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB065269.001	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5
		Chloromethane	µg/L	5	<5
		Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3
		Bromomethane	µg/L	10	<10
		Chloroethane	µg/L	5	<5
		Trichlorofluoromethane	µg/L	1	<1
		Iodomethane	µg/L	5	<5
		1,1-dichloroethene	µg/L	0.5	<0.5
		Dichloromethane (Methylene chloride)	µg/L	5	<5
		Allyl chloride	µg/L	2	<2
		trans-1,2-dichloroethene	µg/L	0.5	<0.5
		1,1-dichloroethane	µg/L	0.5	<0.5
		cis-1,2-dichloroethene	µg/L	0.5	<0.5
		Bromochloromethane	µg/L	0.5	<0.5
		1,2-dichloroethane	µg/L	0.5	<0.5
		1,1,1-trichloroethane	µg/L	0.5	<0.5
		1,1-dichloropropene	µg/L	0.5	<0.5
		Carbon tetrachloride	µg/L	0.5	<0.5
		Dibromomethane	µg/L	0.5	<0.5
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5
		1,1,2-trichloroethane	µg/L	0.5	<0.5
		1,3-dichloropropane	µg/L	0.5	<0.5
		Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5
		1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5
		cis-1,4-dichloro-2-butene	µg/L	1	<1
		1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5
		1,2,3-trichloropropane	µg/L	0.5	<0.5
		trans-1,4-dichloro-2-butene	µg/L	1	<1
		1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5
		Hexachlorobutadiene	µg/L	0.5	<0.5
	Halogenated Aromatics	Chlorobenzene	µg/L	0.5	<0.5
		Bromobenzene	µg/L	0.5	<0.5
		2-chlorotoluene	µg/L	0.5	<0.5
		4-chlorotoluene	µg/L	0.5	<0.5
		1,3-dichlorobenzene	µg/L	0.5	<0.5
		1,4-dichlorobenzene	µg/L	0.3	<0.3
		1,2-dichlorobenzene	µg/L	0.5	<0.5
		1,2,4-trichlorobenzene	µg/L	0.5	<0.5
		1,2,3-trichlorobenzene	µg/L	0.5	<0.5
	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
		Styrene (Vinyl benzene)	µg/L	0.5	<0.5
		Isopropylbenzene (Cumene)	µg/L	0.5	<0.5
		n-propylbenzene	µg/L	0.5	<0.5
		1,3,5-trimethylbenzene	µg/L	0.5	<0.5
		tert-butylbenzene	µg/L	0.5	<0.5
		1,2,4-trimethylbenzene	µg/L	0.5	<0.5
		sec-butylbenzene	µg/L	0.5	<0.5
		p-isopropyltoluene	µg/L	0.5	<0.5
		n-butylbenzene	µg/L	0.5	<0.5
	Nitrogenous Compounds	Acrylonitrile	µg/L	0.5	<0.5
	Oxygenated Compounds	Acetone (2-propanone)	µg/L	10	<10
		MtBE (Methyl-tert-butyl ether)	µg/L	2	<1
		Vinyl acetate	µg/L	10	<10
		MEK (2-butanone)	µg/L	10	<10
		MIBK (4-methyl-2-pentanone)	µg/L	5	<5
		2-hexanone (MBK)	µg/L	5	<5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5



METHOD BLANKS

SE131994 R0

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.

VOCs in Water (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB065269.001	Sulphonated	Carbon disulfide	µg/L	2	<2
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	110
		d4-1,2-dichloroethane (Surrogate)	%	-	115
		d8-toluene (Surrogate)	%	-	93
		Bromofluorobenzene (Surrogate)	%	-	94
	Trihalomethanes	Chloroform (THM)	µg/L	0.5	<0.5
		Bromodichloromethane (THM)	µg/L	0.5	<0.5
		Dibromochloromethane (THM)	µg/L	0.5	<0.5
		Bromoform (THM)	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result
LB065269.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	116
		d4-1,2-dichloroethane (Surrogate)	%	-	115
		d8-toluene (Surrogate)	%	-	87
		Bromofluorobenzene (Surrogate)	%	-	78



DUPLICATES

SE131994 R0

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.

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131946.001	LB065373.004	Total Phenols	mg/L	0.01	0.9693	0.9817	20	1

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE132022.019	LB065454.028	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		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	5	<5	<5	200	0
SE132033.003	LB065454.032	Cadmium, Cd	µg/L	0.1	28	28	15	2
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	9900	10000	15	1

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.

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB065266.002	Naphthalene	µg/L	0.1	35	40	60 - 140	88
	Acenaphthylene	µg/L	0.1	36	40	60 - 140	90
	Acenaphthene	µg/L	0.1	33	40	60 - 140	83
	Phenanthrene	µg/L	0.1	40	40	60 - 140	100
	Anthracene	µg/L	0.1	36	40	60 - 140	89
	Fluoranthene	µg/L	0.1	31	40	60 - 140	77
	Pyrene	µg/L	0.1	32	40	60 - 140	80
	Benzo(a)pyrene	µg/L	0.1	44	40	60 - 140	110
	Surrogates						
	d5-nitrobenzene (Surrogate)	µg/L	-	0.5	0.5	40 - 130	104
	2-fluorobiphenyl (Surrogate)	µg/L	-	0.5	0.5	40 - 130	104
	d14-p-terphenyl (Surrogate)	µg/L	-	0.6	0.5	40 - 130	112

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB065373.002	Total Phenols	mg/L	0.01	0.24	0.25	80 - 120	97

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB065454.002	Arsenic, As	µg/L	1	20	20	80 - 120	100
	Cadmium, Cd	µg/L	0.1	20	20	80 - 120	102
	Chromium, Cr	µg/L	1	20	20	80 - 120	101
	Copper, Cu	µg/L	1	20	20	80 - 120	102
	Lead, Pb	µg/L	1	20	20	80 - 120	98
	Nickel, Ni	µg/L	1	20	20	80 - 120	99
	Zinc, Zn	µg/L	5	20	20	80 - 120	99
LB065454.026	Arsenic, As	µg/L	1	20	20	80 - 120	100
	Cadmium, Cd	µg/L	0.1	21	20	80 - 120	104
	Chromium, Cr	µg/L	1	20	20	80 - 120	101
	Copper, Cu	µg/L	1	20	20	80 - 120	102
	Lead, Pb	µg/L	1	19	20	80 - 120	96
	Nickel, Ni	µg/L	1	20	20	80 - 120	100
	Zinc, Zn	µg/L	5	20	20	80 - 120	102

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB065266.002	TRH C10-C14	µg/L	50	1200	1200	60 - 140	97
	TRH C15-C28	µg/L	200	1200	1200	60 - 140	98
	TRH C29-C36	µg/L	200	1200	1200	60 - 140	98
	TRH F Bands						
	TRH >C10-C16 (F2)	µg/L	60	1200	1200	60 - 140	97
	TRH >C16-C34 (F3)	µg/L	500	1200	1200	60 - 140	98
	TRH >C34-C40 (F4)	µg/L	500	610	600	60 - 140	101

VOCs in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB065269.002	Halogenated						
	1,1-dichloroethene	µg/L	0.5	50	45.45	60 - 140	110
	Aliphatics						
	1,2-dichloroethane	µg/L	0.5	50	45.45	60 - 140	110
	Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	49	45.45	60 - 140	108
	Halogenated						
	Chlorobenzene	µg/L	0.5	49	45.45	60 - 140	108
	Monocyclic						
	Benzene	µg/L	0.5	50	45.45	60 - 140	110
	Aromatic						
	Toluene	µg/L	0.5	49	45.45	60 - 140	108
	Ethylbenzene	µg/L	0.5	49	45.45	60 - 140	108
	m/p-xylene	µg/L	1	98	90.9	60 - 140	108
	o-xylene	µg/L	0.5	49	45.45	60 - 140	108
	Trihalomethan						
	Chloroform (THM)	µg/L	0.5	40	45.45	60 - 140	89

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB065269.002	TRH C6-C10	µg/L	50	1000	946.63	60 - 140	107
	TRH C6-C9	µg/L	40	830	818.71	60 - 140	101
	VPH F Bands						
	TRH C6-C10 minus BTEX (F1)	µg/L	50	710	639.67	60 - 140	112



MATRIX SPIKES

SE131994 R0

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 (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131994.001	LB065444.004	Mercury	mg/L	0.0001	0.0046	<0.0001	0.008	58 Ⓢ

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131951.001	LB065454.004	Cadmium, Cd	µg/L	0.1	20	<0.0001	20	101
		Chromium, Cr	µg/L	1	20	<0.001	20	98
		Copper, Cu	µg/L	1	22	0.002	20	100
		Lead, Pb	µg/L	1	19	<0.001	20	97
		Nickel, Ni	µg/L	1	21	0.002	20	95
		Zinc, Zn	µg/L	5	61	0.041	20	99
SE132033.002	LB065454.030	Cadmium, Cd	µg/L	0.1	20	<0.1	20	101
		Chromium, Cr	µg/L	1	19	<1	20	95
		Copper, Cu	µg/L	1	19	<1	20	92
		Lead, Pb	µg/L	1	19	<1	20	95
		Zinc, Zn	µg/L	5	26	7	20	97



MATRIX SPIKE DUPLICATES

SE131994 R0

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.sgs.com.au/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.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.
- ⑩ LOR was raised due to high conductivity of the sample (required dilution).
- † Refer to Analytical Report comments for further information.

