Appendix F – Laboratory reports

Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Colee Quayle**

Report **612790-S-V2**
Project name CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID 2127477-TASK 3J FOR CONTAMINATION
Received Date Aug 17, 2018

Client Sample ID			**BH11 1.5-2.0**	**BH11 3.0-3.5**	**BH11 4.5-5.0**	**BH11 6.0-6.4**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Au21816**	**S18-Au21817**	**S18-Au21818**	**S18-Au21819**
Date Sampled			**Aug 13, 2018**	**Aug 13, 2018**	**Aug 13, 2018**	**Aug 14, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	-	-
TRH C6-C10	20	mg/kg	< 20	-	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	-	-
TRH >C10-C16	50	mg/kg	< 50	-	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	-	-
TRH >C16-C34	100	mg/kg	< 100	-	-	-
TRH >C34-C40	100	mg/kg	< 100	-	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	-	-
TRH C10-C14	20	mg/kg	< 20	-	-	-
TRH C15-C28	50	mg/kg	< 50	-	-	-
TRH C29-C36	50	mg/kg	< 50	-	-	-
TRH C10-36 (Total)	50	mg/kg	< 50	-	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	-	-
Toluene	0.1	mg/kg	< 0.1	-	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	-
o-Xylene	0.1	mg/kg	< 0.1	-	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	-
4-Bromofluorobenzene (surr.)	1	%	80	-	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	1.6	-	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.8	-	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	2.1	-	-	-
Acenaphthene	0.5	mg/kg	< 0.5	-	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-	-
Benz(a)anthracene	0.5	mg/kg	1.1	-	-	-
Benzo(a)pyrene	0.5	mg/kg	1.1	-	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	1.2	-	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	0.7	-	-	-
Benzo(k)fluoranthene	0.5	mg/kg	1.6	-	-	-
Chrysene	0.5	mg/kg	1.2	-	-	-

Client Sample ID			BH11 1.5-2.0	BH11 3.0-3.5	BH11 4.5-5.0	BH11 6.0-6.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au21816	S18-Au21817	S18-Au21818	S18-Au21819
Date Sampled			Aug 13, 2018	Aug 13, 2018	Aug 13, 2018	Aug 14, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	-
Fluoranthene	0.5	mg/kg	2.5	-	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	0.6	-	-	-
Naphthalene	0.5	mg/kg	< 0.5	-	-	-
Phenanthrene	0.5	mg/kg	< 0.5	-	-	-
Pyrene	0.5	mg/kg	2.4	-	-	-
Total PAH*	0.5	mg/kg	12.4	-	-	-
2-Fluorobiphenyl (surr.)	1	%	109	-	-	-
p-Terphenyl-d14 (surr.)	1	%	129	-	-	-
% Moisture	1	%	4.8	-	-	-
Heavy Metals						
Arsenic	2	mg/kg	5.2	-	-	-
Cadmium	0.4	mg/kg	< 0.4	-	-	-
Chromium	5	mg/kg	5.7	-	-	-
Copper	5	mg/kg	9.4	-	-	-
Lead	5	mg/kg	9.0	-	-	-
Mercury	0.1	mg/kg	< 0.1	-	-	-
Nickel	5	mg/kg	< 5	-	-	-
Zinc	5	mg/kg	35	-	-	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	8.8	9.0	9.1
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	9.5	9.4	8.2
Reaction Ratings*[S05]		comment	-	4.0	4.0	4.0

Client Sample ID			BH11 7.6-8.0	BH11 9.1-9.5	BH11 12.0-12.25	BH11 13.65-14.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au21820	S18-Au21821	S18-Au21822	S18-Au21823
Date Sampled			Aug 14, 2018	Aug 14, 2018	Aug 14, 2018	Aug 14, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	-	-
TRH C6-C10	20	mg/kg	-	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	-	-
TRH >C10-C16	50	mg/kg	-	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	-	-
TRH >C16-C34	100	mg/kg	-	2600	-	-
TRH >C34-C40	100	mg/kg	-	1100	-	-
TRH >C10-C40 (total)*	100	mg/kg	-	3700	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	-	-
TRH C10-C14	20	mg/kg	-	< 20	-	-
TRH C15-C28	50	mg/kg	-	1300	-	-
TRH C29-C36	50	mg/kg	-	1800	-	-
TRH C10-36 (Total)	50	mg/kg	-	3100	-	-

Client Sample ID			BH11 7.6-8.0	BH11 9.1-9.5	BH11 12.0-12.25	BH11 13.65-14.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au21820	S18-Au21821	S18-Au21822	S18-Au21823
Date Sampled			Aug 14, 2018	Aug 14, 2018	Aug 14, 2018	Aug 14, 2018
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	-
Toluene	0.1	mg/kg	-	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	-
o-Xylene	0.1	mg/kg	-	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	-	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	-	83	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	-	-
Acenaphthene	0.5	mg/kg	-	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	-
Anthracene	0.5	mg/kg	-	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Chrysene	0.5	mg/kg	-	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	-
Fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Fluorene	0.5	mg/kg	-	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	-
Naphthalene	0.5	mg/kg	-	< 0.5	-	-
Phenanthrene	0.5	mg/kg	-	< 0.5	-	-
Pyrene	0.5	mg/kg	-	< 0.5	-	-
Total PAH*	0.5	mg/kg	-	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	-	95	-	-
p-Terphenyl-d14 (surr.)	1	%	-	89	-	-
Ammonia (as N)	5	mg/kg	-	< 5	-	-
Cyanide (total)	5	mg/kg	-	< 5	-	-
% Moisture	1	%	-	16	-	-
Heavy Metals						
Arsenic	2	mg/kg	-	5.9	-	-
Cadmium	0.4	mg/kg	-	< 0.4	-	-
Chromium	5	mg/kg	-	< 5	-	-
Copper	5	mg/kg	-	< 5	-	-
Lead	5	mg/kg	-	< 5	-	-
Mercury	0.1	mg/kg	-	< 0.1	-	-
Nickel	5	mg/kg	-	< 5	-	-
Zinc	5	mg/kg	-	30	-	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	8.9	8.9	7.9	7.5
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	8.4	8.7	2.6	7.7
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			BH11 15-15.3	[R20]TRIP SPIKE	TRIP BLANK
Sample Matrix			Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au21824	S18-Au21825	S18-Au21826
Date Sampled			Aug 14, 2018	Aug 14, 2018	Aug 14, 2018
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5
TRH C6-C10	20	mg/kg	-	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	-	-	< 20
BTEX					
Benzene	0.1	mg/kg	-	100	< 0.1
Toluene	0.1	mg/kg	-	100	< 0.1
Ethylbenzene	0.1	mg/kg	-	100	< 0.1
m&p-Xylenes	0.2	mg/kg	-	100	< 0.2
o-Xylene	0.1	mg/kg	-	100	< 0.1
Xylenes - Total	0.3	mg/kg	-	100	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	92	95
Acid Sulfate Soils Field pH Test					
pH-F (Field pH test)*	0.1	pH Units	7.4	-	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.6	-	-
Reaction Ratings*[S05]		comment	4.0	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 23, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons	Sydney	Aug 21, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Aug 23, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Aug 23, 2018	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Eurofins | mgt Suite B7			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 23, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Melbourne	Aug 23, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Melbourne	Aug 23, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Ammonia (as N)	Melbourne	Aug 23, 2018	7 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Cyanide (total)	Melbourne	Aug 23, 2018	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Acid Sulfate Soils Field pH Test	Brisbane	Aug 22, 2018	7 Days
- Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests			
% Moisture	Melbourne	Aug 17, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261
Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 17, 2018 12:10 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	612790 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Aug 24, 2018 5 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA				
Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	CANCELLED	Cyanide (total)	pH (at 25°C)	Acid Sulfate Soils Field pH Test	BTEX	Eurofins | mgt Suite B15	Volatile Organics	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X			X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X				X	X
Brisbane Laboratory - NATA Site # 20794											X						
Perth Laboratory - NATA Site # 23736																	
External Laboratory																	
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**												
1	BWS01	Aug 13, 2018		Water	S18-Au21814					X			X	X		X	
2	BH11 0.2-0.3	Aug 13, 2018		Soil	S18-Au21815		X										
3	BH11 1.5-2.0	Aug 13, 2018		Soil	S18-Au21816										X	X	
4	BH11 3.0-3.5	Aug 13, 2018		Soil	S18-Au21817						X						
5	BH11 4.5-5.0	Aug 13, 2018		Soil	S18-Au21818						X						
6	BH11 6.0-6.4	Aug 14, 2018		Soil	S18-Au21819						X						
7	BH11 7.6-8.0	Aug 14, 2018		Soil	S18-Au21820						X						
8	BH11 9.1-9.5	Aug 14, 2018		Soil	S18-Au21821	X			X		X				X	X	
9	BH11 12.0-12.25	Aug 14, 2018		Soil	S18-Au21822						X						