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Project **E22317 - 75 Mary Street St Peters - Add**
 Order Number **E22317**
 Samples **8**
 Date Started **14 Oct 2014**

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SGS Reference **SE131994A R1**
 Report Number **0000095244**
 Date Reported **10 Nov 2014**
 Date Received **08 Oct 2014**

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

This report cancels and supersedes the report No.SE131994A R0 issued by SGS Environmental Services due to amendment of DQO report.

SIGNATORIES



Dong Liang
Metals/Inorganics Team Leader



ANALYTICAL REPORT

SE131994A R1

Parameter	Sample Number		SE131994A.001	SE131994A.002	SE131994A.003	SE131994A.004
	Sample Matrix		Water	Water	Water	Water
	Sample Date		08 Oct 2014	08 Oct 2014	08 Oct 2014	08 Oct 2014
	Sample Name		MW1-1	MW2-1	MW3-1	MW4-1
Units		LOR				

pH in water Method: AN101

pH**	No unit	-	-	-	4.8	-
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Conductivity and TDS by Calculation - Water Method: AN106

Conductivity @ 25 C	µS/cm	2	-	-	1600	-
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Anions by Ion Chromatography in Water Method: ME-AU-ENVAN245

Chloride	mg/L	0.05	-	-	260	-
Sulphate, SO ₄	mg/L	1	-	-	330	-

Ammonia Nitrogen by Discrete Analyser (Aquakem) Method: AN291

Ammonia Nitrogen, NH ₃ as N	mg/L	0.01	0.17	0.18	0.17	0.16
--	------	------	------	------	------	------



ANALYTICAL REPORT

SE131994A R1

Parameter	Sample Number	SE131994A.005	SE131994A.006	SE131994A.007	SE131994A.008
	Sample Matrix	Water	Water	Water	Water
	Sample Date	08 Oct 2014	08 Oct 2014	08 Oct 2014	08 Oct 2014
	Sample Name	MW5-1	B1	RB-1	TB-1
Units		LOR			

pH in water Method: AN101

pH**	No unit	-	-	-	-	-
------	---------	---	---	---	---	---

Conductivity and TDS by Calculation - Water Method: AN106

Conductivity @ 25 C	µS/cm	2	-	-	-	-
---------------------	-------	---	---	---	---	---

Anions by Ion Chromatography in Water Method: ME-AU-ENVAN245

Chloride	mg/L	0.05	-	-	-	-
Sulphate, SO ₄	mg/L	1	-	-	-	-

Ammonia Nitrogen by Discrete Analyser (Aquakem) Method: AN291

Ammonia Nitrogen, NH ₃ as N	mg/L	0.01	0.20	-	-	-
--	------	------	------	---	---	---

MB blank results are compared to the Limit of Reporting

LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.

DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Ammonia Nitrogen, NH ₃ as N	LB065707	mg/L	0.01	<0.01	0%	102%

Anions by Ion Chromatography in Water Method: ME-AU-ENVAN245

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MSD %RPD
Chloride	LB065339	mg/L	0.05	<0.05	0%	95%	NA
Sulphate, SO ₄	LB065339	mg/L	1	<1.0	0%	96%	NA

Conductivity and TDS by Calculation - Water Method: ME-(AU)-[ENV]AN106

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Conductivity @ 25 C	LB065421	µS/cm	2	<2	1%	105 - 107%

pH in water Method: ME-(AU)-[ENV]AN101

Parameter	QC Reference	Units	LOR	LCS %Recovery
pH**	LB065430	No unit	-	100%

METHOD

METHODOLOGY SUMMARY

AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode (glass plus reference electrode) and is calibrated against 3 buffers purchased commercially. For soils, an extract with water is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN106	Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as $\mu\text{mhos/cm}$ or $\mu\text{S/cm}$ @ 25°C. For soils, an extract with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Total Dissolved Salts can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. SGS use 0.6. Reference APHA 2520 B.
AN245	Anions by Ion Chromatography: A water sample is injected into an eluent stream that passes through the ion chromatographic system where the anions of interest ie Br, Cl, NO ₂ , NO ₃ and SO ₄ are separated on their relative affinities for the active sites on the column packing material. Changes to the conductivity and the UV-visible absorbance of the eluent enable identification and quantitation of the anions based on their retention time and peak height or area. APHA 4110 B
AN291	Ammonia in solution reacts with hypochlorite ions from Sodium Dichloroisocyanate, and salicylate in the presence of Sodium Nitroprusside to form indophenol blue and measured at 670 nm by Discrete Analyser.

FOOTNOTES

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

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

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

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
[http://www.sgs.com.au/~media/Local/Australia/Documents/ Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf](http://www.sgs.com.au/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf)

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STATEMENT OF QA/QC PERFORMANCE

SE131994A R1

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Project **E22317 - 75 Mary Street St Peters - Add**
Order Number **E22317**
Samples **8**

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SGS Reference **SE131994A R1**
Report Number **0000095245**
Date Reported **10 Nov 2014**

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:

Extraction Date	pH in water	1 item
Analysis Date	pH in water	1 item

SAMPLE SUMMARY

Sample counts by matrix	5 Water	Type of documentation received	Email
Date documentation received	10/10/14@10:20am	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		



HOLDING TIME SUMMARY

SE131994A R1

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.

Ammonia Nitrogen by Discrete Analyser (Aquakem)

Method: ME-(AU)-[ENV]AN291

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW1-1	SE131994A.001	LB065707	08 Oct 2014	08 Oct 2014	05 Nov 2014	17 Oct 2014	05 Nov 2014	17 Oct 2014
MW2-1	SE131994A.002	LB065707	08 Oct 2014	08 Oct 2014	05 Nov 2014	17 Oct 2014	05 Nov 2014	17 Oct 2014
MW3-1	SE131994A.003	LB065707	08 Oct 2014	08 Oct 2014	05 Nov 2014	17 Oct 2014	05 Nov 2014	17 Oct 2014
MW4-1	SE131994A.004	LB065707	08 Oct 2014	08 Oct 2014	05 Nov 2014	17 Oct 2014	05 Nov 2014	17 Oct 2014
MW5-1	SE131994A.005	LB065707	08 Oct 2014	08 Oct 2014	05 Nov 2014	17 Oct 2014	05 Nov 2014	17 Oct 2014

Anions by Ion Chromatography in Water

Method: ME-AU-ENVAN245

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW3-1	SE131994A.003	LB065339	08 Oct 2014	08 Oct 2014	05 Nov 2014	13 Oct 2014	05 Nov 2014	15 Oct 2014

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW3-1	SE131994A.003	LB065421	08 Oct 2014	08 Oct 2014	05 Nov 2014	10 Oct 2014	05 Nov 2014	14 Oct 2014

pH in water

Method: ME-(AU)-[ENV]AN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW3-1	SE131994A.003	LB065430	08 Oct 2014	08 Oct 2014	09 Oct 2014	10 Oct 2014†	09 Oct 2014	10 Oct 2014†



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.

No surrogates were required for this job.



METHOD BLANKS

SE131994A R1

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.

Ammonia Nitrogen by Discrete Analyser (Aquakem)

Method: ME-(AU)-(ENV)JAN291

Sample Number	Parameter	Units	LOR	Result
LB065707.001	Ammonia Nitrogen, NH ₃ as N	mg/L	0.01	<0.01

Anions by Ion Chromatography in Water

Method: ME-AU-ENVAN245

Sample Number	Parameter	Units	LOR	Result
LB065339.001	Chloride	mg/L	0.05	<0.05
	Sulphate, SO ₄	mg/L	1	<1.0

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-(ENV)JAN106

Sample Number	Parameter	Units	LOR	Result
LB065421.001	Conductivity @ 25 C	µS/cm	2	<2
LB065421.024	Conductivity @ 25 C	µS/cm	2	<2



DUPLICATES

SE131994A R1

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.

Ammonia Nitrogen by Discrete Analyser (Aquakem)

Method: ME-(AU)-ENVJAN291

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131994A.001	LB065707.004	Ammonia Nitrogen, NH ₃ as N	mg/L	0.01	0.17	0.17	21	0

Anions by Ion Chromatography in Water

Method: ME-AU-ENVAN245

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE132041.010	LB065339.021	Chloride	mg/L	0.05	<0.05	<0.05	200	0
		Sulphate, SO ₄	mg/L	1	<1.0	<1.0	200	0

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-ENVJAN106

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE132059.002	LB065421.013	Conductivity @ 25 C	µS/cm	2	260	260	16	1
SE132083.008	LB065421.026	Conductivity @ 25 C	µS/cm	2	640	640	15	1



LABORATORY CONTROL SAMPLES

SE131994A R1

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.

Ammonia Nitrogen by Discrete Analyser (Aquakem)

Method: ME-(AU)-[ENV]JAN291

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB065707.002	Ammonia Nitrogen, NH ₃ as N	mg/L	0.01	2.6	2.5	80 - 120	102

Anions by Ion Chromatography in Water

Method: ME-AU-ENVAN245

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB065339.002	Chloride	mg/L	0.05	19	20	80 - 120	95
	Sulphate, SO ₄	mg/L	1	19	20	80 - 120	96

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]JAN106

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB065421.002	Conductivity @ 25 C	µS/cm	2	320	303	90 - 110	105
LB065421.023	Conductivity @ 25 C	µS/cm	2	320	303	90 - 110	107

pH in water

Method: ME-(AU)-[ENV]JAN101

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB065430.001	pH**	No unit	-	7.4	7.415	98 - 102	100



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.

No matrix spikes were required for this job.



MATRIX SPIKE DUPLICATES

SE131994A R1

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.

Anions by Ion Chromatography in Water

Method: ME-AU-ENVAN245

QC Sample	Sample Number	Parameter	Units	LOR	Duplicate
SE132041.010	LB065339.022	Chloride	mg/L	0.05	18
		Sulphate, SO ₄	mg/L	1	18



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.sgs.com.au/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.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.
- ⑩ LOR was raised due to high conductivity of the sample (required dilution).
- † Refer to Analytical Report comments for further information.

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Appendix K

QA/QC Assessment



K1 QUALITY CONTROL PROGRAM

K1.1 INTRODUCTION

For the purpose of assessing the quality of data presented in this Remediation and Validation report, EI collected field QC samples for analysis. The primary laboratory, SGS Australia Pty Ltd (SGS) and secondary laboratory, Envirolab Services Pty Ltd (Envirolab) also prepared and analysed QC samples. Details of the field and laboratory QC samples are provided, with the allowable acceptance ranges for the data presented in **Table K-1**.

Table K-1 Sampling Data Quality Indicators

Data Quality Objective	Data Quality Indicator	Acceptable Range
Accuracy	Field – Trip blank	< laboratory limit of reporting (LOR)
	Field – Rinsate blank	< laboratory limit of reporting (LOR)
	Field – Trip spike (laboratory prepared)	70% - 130% of initial concentration
	Laboratory – Laboratory control spike and matrix spike	Prescribed by the laboratories
Precision	Field – Blind replicate and spilt duplicate	< 30 % relative percentage difference (RPD [%]) RPD > 30% & concentration < 10 x LOR RPD ≤ 50% & 10 x LOR < concentration < 20 x LOR
	Laboratory – Laboratory duplicate and matrix spike duplicate	Prescribed by the laboratories
Representativeness	Field – Trip blank	< laboratory limit of reporting (LOR)
	Field – Rinsate blank	< laboratory limit of reporting (LOR)
	Field – Trip spike (laboratory prepared)	70% - 130% of initial concentration
	Laboratory – Method blank	Prescribed by the laboratories
Completeness	Completion (%)	-

K1.2 CALCULATION OF RELATIVE PERCENTAGE DIFFERENCE (RPD)

The RPD values were calculated using the following equation:

$$RPD = \frac{([C_o - C_R] \times 100)}{\frac{(C_o + C_R)}{2}}$$

C_o = Concentration obtained from the primary sample.

C_R = Concentration obtained from the blind replicate or split sample.



K2 FIELD QA/QC DATA EVALUATION

K2.1 SOIL INVESTIGATION

The field quality assurance/quality control (QA/QC) soil samples collected during the soil investigation works were as follows:

- Blind field duplicate;
- Inter laboratory duplicates;
- Trip spikes;
- Trip blanks; and
- Rinsate Blank.

The results of the QA/QC samples collected during the investigation works, including the calculated RPD values between primary and duplicate samples, are presented in **Table K-2**.

K2.1.1 Blind Field Duplicate

One blind field duplicate (BFD) sample was collected for the soil sampling event. The preparation of the BFD sample involved the collection of a bulk quantity of soil from the same sampling point without mixing, before dividing the material into identical sampling vessels. The duplicate sample was then presented blind to the primary laboratory (SGS) to avoid any potential analytical bias. The BFD was analysed for TPH, BTEX and selected heavy metals. The RPD values calculated found to be within the Data Acceptance Criteria (**Appendix L, Table QC5**), with the exception of Zinc (53.52%), indicating non homogenous material which are common in fill materials.

K2.1.2 Inter Laboratory Duplicate

One inter laboratory duplicate (ILD) sample was collected for the soil sampling event. The preparation of the ILD sample was identical to the BFD sample as described above and analysed for TPH, BTEX and selected heavy metals. The RPD values calculated for the ILD sample was found to be within the Data Acceptance Criteria, with the exception of Mercury (133.33%), indicating the fill material tested is likely heterogeneous.

Furthermore, soil samples were placed immediately into jars following sampling to reduce the loss of volatiles from samples. Results of soil sampling indicated that the samples collected were representative of the soils present at respective sampling locations; therefore, EI concludes that the samples collected are representative of the soils present at the respective sampling locations.

K2.1.3 Trip Spike and Trip Blank

One trip spike (TS) sample, prepared by the primary laboratory, was analysed for BTEX by the primary laboratory. The recovery levels in the TS sample were found to be within the Data Acceptance Criteria.

One trip blank (TB) sample, prepared by the primary laboratory, was analysed for BTEX by the primary laboratory. The soil TB sample results were reported below the laboratory LOR. The test results of TS and TB samples indicated that ideal sample transport and handling conditions were achieved.



Table K-2 Summary of QA/QC results for soil investigation samples

Report No. : E22317 AA

Sample identification	Sampled Date	Description	TRH				BTEX				Heavy Metals							
			F1*	F2**	F3 (>C ₁₆ - C ₃₄)	F4 (>C ₃₄ - C ₄₀)	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Intra-laboratory Duplicate																		
BH12-1	23/9/2014	Fill Material	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	7	0.6	20	12	27	0.04	2.5	260
B1	23/9/2014	Replicate of BH12-1	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	7	0.9	25	17	22	0.06	3.9	450
RPD			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	40.00	22.22	34.48	20.41	40.00	43.75	53.52
Inter-laboratory Duplicate																		
BH12-1	23/9/2014	Fill Material	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	7	0.6	20	12	27	0.04	2.5	260
I1	16/9/2014	Replicate of BH12-1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	8	0.4	27	10	24	0.2	3	360
RPD			0.00	NA	NA	NA	NA	NA	NA	NA	13.33	40.00	29.79	18.18	11.76	133.33	18.18	32.26
Trip Spikes																		
TS ¹	23/9/2014	De-ionised water	-	-	-	-	93%	94%	92%	94%	-	-	-	-	-	-	-	-
Trip Blanks																		
TB	23/9/2014	De-ionised water	-	-	-	-	<0.5	<0.5	<0.5	<1.5	-	-	-	-	-	-	-	-
Rinsate Blanks																		
RB	23/9/2014	De-ionised water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	1	<5

52.17 Indicates values where a single result is found to be less than detection, with the duplicate sample found to be over the detection limit.

82.35 RPD exceeds 30-50% range referenced from AS4482.1 (2005)

NOTE:

All soil results are reported in mg/kg. All water results are reported in µg/L.

* - to obtain F1 subtract the sum of BTEX concentrations from the C₆-C₁₀ fraction

** - to obtain F2 subtract naphthalene from the > C₁₀-C₁₆ fraction

1 The recovery levels for Xylene reported were the lowest of m/p- xylene and o-xylene

K2.1.4 Rinsate Blank

One rinsate blank (RB) sample was submitted to the primary laboratory for TPH, BTEX and selected heavy metals analysis. The RB sample results were reported below the laboratory LOR except for Nickel (1 µg/L). As other chemicals present in the primary samples were not detected in the RB sample, it is unlikely that the presence of Nickel was a result of cross contamination between sampling equipment. Therefore it was concluded that decontamination procedures performed during the field works had been effective. In addition, given the detected concentration is relatively low, we consider that the detected concentration will not affect the conclusions drawn in this investigation in regards to the environmental conditions of the site.

K2.2 GROUNDWATER INVESTIGATION

The field quality assurance/quality control (QA/QC) groundwater samples collected during the groundwater investigation works were as follows:

- Blind field duplicate;
- Inter laboratory duplicates;
- Trip blanks; and
- Rinsate Blank.

The results of the QA/QC samples collected during the groundwater investigation, including the calculated RPD values between primary and duplicate samples, are presented in **Table K-3**.

K2.2.1 Blind Field Duplicate

One blind field duplicate (BFD) sample was collected from the primary sample MW5-1. The preparation of the BFD sample involved the decanting of groundwater collected from the respective groundwater monitoring well into two separate groups of appropriately labelled sampling containers. Volumes were split equally between the groups of sampling bottles. It should be noted that the sample was not mixed prior to decanting, in order to preserve the concentrations of volatiles potentially present within the sample. The duplicate sample was then presented blind to the primary laboratory (SGS) to avoid any potential analytical bias. The BFD was analysed for TPH, BTEX and selected heavy metals. The RPD values calculated for the majority of the analytes tested were found to be within the Data Acceptance Criteria (DAC), with the exception of Copper, which was a result of the low concentrations in samples.

K2.2.2 Inter-Laboratory Duplicate

One (1) inter laboratory duplicate (ILD) sample was collected from the primary sample MW5-1. The preparation of the ILD sample was identical to the BFD sample as described above and analysed for TPH, BTEX and selected heavy metals. The RPD values calculated for the ILD sample were found to be within the Data Acceptance Criteria.

K2.2.3 Trip Blank

One trip blank (TB) sample was analysed for BTEX by the primary laboratory. The groundwater TB sample results were reported below the laboratory LOR, indicating that ideal sample transport and handling conditions were achieved.



Table K-3 Summary of QA/QC results for groundwater investigation samples

Report No.: E22317 AA

Sample Identification	Sampled Date	Description	TRH				BTEX				Heavy Metals							
			F1*	F2**	F3 (>C ₁₆ - C ₃₄)	F4 (>C ₃₄ - C ₄₀)	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Intra-laboratory Duplicate																		
MW5-1	8/10/2014	Groundwater	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	39	70
MWB-1	8/11/2014	Replicate of MW5-1	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	2	<1	<0.0001	40	80
RPD			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80.00	0.00	NA	2.53	13.33
Inter-laboratory Duplicate																		
MW5-1	8/10/2014	Groundwater	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	39	70
MWI-1	8/10/2014	Replicate of MW5-1	<10	<50	<100	<100	<1	<1	<1	<3	<1	<0.1	<1	<1	<1	<0.05	35	71
RPD			NA	NA	NA	NA	NA	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	NA	10.81	1.42
Trip Blanks																		
TB-1	8/10/2014	De-ionised water	-	-	-	-	<0.5	<0.5	<0.5	<1.5	-	-	-	-	-	-	-	-
Rinsate Blanks																		
RB-1	8/10/2014	De-ionised water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	<1	11

52.17 Indicates values where a single result is found to be less than detection, with the duplicate sample found to be over the detection limit.

82.35 RPD exceeds 30-50% range referenced from AS4482.1 (2005)

NOTE:

All soil results are reported in mg/kg . All water results are reported in µg/L.

* - to obtain F1 subtract the sum of BTEX concentrations from the C₆-C₁₀ fraction

** - to obtain F2 subtract naphthalene from the > C₁₀-C₁₆ fraction

K2.2.4 Rinsate Blank

One rinsate blank (RB) sample was submitted to the primary laboratory for TPH, BTEX and selected heavy metals analysis. The RB sample results were reported below the laboratory LOR except for Zinc (11 µg/L). As other chemicals present in the primary samples were not detected in the RB sample, it is unlikely that the presence of Zinc was a result of cross contamination between sampling equipment. Therefore it was concluded that decontamination procedures performed during the field works had been effective. In addition, given the detected concentration is relatively low, we consider that the detected concentration will not affect the conclusions drawn in this investigation in regards to the environmental conditions of the site.

K2.3 ASSESSMENT OF FIELD QA/QC DATA

All soil samples were classified in the field with respect to soil/fill characteristics and any observable signs of contamination based on visual and odour assessment.

All samples, including field QC samples, were transported to the primary and secondary laboratories under strict Chain-of-Custody conditions and appropriate copies of relevant documentation were included in the respective reports.

The overall completeness of documentation produced under the field program of the subject assessment was considered to be adequate for the purposes of drawing valid conclusions regarding the environmental condition of the site.

Based on the results of the field QA/QC data, EI considered the field QA/QC programme carried out during the investigation works to be appropriate and the results to be acceptable.

K3 LABORATORY QA/QC

K3.1 LABORATORY ACCREDITATION

To undertake all analytical testing, EI commissioned SGS as the primary laboratory and Envirolab as the secondary laboratory. SGS and Envirolab, both established analytical laboratories which operate in accordance with the guidelines set out in ISO/IEC Guide 25 "General requirements for the competence of calibration and testing laboratories", conducted all respective analyses using National Association Testing Authorities (NATA)-registered procedures.

In relation to contingencies, should the pre-determined DQOs not be achieved, in accordance with each laboratory's QC policy, respective tests are accordingly repeated. Should the results again fall outside the DQOs, then sample heterogeneity may be assumed and written comment will be provided to this effect on the final laboratory certificate.

K3.2 SAMPLE HOLDING TIMES

All sample holding times were generally within standard environmental protocols as tabulated in **Appendix L, Tables QC1 and QC2**, with the exception of groundwater sample SE131994A.003 for pH values in water, which was outside the extraction and analysis due date.



K3.3 TEST METHODS AND PRACTICAL QUANTITATION LIMITS (PQLs)

Practical Quantitation Limits for the tested parameters during the assessments of soils are presented in **Appendix L, Tables QC3 and QC4**.

K3.4 METHOD BLANKS

Concentrations of all parameters in method blanks during the assessment were below the laboratory PQLs and were therefore within the DAC.

K3.5 LABORATORY DUPLICATE SAMPLES

The RPD values of Laboratory Duplicate Samples (LDS) for the analysis batches were within acceptable ranges and conformed to the DAC, with the exception of following soil samples:

- Carcinogenic PAHs (as BaP TEQ) analysis of sample SE131705.012, RPD failed acceptance criteria due to sample heterogeneity;
- Arsenic, Chromium and Nickel analyses of sample SE131666.046, RPD failed acceptance criteria due to sample heterogeneity;
- 1,2,4-trimethylbenzene analysis of sample SE131743.010. Result was less than 5 times LOR, hence preclude acceptance criteria for RPD.

K3.6 LABORATORY CONTROL SAMPLES

The Laboratory Control Samples (LCS) for the analysis batches were within acceptable ranges and conformed to the DAC.

K3.7 MATRIX SPIKES

The matrix spikes of the analysis batches were within acceptable ranges and conformed to the DAC, with the exception of following:

- Nickel for sample SE131666.037, recovery failed acceptance criteria due to sample heterogeneity;
- Lead for sample SE131674.003, recovery failed acceptance criteria due to matrix interference;
- Zinc for sample SE131674.003, recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level);
- Phenanthrene, Pyrene, Benzo(a)pyrene for sample SE131743.001, recovery failed acceptance criteria due to sample heterogeneity;
- TRH C10-C14 and TRH >C10-C16 for sample SE131743.002, recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
- Mercury for sample SE131994.001, recovery failed acceptance criteria due to matrix interference.



K3.8 MATRIX SPIKE DUPLICATES

The matrix spike duplicates of the analysis batches were within acceptable ranges and conformed to the DAC, with the exception of Phenanthrene, Fluoranthene and Pyrene for sample SE131743.001.



APPENDIX L

Laboratory QA/AC Policies and DQOs



SGS Environmental Services is accredited by NATA for Chemical Testing (Reg.No.2562) and Quality System compliance to ISO/IEC 17025. The QC parameters contained within are designed to meet NEPM 1999 requirements.

Quality Control samples included in any analytical run are listed below.

Reagent/Analysis Blank (BLK) Method Blank (MB)	Sample free reagents carried through the preparation/extraction/digestion procedure and analysed at the beginning of every sample batch analysis. A reagent blank is prepared and analysed with every batch of samples plus with each new batch of solvent prior to use.
Sample Matrix Spike (MS) & Matrix Spike Duplicate (MSD)	Sample replicates spiked with identical concentrations of target analyte(s). The spiking occurs during the sample preparation and <u>prior to the extraction/digestion procedure</u>. They are used to document the precision and bias of a method in a given sample matrix. Where there is not enough sample available to prepare a spiked sample, another known soil/sand or water may be used. A duplicate spiked sample is analysed at least every 20 samples.
Surrogate Spike (SS)	At least one but up to three surrogate compounds are added to all samples requiring analysis for organics prior to extraction. Used to determine the extraction efficiency. They are organic compounds which are similar to the target analyte(s) in chemical composition and behaviour in the analytical process, but which are not normally found in environmental samples. Where possible they are surrogate compounds recommended by the USEPA.
Control Matrix Spike (CMS)	To ensure spike recoveries can be determined for every batch of samples a control matrix is spiked with identical concentrations of target analyte(s) and then analysed. These results allow recoveries to be determined in the event that the matrix spikes are unusable (eg. matrix spikes performed on heavily contaminated samples). These are analysed at least every 20 samples.
Internal Standard (IS)	Added to all samples requiring analysis for organics (where relevant) after the extraction process; the compounds serve to give a standard of retention time and response, which is invariant from run-to-run with the instruments. Where possible they are standard compounds recommended by the USEPA.
Lab Duplicates (D)	A separate portion of a sample being analysed that is treated the same as the other samples in the batch. One duplicate is processed at least every 10 samples.
Lab Control Standards/Samples (LCS)	Prepared from a source independent of the calibration standards. At least one control standard is included in each run to confirm calibration validity. Thereafter they are analysed at least every one in 20 samples plus at the end of each analytical run. This data is not reported.
Continuous Calibration Verification (CCV) or Calibration Check Standard & Blank	A calibration check standard or CCV and blank are run after every 20 samples of an instrumental analysis run to assess analytical drift. Calibration Standards are checked old versus new with a criteria of $\pm 10\%$



Quality Assurance Programs are listed below:

Statistical analysis of Quality Control data (SQC)	Quality control data is plotted on control charts using the APHA procedure with warning and control limits at 2 and 3 standard deviations respectively. See also QMS Procedure "Statistical Quality Control".
Certified Reference Materials (CRM/SRM)	Certified Reference Materials and Standards are regularly analysed. These materials/standards have certified reference values for various parameters.
Proficiency Testing	Regular proficiency test samples are analysed by our laboratories. SGS Environmental participates in a number of programs. Results and proficiency status are compiled and sent to participating laboratory post data interpretation. Failure to comply with acceptable values result in further investigations.
Inter-laboratory & Intra-laboratory Testing	SGS Environmental Services has schedules in the Quality Systems to participate in Inter/Intra laboratory testing conducted internally and by other parties.
Data Acceptance Criteria Unless otherwise specified in the method or method manual the following general criteria apply to all inorganic tests. All recoveries are to be reported to 3 significant figures.	Failure to meet the internal acceptance criteria will result in sample batch repeats dependent upon investigation outcomes. For data to be accepted: <u>Inorganics (water samples)</u> - For all inorganic analytes the Reagent & Method Blanks must be less than the LOR. - The Calibration Check Standards or Continuous Calibration Verification (CCV) must be within $\pm 15\%$. - Control Standards must be 80-120% of the accepted value. - The Calibration Check Blanks must be less than the LOR. - Lab Duplicates RPD to be $<15\%$. Note: If client field duplicates do not meet this criteria it may indicate heterogeneity and shall be noted on the data reports for QC samples. - Sample (and if applicable Control) Matrix Spike^d Duplicate recovery RPD to be $<30\%$. - Where CRMs are used, results to be within ± 2 standard deviations of the expected value. <u>Inorganics (soil samples)</u> - For all inorganic analytes the Reagent & Method Blanks must be less than the LOR. - The Calibration Check Standards or Continuous Calibration Verification (CCV) must be within $\pm 15\%$. - Control Standards must be 80-120% of the accepted value. - The Calibration Check Blanks must be less than the LOR. - Lab duplicate RPD to be $<30\%$* for sample results greater than 10 times LOR. - Sample Matrix Spike Duplicate (MS^d/MSD) recovery RPD to be $<30\%$. In the event that the matrix spike has been applied to samples whose matrix or contamination is problematic to the method then these acceptance criteria apply to the Control Matrix Spike (CMS/D). - Where CRMs are used, results to be within ± 2 standard deviations of the expected value.

Data Acceptance Criteria

Unless otherwise specified in the method or method manual the following general criteria apply to all organic tests.

All recoveries are to be reported to 3 significant figures.

Organics

- Volatile & extractable Reagent & Method Blanks must contain levels less than or equal to LOR.
- The Calibration Check Standards or Continuous Calibration Verification (CCV) must be within $\pm 25\%$. Some analytes may have specific criteria.
- Control Standards (LCS/CMS) and Certified Reference Materials (CRM) recoveries are to be within established control limits or as a default 60-140% unless compound specific limits apply.
- Retention times are to vary by no more than 0.2 min.
- **At least two of three** routine level soil sample Surrogate Spike (SS) recoveries 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 acceptance criterion. Any recoveries outside these limits will have comment.
- Water sample Surrogates Spike (SS) recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion. Any recoveries outside these limits will have comment.
- Lab Duplicates (D) must have a RPD $< 30\%^*$.
- Sample Matrix Spike Duplicate (MS^d/MSD) recovery RPD to be $< 30\%$. In the event that the matrix spike has been applied to samples whose matrix or contamination is problematic to the method then these acceptance criteria apply to the Control Matrix Spike (CMS/D).

*Only if results are at least 10 times the LOR otherwise no acceptance criteria for RPD's apply.

Application of more stringent criteria shall be applied for clean water sample from water boards and any other nominated client contracts. Nominal 10xLOR criteria are dropped to 5xLOR where specified.

^dMatrix do not readily equate to definitive recovery due to inherent matrix interferences and thus do not have recovery compliance values set. As a guide inorganic recoveries should be between 70-130% and for organics 60-130%

Batch Structure Summary

An analytical batch is nominally considered as 20 samples or smaller. As a standard template the following should be **used as a guide** according to the above Quality Control Types:

1	MB	16	UNK_DUP
2	STD1	17	MS
3	STD2	18	MS_DUP
4	STD3	19	UNK 11
5	LCS	20	UNK 12
6	BLK	21	UNK 13
7	UNK 1	22	UNK 14
8	UNK 2	23	UNK 15
9	UNK 3	24	UNK 16
10	UNK 4	25	UNK 17
11	UNK 5	26	UNK 18
12	UNK 6	27	UNK 19
13	UNK 7	28	UNK 20 (SS if applicable)
14	UNK 8	29	UNK_DUP
15	UNK 9	30	CCV
16	UNK 10 (SS if applicable)	31	CRM / SRM / CMS / LCS

Table QC1 - Containers, Preservation Requirements and Holding Times - Soil			
Parameter	Container	Preservation	Maximum Holding Time
Acid digestible metals and metalloids - Total and TCLP (As,Cd.,Cu,Cr,Ni,Pb,Zn)	Glass with Teflon Lid	Nil	6 months
Mercury	Glass with Teflon Lid	Nil	28 days
TPH / BTEX / VOC / SVOC / CHC	Glass with Teflon Lid	4°C, zero headspace	14 days
PAHs (total and TCLP)	Glass with Teflon Lid	4°C ¹	14 days
Phenols	Glass with Teflon Lid	4°C ¹	14 days
OCPs, OPPs and total PCBs	Glass with Teflon Lid	4°C ¹	14 days
Asbestos	Sealed Plastic Bag	Nil	N/A

Table QC2 - Containers, Preservation Requirements and Holding Times - Water			
Parameter	Container Volume (mL)	Preservation	Maximum Holding Time
Heavy Metals	125mL Plastic	Field filtration 0.45µm HNO ₃ / 4°C	6 months
Cyanide	125mL Amber Glass	pH > 12 NaOH / 4°C	6 months
TPH (C6-C9) / BTEX / VOCs SVOCs / CHCs	4 x 43mL Glass	HCl / 4°C ¹	14 days
TPH (C10-C36) / PAH / Phenolics OCP / OPP / TDS / pH	3 x 1L Amber Glass	None / 4°C ¹	28 days

Notes: ¹ = Extraction within 14 days, Analysis within 40 days.

Table QC3 - Analytical Parameters, PQLs and Methods - Soil			
Parameter	Unit	PQL	Method Reference
Metals in Soil			
Arsenic - As ¹	mg / kg	1	USEPA 200.7
Cadmium - Cd ¹	mg / kg	0.5	USEPA 200.7
Chromium - Cr ¹	mg / kg	1	USEPA 200.7
Copper - Cu ¹	mg / kg	1	USEPA 200.7
Lead - Pb ¹	mg / kg	1	USEPA 200.7
Mercury - Hg ²	mg / kg	0.1	USEPA 7471A
Nickel - Ni ¹	mg / kg	1	USEPA 200.7
Zinc - Zn ¹	mg / kg	1	USEPA 200.7
Total Petroleum Hydrocarbons (TPHs) in Soil			
C ₆ -C ₉ fraction	mg / kg	25	USEPA 8260
C ₁₀ -C ₁₄ fraction	mg / kg	50	USEPA 8000
C ₁₅ -C ₂₈ fraction	mg / kg	100	USEPA 8000
C ₂₉ -C ₃₆ fraction	mg / kg	100	USEPA 8000
BTEX in Soil			
Benzene	mg / kg	1	USEPA 8260
Toluene	mg / kg	1	USEPA 8260
Ethylbenzene	mg / kg	1	USEPA 8260
m & p Xylene	mg / kg	2	USEPA 8260
o- Xylene	mg / kg	1	USEPA 8260
Other Organic Contaminants in Soil			
PAHs	mg / kg	0.05-0.2	USEPA 8270
CHCs	mg / kg	1	USEPA 8260
VOCs	mg / kg	1	USEPA 8260
SVOCs	mg / kg	1	USEPA 8260
OCPs	mg / kg	0.1	USEPA 8140, 8080
OPPs	mg / kg	0.1	USEPA 8140, 8080
PCBs	mg / kg	0.1	USEPA 8080
Phenolics	mg / kg	5	APHA 5530
Asbestos			
Asbestos	mg / kg	Presence / Absence	AS4964-2004

Notes:

1. Acid Soluble Metals by ICP-AES
2. Total Recoverable Mercury

Table QC4 - Analytical Parameters, PQLs and Methods - Groundwater

Parameter	Unit	PQL	Method	Parameter	Unit	PQL	Method
Heavy Metals				Chlorinated Hydrocarbons (CHCs)			
Antimony - Sb	µg/L	1	USEPA 200.8	1,2-dichlorobenzene	µg/L	1	USEPA 8260B
Arsenic - As	µg/L	1	USEPA 200.8	1,3-dichlorobenzene	µg/L	1	USEPA 8260B
Beryllium - Be	µg/L	0.5	USEPA 200.8	1,4-dichlorobenzene	µg/L	1	USEPA 8260B
Cadmium - Cd	µg/L	0.1	USEPA 200.8	1,2,3-trichlorobenzene	µg/L	1	USEPA 8260B
Chromium - Cr	µg/L	1	USEPA 200.8	1,2,4-trichlorobenzene	µg/L	1	USEPA 8260B
Cobalt - Co	µg/L	1	USEPA 200.8	Hexachlorobutadiene	µg/L	1	USEPA 8260B
Copper - Cu	µg/L	1	USEPA 200.8	1,1,2-trichloroethane	µg/L	1	USEPA 8260B
Lead - Pb	µg/L	1	USEPA 200.8	Hexachloroethane	µg/L	10	USEPA 8270D
Mercury - Hg	µg/L	0.5	USEPA 7471A	Other CHCs	µg/L	1	USEPA 8260B
Molybdenum - Mo	µg/L	1	USEPA 200.8	Volatile Organic Compounds (VOCs)			
Nickel - Ni	µg/L	1	USEPA 200.8	Aniline	µg/L	10	USEPA 8260B
Selenium - Se	µg/L	1	USEPA 200.8	2,4-dichloroaniline	µg/L	10	USEPA 8260B
Silver - Ag	µg/L	1	USEPA 200.8	3,4-dichloroaniline	µg/L	10	USEPA 8260B
Tin (inorg.) - Sn	µg/L	1	USEPA 200.8	Nitrobenzene	µg/L	50	USEPA 8260B
Nickel - Ni	µg/L	1	USEPA 200.8	2,4-dinitrotoluene	µg/L	50	USEPA 8260B
Zinc - Zn	µg/L	1	USEPA 200.8	2,4,6-trinitrotoluene	µg/L	50	USEPA 8260B
Total Petroleum Hydrocarbons (TPHs)				Phenolic Compounds			
C ₆ -C ₉ fraction	µg/L	10	USEPA 8220A / 8000	Phenol	µg/L	10	USEPA 8041
C ₁₀ -C ₁₄ fraction	µg/L	50	USEPA 8000	2-chlorophenol	µg/L	10	USEPA 8041
C ₁₅ -C ₂₈ fraction	µg/L	100	USEPA 8000	4-chlorophenol	µg/L	10	USEPA 8041
C ₂₉ -C ₃₆ fraction	µg/L	100	USEPA 8000	2, 4-dichlorophenol	µg/L	10	USEPA 8041
BTEX				2,4,6-trichlorophenol	µg/L	10	USEPA 8041
Benzene	µg/L	1	USEPA 8220A	2,3,4,6-tetrachlorophenol	µg/L	10	USEPA 8041
Toluene	µg/L	1	USEPA 8220A	Pentachlorophenol	µg/L	10	USEPA 8041
Ethylbenzene	µg/L	1	USEPA 8220A	2,4-dinitrophenol	µg/L	10	USEPA 8041
m- & p-Xylene	µg/L	2	USEPA 8220A	Miscellaneous Parameters			
o-Xylene	µg/L	1	USEPA 8220A	Total Cyanide	µg/L	5	APHA 4500C&E-CN
Polycyclic Aromatic Hydrocarbons (PAHs)				Fluoride	µg/L	10	APHA 4500 F-C
PAHs	µg/L	0.1	USEPA 8270	Salinity (TDS)	mg/L	1	APHA 2510
Benzo(a)pyrene	µg/L	0.01	USEPA 8270	pH	units	0.1	APHA 4500H+
OrganoChlorine Pesticides (OCPs)				OrganoPhosphate Pesticides (OPPs)			
Aldrin	µg/L	0.001	USEPA 8081	Azinphos Methyl	µg/L	0.01	USEPA 8141
Chlordane	µg/L	0.001	USEPA 8081	Chlorpyrifos	µg/L	0.01	USEPA 8141
DDT	µg/L	0.001	USEPA 8081	Diazinon	µg/L	0.01	USEPA 8141
Dieldrin	µg/L	0.001	USEPA 8081	Dimethoate	µg/L	0.01	USEPA 8141
Endosulfan	µg/L	0.001	USEPA 8081	Fenitrothion	µg/L	0.01	USEPA 8141
Endrin	µg/L	0.001	USEPA 8081	Malathion	µg/L	0.01	USEPA 8141
Heptachlor	µg/L	0.001	USEPA 8081	Parathion	µg/L	0.01	USEPA 8141
Lindane	µg/L	0.001	USEPA 8081	Temephos	µg/L	0.01	USEPA 8141
Toxaphene	µg/L	0.001	USEPA 8081	Polychlorinated Biphenyls (PCBs)			
				Individual PCBs	µg/L	0.01	USEPA 8081

Table QC5 - QC Sample Data Acceptance Criteria		
QC Sample Type	Method of Assessment	Acceptable Range
Field QC		
Blind Duplicates and Split Samples	The assessment of split duplicate is undertaken by calculating the Relative Percent Difference (RPD) of the duplicate concentration compared with the primary sample concentration. The RPD is defined as: $RPD = 100 \times \frac{ X_1 - X_2 }{\text{mean}(X_1, X_2)}$ Where: X_1 and X_2 are the concentrations of the primary and duplicate samples.	The acceptable range depends upon the levels detected: - 0-150% RPD (when the average concentration is <5 times the LOR/PQL) - 0-75% RPD (when the average concentration is 5 to 10 times the LOR/PQL) - 0-50% RPD (when the average concentration is >10 times the LOR/PQL)
Rinsate & Trip Blanks	Each blank is analysed as per the original samples.	Analytical Result <LOR/PQL
Laboratory prepared Trip Spike	The Trip Spike is analysed after returning from the field and the % recovery of the known spike is calculated.	70 - 130%
Laboratory QC		
Laboratory Duplicates	Assessment of Lab Duplicate RPD as per Blind Duplicates and Split Samples.	Lab Duplicate RPD < 15% (Inorganics) Lab Duplicate RPD < 30% (Organics) for sample results > 10 LOR
Surrogates Matrix Spikes Laboratory Control Samples	Assessment is undertaken by determining the percent recovery of the known surrogate spike (SS) or addition to the sample. $\% \text{ Recovery} = 100 \times \frac{C - A}{B}$ Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; and C = Calculated Concentration.	at least 2 SS recoveries to be within 70-130% subject to matrix effects (Organics) 80-120% (Inorganics / Metals) 60-140% (Organics) 10-140% (SVOC and Speciated Phenols) If the result is outside the above ranges, the result must be <3x Standard Deviation of the Historical Mean (calculated over the past 12 months).
Sample Matrix Spike Duplicates	Recovery RPD	<30% (Inorganics & Organics)
Calibration Check Standards	Continuous Calibration Verification (CCV)	CCV must be within $\pm 15\%$ (inorganics) CCV must be within $\pm 25\%$ (inorganics)
Reagent, Method & Calibration Check Blanks	Each blank is analysed as per the original samples.	Analytical Result <LOR/PQL
Note: PQL - Laboratory Practical Quantitation Limit (PQL) or the minimum detection limit for a particular analyte. LOR = Limit of Reporting		

1 OBJECTIVE

This procedure will be used by sections to comply with NEPM requirements for QA/QC reporting.

This procedure is applicable to all Environmental samples eg from Environmental Consultants. Samples from non Environmental Consultants such as Councils, mines or trade waste etc do not have to conform with these requirements, however, it will be Envirolab Services policy that this procedure be used when ever possible.

2 DEFINITIONS

Duplicate

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

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. Other terms cited in literature, but not used here include: Reagent Blank, Control Blank, Method Blank.

Matrix Spike

A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. Other terms cited in literature include Laboratory Fortified Matrix. It is suggested that the spiking concentration be near the middle of the calibration range.

Surrogate Spike

Surrogates are known additions to each sample, blank, matrix spike and LCS in a process batch, of compounds which are similar to the analyte of interest in terms of:

- a) extraction
- b) recovery through clean up procedures
- c) response to chromatography or other determinations

but which:

- d) are not expected to be found in real samples
- e) will not interfere with quantification of any analyte of interest
- f) may be separately and independently quantified

These are only applicable to organic testing.

Internal Standards

Internal standards are used to check the consistency of the analytical step (eg injection volumes, retention times etc) and provide a reference against which results may be adjusted in case of variation. For organic and some inorganic analysis, internal standards are added after all extraction, cleanup and concentration steps, to each final extract solution.

LCS (Laboratory Control Sample)

This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample. Other terms cited in literature include: laboratory control standard, quality control check sample, laboratory fortified blank.

Process Batch

A group of samples which behave similarly with respect to the sampling or the testing procedures being employed and which are processed as a unit for QC purposes. It is important that all factors within a process batch be the same. If any factors change eg

reagents, staff, standards then a new process batch is deemed to have begun.

Percent Recovery

Percent recovery describes the capability of the method to recover a known amount of analyte added to the sample.

$$\% \text{ Recovery} = C - A / B \times 100$$

where: A = natural concentration of analyte in the sample

B = concentration of analyte added to the sample

C = concentration of analyte determined in the spiked sample

RPD (Relative Percent Difference)

This calculation measures the precision between two figures. Commonly used to compare the closeness of Duplicate results.

$$\% \text{ RPD} = \text{Highest} - \text{Lowest} / \text{Average} \times 100$$

3 QC REQUIRED AND WHAT IS REPORTED

The following QC is required for all Environmental Samples, unless justified otherwise by a Supervisor.

Blank

At least one per process batch.

The Blanks must be labelled throughout the day eg: Blk_1-25/8/05, Blk_2-25/8/05 etc.

The Blank is reported to all clients.

LCS

At least one per process batch.

The LCS's must be labelled throughout the day eg: LCS_1-25/8/05, LCS_2-25/8/05 etc.

The LCS is reported to all clients.

Duplicate

At least one per process batch or one per ten samples, whichever is the smaller.

ie: A Duplicate is done every 10 samples.

So, if there is one process batch of 100 samples there will be 10 Duplicates.

Or, if there are 3 process batches, each of 2 samples making up the Process Batch there will be 1 Duplicate. The sample to undertake duplicate in this case is chosen by the analyst.

The Duplicate is only reported to the client if it is performed on their sample.

Matrix Spike

One for each soil or water type. eg: if a batch contains sediment, clay, compost, leachate, saline water etc then a matrix spike must be done on each sample type.

The sample type is generally judged by the Chain of Custody. If a client calls all samples 'soil' then we will treat all samples as 1 sample type (unless they are very obviously different).

If there is only one sample type eg soil, then a matrix spike is performed every 20 samples.

There is no requirement in NEPM for a Matrix Spike Duplicate.

The Matrix Spike is only reported to the client if it is performed on their sample.

4 ACCEPTANCE CRITERIA

Acceptance criteria for QC is generally specified in individual methods.

If QC fails, take corrective action promptly to determine and eliminate the source of the error.

Do not report data until the cause of the problem is identified and either corrected or qualified by a supervisor.

Matrix Spikes

As a general rule, the recoveries of most analytes spiked into samples should fall within the range 70% - 130% and this range should be used as a guide in evaluating in house performance until in house limits are established.

Matrix Spikes will regularly fail, often due to matrix interferences. If a Matrix Spike fails it should be investigated:

- a) check calculations and transcriptions to ensure a mistake has not been made.
- b) look at the background concentration of the sample. If it is high then it is likely a matrix interference exists. As long as the LCS is acceptable then the Process Batch will be accepted.
- c) If the LCS has also failed then the Process Batch is deemed to have failed and data should not be reported unless justified. The batch should be repeated after consultation with the supervisor, possibly replacing standards or reagents.

If a matrix spike has failed yet the process batch has been accepted by the supervisor, the failed matrix spike should still be reported to the client. This should be accompanied by an appropriate comment such as 'percent recovery not available due to significant background levels of analyte in the sample' or 'the matrix spike recovery was outside recommended acceptance criteria, however, an acceptable recovery was achieved for the LCS. This indicates a sample matrix interference'.

Matrix spikes are not carried out for all tests. These are mainly the inorganic tests such as TSS, pH, EC etc. In these cases an acceptable LCS is required.

Matrix spikes are also not reported for all analytes. For example in a SVOC run of 80 analytes it is acceptable to only spike a range of analytes.

LCS

As a general rule, the recoveries of most LCS's should fall within the range 70% - 130% or within the certificate value.

If an LCS fails it should be investigated.

- a) check calculations and transcriptions to ensure a mistake has not been made.
- b) If all other QC has passed, repeat the LCS. If the LCS fails again it should be remade and re analysed along with 10% of samples.
- c) If the LCS fails after the second attempt there could be a problem with the LCS – consult the supervisor.
- d) If an LCS and matrix spike fail the data cannot be accepted without qualification – consult the supervisor.

There should be an LCS available for all tests.

Duplicates

Acceptable Duplicate data is judged by % RPD.

>5 x PQL = 0-50% RPD is acceptable.

<5 x PQL = Any % is acceptable.

If a water duplicate fails you need to repeat it (if there is sufficient sample left), along with 10% of the positives from the batch.

If it fails again it is likely to be due to a matrix interference and an appropriate comment should be applied to the report such as 'the duplicate is outside acceptable %RPD, reanalysis indicates possible sample heterogeneity'. All failed duplicate results should be reported.

If a soil duplicate fails you need to repeat it (if there is sufficient sample left), along with 10% of the positive samples in the batch.

If it fails again it is likely to be due to a matrix interference and an appropriate comment

should be applied to the report such as 'the duplicate is outside acceptable %RPD, reanalysis indicates possible sample heterogeneity'. All failed duplicate results should be reported.

Surrogates

Surrogate recoveries should generally be within the range of 70-130%.

High analyte concentrations may cause surrogates to fail – this needs to be annotated on the final report.

A criteria of 50-150% is acceptable for <10% of samples in a batch – this is subject to a supervisors professional judgement and that all other QC is acceptable.

Internal Standards

Acceptance criteria for internal standards are 75-125%.

If internal standards exceed this criteria they will need to be either re-vialled and re run for organics or diluted and re run for metals. If they continue to fail consult the supervisor.

5 CHECKING THE CORRECTNESS OF ANALYTES**Anion Cation Balance**

The anion and cation sums, when expressed as milliequivalents per litre, must balance because all potable waters are electrically neutral. As a minimum we must test: (Na/Ca/Mg/K and Alk/Cl/SO₄).

The full calculation can be found in APHA or use the spreadsheet at

S drive;calculations;envirolab mass balance.

The acceptance criteria in APHA are very strict as they are based on potable water. The environmental waters we receive could rarely be termed potable so our % Difference has been determined to be 15%, with supervisor discretion.

If the % is >15 then by using the spreadsheet above you should be able to determine if there is a gross error – this particular test should then be repeated. If the repeat is confirmed then an appropriate comment must accompany the report such as 'the mass imbalance may be caused by other ions that have not been measured'.

TDS v Ions

Measured TDS should be similar or greater than ion calculated TDS. This is because the calculation will normally not involve ions such as F, Si, NO₃ etc.

$0.6(\text{alk}) + \text{Cl} + \text{SO}_4 + \text{Na} + \text{Ca} + \text{Mg} + \text{K} = \text{Approx TDS.}$

Measured EC and Ion sums

Both the anion & cation sums should be 1/100 of the measured EC value. If either of the 2 sums does not meet this criteria, that sum is suspect.

The calculation is: $100 \times \text{anion (or cation sum)meq/L} = (0.9-1.1 \text{ EC})$

The full calculation can be found in APHA or use the spreadsheet at

S drive/calculation/envirolab mass balance.

Measured TDS to EC Ratio

$\text{EC} \times (0.55-0.7) = \text{TDS.}$

If it is outside this criteria one of the tests may be suspect. The exception is waters with high colloidal particulates that may contribute to a higher measured TDS result.

Metals – Total Recoverable v Dissolved.

In theory Total recoverable metals must be equal or higher than dissolved metals. If the difference is within the uncertainty of the individual tests then this should be stated on the report. If the difference is outside the uncertainty of the individual tests then one of the results is suspect and should be reanalysed.

Organics

Some simple checks to be aware of include:

C6-C9 should generally be greater than BTEX.

C10-C36 should be greater than PAH.

Naphthalene in VOC run should be similar to PAH run.

Nutrients

TKN should be greater than or equal to Ammonia. If the difference is within the uncertainty of the individual tests then this should be stated on the report. If the difference is outside the uncertainty of the individual tests then one of the results is suspect and should be reanalyzed.

6 CONTROL CHARTS

Control Charts should be updated after each batch of analysis. As a minimum the LCS & MS data will be entered, however, depending on the test other data such as duplicate RPD's etc may be plotted.

LCS data is a good indication of the health of the method. Matrix spike and duplicate data can vary significantly due to the nature of certain matrices so are not considered an ideal measure. If a MS result is grossly out due to a known interference there is no need to plot it. Control charts are used to monitor trends and should alert the analyst to potential problems. These may be recorded manually or electronically. In theory all plotted data should lie within 2SD of the mean. If 4 successive points are showing a trend then action needs to be taken before the system reaches the CL.

The point at 2SD from the mean is referred to as WL (Warning Limits). If 2 consecutive results lie outside of the WL then the system is out of control and a supervisor must be consulted.

The point at 3SD from the mean is referred to as the CL (Control Limit). Results outside the CL should not be accepted unless there is a valid, documented reason.

7 STANDARDS / CALIBRATIONS

Calibration Check

For some methods such as organics and ICP a Calibration Check is done straight after the calibration. This should be an independent check (i.e. made from another source) and should be within 10% for metals and 20 % for organics. If it is outside this acceptance a new calibration will be necessary.

Continuing Calibration

A continuing calibration is done approximately every 10 samples for metals and 20 samples for organics and at the end of the run.

Acceptance should be 10% for metals and 20% for organics. If it is outside this acceptance a new calibration will be necessary.

New v's Old Standard Checks

New standards should always be compared to the old with an acceptance of 5%. For organics the acceptance criteria is 20%, as the new standard will also be compared against the independent check standard.

Expired Standards

Standards that have expired may still be used, however, need to be verified against another in date standard, CRM or confirmed by another lab. The expiry date may then be extended a further 6 months. For some analytes, such as metals, extending the expiry date for many years may be acceptable.

Table QC1 - Containers, Preservation Requirements and Holding Times - Soil			
Parameter	Container	Preservation	Maximum Holding Time
Acid digestible metals and metalloids - Total and TCLP (As,Cd.,Cu,Cr,Ni,Pb,Zn)	Glass with Teflon Lid	Nil	6 months
Mercury	Glass with Teflon Lid	Nil	28 days
TPH / BTEX / VOC / SVOC / CHC	Glass with Teflon Lid	4°C, zero headspace	14 days
PAHs (total and TCLP)	Glass with Teflon Lid	4°C ¹	14 days
Phenols	Glass with Teflon Lid	4°C ¹	14 days
OCPs, OPPs and total PCBs	Glass with Teflon Lid	4°C ¹	14 days
Asbestos	Sealed Plastic Bag	Nil	N/A

Table QC2 - Containers, Preservation Requirements and Holding Times - Water			
Parameter	Container Volume (mL)	Preservation	Maximum Holding Time
Heavy Metals	60mL Plastic	Field filtration 0.45µm HNO ₃ / 4°C	6 months
Mercury	60mL Plastic	Field filtration 0.45µm HNO ₃ / 4°C	6 months 28 days
Cyanide	125mL Amber Glass or 125mL Opaque HDPE	pH > 12 NaOH / 4°C	6 months 14 days
TPH (C6-C9) / BTEX / VOCs SVOCs / CHCs	4 x 44mL Glass	HCl / 4°C ¹ or Sodium Bisulphate	14 days
TPH (C10- C40) / PAH / Phenolics OCP / OPP / TDS / pH	3 x 1L Amber Glass	None / 4°C ¹	28 days (TDS is 7 days, pH is ideally a field test and should be analysed ASAP)

Notes: ¹ = Extraction within 14 days, Analysis within 40 days.

Table QC3 - Analytical Parameters, PQLs and Methods - Soil (Routine Levels)

Parameter	Unit	PQL	Method Reference
Metals in Soil			
Arsenic - As ¹	mg / kg	4	USEPA 200.7 (also reference USEPA 6010C and 3050)
Cadmium - Cd ¹	mg / kg	0.4	USEPA 200.7 (also reference USEPA 6010C and 3050)
Chromium - Cr ¹	mg / kg	1	USEPA 200.7 (also reference USEPA 6010C and 3050)
Copper - Cu ¹	mg / kg	1	USEPA 200.7 (also reference USEPA 6010C and 3050)
Lead - Pb ¹	mg / kg	1	USEPA 200.7 (also reference USEPA 6010C and 3050)
Mercury - Hg ²	mg / kg	0.1	USEPA 7471A (also reference USEPA 3050)
Nickel - Ni ¹	mg / kg	1	USEPA 200.7 (also reference USEPA 6010C and 3050)
Zinc - Zn ¹	mg / kg	1	USEPA 200.7 (also reference USEPA 6010C and 3050)
Total Petroleum Hydrocarbons (TRHs) in Soil			
old fractions			
C ₆ -C ₉ fraction	mg / kg	25	USEPA 8260
C ₁₀ -C ₁₄ fraction	mg / kg	50	USEPA 8000
C ₁₅ -C ₂₈ fraction	mg / kg	100	USEPA 8000
C ₂₉ -C ₃₆ fraction	mg / kg	100	USEPA 8000
NEPM 2013 Fractions			
C ₆ -C ₁₀ fraction	mg / kg	25	USEPA 8260
>C ₁₀ -C ₁₆ fraction	mg / kg	50	USEPA 8000
>C ₁₆ -C ₃₄ fraction	mg / kg	100	USEPA 8000
>C ₃₄ -C ₄₀ fraction	mg / kg	100	USEPA 8000
BTEX in Soil			
Benzene	mg / kg	0.2	USEPA 8260
Toluene	mg / kg	0.5	USEPA 8260
Ethylbenzene	mg / kg	0.5	USEPA 8260
m & p Xylene	mg / kg	1	USEPA 8260
o- Xylene	mg / kg	0.5	USEPA 8260
Other Organic Contaminants in Soil			
PAHs	mg / kg	0.05-0.2	USEPA 8270
CHCs	mg / kg	1	USEPA 8260
VOCs	mg / kg	1	USEPA 8260
SVOCs	mg / kg	1	USEPA 8260
OCPs	mg / kg	0.1	USEPA 8140, 8080
OPPs	mg / kg	0.1	USEPA 8140, 8080
PCBs	mg / kg	0.1	USEPA 8080
Phenolics	mg / kg	5	APHA 5530
Asbestos			
Asbestos	mg / kg	Presence / Absence	AS4964-2004

Notes:

1. Acid Soluble Metals by ICP-AES
2. Total Recoverable Mercury

Table QC4 - Analytical Parameters, PQLs and Methods - Groundwater

Parameter	Unit	PQL	Method	Parameter	Unit	PQL	Method
Heavy Metals				Chlorinated Hydrocarbons (CHCs)			
Antimony - Sb	µg/L	1	USEPA 200.8	1,2-dichlorobenzene	µg/L	1	USEPA 8260C
Arsenic - As	µg/L	1	USEPA 200.8	1,3-dichlorobenzene	µg/L	1	USEPA 8260C
Beryllium - Be	µg/L	0.5	USEPA 200.8	1,4-dichlorobenzene	µg/L	1	USEPA 8260C
Cadmium - Cd	µg/L	0.1	USEPA 200.8	1,2,3-trichlorobenzene	µg/L	1	USEPA 8260C
Chromium - Cr	µg/L	1	USEPA 200.8	1,2,4-trichlorobenzene	µg/L	1	USEPA 8260C
Cobalt - Co	µg/L	1	USEPA 200.8	Hexachlorobutadiene	µg/L	1	USEPA 8260C
Copper - Cu	µg/L	1	USEPA 200.8	1,1,2-trichloroethane	µg/L	1	USEPA 8260C
Lead - Pb	µg/L	1	USEPA 200.8	Hexachloroethane	µg/L	10	USEPA 8270D
Mercury - Hg	µg/L	0.05	USEPA 7471A	Other CHCs	µg/L	1	USEPA 8260C
Molybdenum - Mo	µg/L	1	USEPA 200.8	Semi-Volatile Organic Compounds (SVOCs)			
Nickel - Ni	µg/L	1	USEPA 200.8	Aniline	µg/L	10	USEPA 8270D
Selenium - Se	µg/L	1	USEPA 200.8	2,4-dichloroaniline	µg/L	10	USEPA 8270D
Silver - Ag	µg/L	1	USEPA 200.8	3,4-dichloroaniline	µg/L	10	USEPA 8270D
Tin (inorg.) - Sn (all forms)	µg/L	1	USEPA 200.8	Nitrobenzene	µg/L	10	USEPA 8270D
Nickel - Ni	µg/L	1	USEPA 200.8	2,4-dinitrotoluene	µg/L	10	USEPA 8270D
Zinc - Zn	µg/L	1	USEPA 200.8	2,4,6-trinitrotoluene	µg/L	10	USEPA 8270D
Total Petroleum Hydrocarbons (TRHs)				Phenolic Compounds			
C ₆ -C ₉ fraction	µg/L	10	USEPA 8220A / 8000	Phenol	µg/L	10	USEPA 8270D
C ₁₀ -C ₁₄ fraction	µg/L	50	USEPA 8000	2-chlorophenol	µg/L	10	USEPA 8270D
C ₁₅ -C ₂₈ fraction	µg/L	100	USEPA 8000	4-chlorophenol	µg/L	10	USEPA 8270D
C ₂₉ -C ₃₆ fraction	µg/L	100	USEPA 8000	2, 4-dichlorophenol	µg/L	10	USEPA 8270D
NEPM 2013				2,4,6-trichlorophenol	µg/L	10	USEPA 8270D
C ₆ -C ₁₀ fraction	µg/L	10	USEPA 8220A / 8000	2,3,4,6-tetrachlorophenol	µg/L	10	USEPA 8270D
>C ₁₀ -C ₁₆ fraction	µg/L	50	USEPA 8000	Pentachlorophenol	µg/L	10	USEPA 8270D
>C ₁₆ -C ₃₄ fraction	µg/L	100	USEPA 8000	2,4-dinitrophenol	µg/L	100	USEPA 8270D
>C ₃₄ -C ₄₀ fraction	µg/L	100	USEPA 8000	Miscellaneous Parameters			
BTEX				Total Cyanide	µg/L	4	APHA 4500C&E-CN
Benzene	µg/L	1	USEPA 8260	Fluoride	µg/L	100	APHA 4500 F-C
Toluene	µg/L	1	USEPA 8260	Salinity (TDS)	mg/L	5	APHA 2510
Ethylbenzene	µg/L	1	USEPA 8260	pH	units	0.1	APHA 4500H+
m- & p-Xylene	µg/L	2	USEPA 8260	OrganoPhosphate Pesticides (OPPs) Trace Level			
o-Xylene	µg/L	1	USEPA 8260	Azinphos Methyl	µg/L	0.01	USEPA 8082A/8270D
Polycyclic Aromatic Hydrocarbons (PAHs)				Chloropyrifos	µg/L	0.01	USEPA 8082A/8270D
PAHs Level 2	µg/L	0.1	USEPA 8270	Diazinon	µg/L	0.01	USEPA 8082A/8270D
Benzo(a)pyrene Level 3	µg/L	0.01	USEPA 8270	Dimethoate	µg/L	0.01	USEPA 8082A/8270D
OrganoChlorine Pesticides (OCPs) Trace Level				Fenitrothion	µg/L	0.01	USEPA 8082A/8270D
Aldrin	µg/L	0.001	USEPA 8082A	Malathion	µg/L	0.01	USEPA 8082A/8270D
Chlordane	µg/L	0.001	USEPA 8082A	Parathion	µg/L	0.01	USEPA 8082A/8270D
DDT	µg/L	0.001	USEPA 8082A	Temephos	µg/L	0.01	USEPA 8082A/8270D
Dieldrin	µg/L	0.001	USEPA 8082A	Polychlorinated Biphenyls (PCBs) Trace Level			
Endosulfan	µg/L	0.001	USEPA 8082A	Individual PCBs	µg/L	0.01	USEPA 8082A/8270D
Endrin	µg/L	0.001	USEPA 8082A				
Heptachlor	µg/L	0.001	USEPA 8082A				
Lindane	µg/L	0.001	USEPA 8082A				
Toxaphene	µg/L	0.001	USEPA 8082A				

Table QC5 - QC Sample Data Acceptance Criteria

QC Sample Type	Method of Assessment	Acceptable Range
Field QC		
Blind Duplicates and Split Samples	The assessment of split duplicate is undertaken by calculating the Relative Percent Difference (RPD) of the duplicate concentration compared with the primary sample concentration. The RPD is defined as: $RPD = 100 \times \frac{ X_1 - X_2 }{\text{mean}(X_1, X_2)}$ Where: X_1 and X_2 are the concentrations of the primary and duplicate samples.	The acceptable range depends upon the levels detected: - 0-150% RPD (when the average concentration is <5 times the LOR/PQL) - 0-75% RPD (when the average concentration is 5 to 10 times the LOR/PQL) - 0-50% RPD (when the average concentration is >10 times the LOR/PQL)
Rinsate & Trip Blanks	Each blank is analysed as per the original samples.	Analytical Result <LOR/PQL
Laboratory prepared Trip Spike	The Trip Spike is analysed after returning from the field and the % recovery of the known spike is calculated.	70 - 130%
Laboratory QC		
Laboratory Duplicates	Assessment of Lab Duplicate RPD as per Blind Duplicates and Split Samples.	The acceptable range depends upon the levels detected: - Any RPD (when the average concentration is <5 times the PQL) - 0-50% RPD (when the average concentration is >5 times the PQL)
Surrogates Matrix Spikes Laboratory Control Samples	Assessment is undertaken by determining the percent recovery of the known surrogate spike (SS) or addition to the sample. $\% \text{ Recovery} = 100 \times \frac{C - A}{B}$ Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; and C = Calculated Concentration.	60-140% (General Analytes) 70-130% (Inorganics / Metals) 60-140% (Organics) 10-140% (SVOC and Speciated Phenols) If the result is outside the above ranges, the result must be <3x Standard Deviation of the Historical Mean (calculated over the past 12 months).
Sample Matrix Spike Duplicates	Recovery RPD	<30% (Inorganics & Organics)
Method Blanks	Each blank is analysed as per the original samples.	Analytical Result <LOR/PQL
Note: PQL - Laboratory Practical Quantitation Limit (PQL) or the minimum detection limit for a particular analyte. LOR = Limit of Reporting		