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Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 17, 2018 12:10 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	612790 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Aug 24, 2018 5 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA				
Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	CANCELLED	Cyanide (total)	pH (at 25°C)	Acid Sulfate Soils Field pH Test	BTEX	Eurofins | mgt Suite B15	Volatile Organics	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X			X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X				X	X
Brisbane Laboratory - NATA Site # 20794											X						
Perth Laboratory - NATA Site # 23736																	
10	BH11 13.65-14.0	Aug 14, 2018		Soil	S18-Au21823						X						
11	BH11 15-15.3	Aug 14, 2018		Soil	S18-Au21824						X						
12	TRIP SPIKE	Aug 14, 2018		Soil	S18-Au21825							X					
13	TRIP BLANK	Aug 14, 2018		Soil	S18-Au21826												X
14	BH11 1.0-1.2	Aug 13, 2018		Soil	S18-Au21838			X									
Test Counts						1	1	1	1	1	8	1	1	1	2	3	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Ammonia (as N)	mg/kg	< 5			5	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	113			70-130	Pass	
TRH C6-C10	%	108			70-130	Pass	
TRH >C10-C16	%	89			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	108			70-130	Pass	
TRH C10-C14	%	78			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	103			70-130	Pass	
Toluene	%	107			70-130	Pass	
Ethylbenzene	%	106			70-130	Pass	
m&p-Xylenes	%	108			70-130	Pass	
Xylenes - Total	%	107			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	88			70-130	Pass	
Acenaphthylene	%	95			70-130	Pass	
Anthracene	%	88			70-130	Pass	
Benz(a)anthracene	%	96			70-130	Pass	
Benzo(a)pyrene	%	96			70-130	Pass	
Benzo(b&j)fluoranthene	%	94			70-130	Pass	
Benzo(g.h.i)perylene	%	76			70-130	Pass	
Benzo(k)fluoranthene	%	117			70-130	Pass	
Chrysene	%	88			70-130	Pass	
Dibenz(a.h)anthracene	%	76			70-130	Pass	
Fluoranthene	%	104			70-130	Pass	
Fluorene	%	98			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	77			70-130	Pass	
Naphthalene	%	91			70-130	Pass	
Phenanthrene	%	85			70-130	Pass	
Pyrene	%	104			70-130	Pass	
LCS - % Recovery							
Ammonia (as N)	%	109			70-130	Pass	
Cyanide (total)	%	96			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	102			80-120	Pass	
Cadmium	%	100			80-120	Pass	
Chromium	%	111			80-120	Pass	
Copper	%	106			80-120	Pass	
Lead	%	110			80-120	Pass	
Mercury	%	91			75-125	Pass	
Nickel	%	112			80-120	Pass	
Zinc	%	107			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M18-Au20859	NCP	%	114			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M18-Au20859	NCP	%	99			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M18-Au22695	NCP	%	72			70-130	Pass	
Acenaphthylene	M18-Au22695	NCP	%	82			70-130	Pass	
Anthracene	M18-Au22695	NCP	%	92			70-130	Pass	
Benz(a)anthracene	M18-Au22695	NCP	%	80			70-130	Pass	
Benzo(a)pyrene	M18-Au22695	NCP	%	80			70-130	Pass	
Benzo(b&j)fluoranthene	M18-Au22695	NCP	%	82			70-130	Pass	
Benzo(g.h.i)perylene	M18-Au22695	NCP	%	88			70-130	Pass	
Benzo(k)fluoranthene	M18-Au22695	NCP	%	86			70-130	Pass	
Chrysene	M18-Au22695	NCP	%	83			70-130	Pass	
Dibenz(a.h)anthracene	M18-Au22695	NCP	%	98			70-130	Pass	
Fluoranthene	M18-Au22695	NCP	%	103			70-130	Pass	
Fluorene	M18-Au22695	NCP	%	78			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-Au22695	NCP	%	90			70-130	Pass	
Naphthalene	M18-Au22695	NCP	%	80			70-130	Pass	
Phenanthrene	M18-Au22695	NCP	%	89			70-130	Pass	
Pyrene	M18-Au22695	NCP	%	100			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	M18-Au24726	NCP	%	97			75-125	Pass	
Chromium	M18-Au24726	NCP	%	107			75-125	Pass	
Copper	M18-Au24726	NCP	%	124			75-125	Pass	
Nickel	M18-Au24726	NCP	%	87			75-125	Pass	
Zinc	M18-Au24726	NCP	%	126			75-125	Fail	Q08
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M18-Oc24680	NCP	%	93			70-130	Pass	
Cyanide (total)	M18-Au26087	NCP	%	51			70-130	Fail	Q08
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M18-Au26557	NCP	%	108			75-125	Pass	
Lead	M18-Au26557	NCP	%	87			75-125	Pass	
Mercury	M18-Au26557	NCP	%	97			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Au24197	NCP	%	102			70-130	Pass	
Toluene	S18-Au24197	NCP	%	114			70-130	Pass	
Ethylbenzene	S18-Au24197	NCP	%	113			70-130	Pass	
m&p-Xylenes	S18-Au24197	NCP	%	117			70-130	Pass	
o-Xylene	S18-Au24197	NCP	%	114			70-130	Pass	
Xylenes - Total	S18-Au24197	NCP	%	116			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-Au24197	NCP	%	104			70-130	Pass	
TRH C6-C10	S18-Au24197	NCP	%	101			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Au24197	NCP	%	108			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M18-Au22694	NCP	mg/kg	240	240	2.0	30%	Pass	
TRH >C16-C34	M18-Au22694	NCP	mg/kg	770	1000	28	30%	Pass	
TRH >C34-C40	M18-Au22694	NCP	mg/kg	130	170	30	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M18-Au22694	NCP	mg/kg	240	230	2.0	30%	Pass	
TRH C15-C28	M18-Au22694	NCP	mg/kg	390	520	29	30%	Pass	
TRH C29-C36	M18-Au22694	NCP	mg/kg	370	490	28	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M18-Au22694	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M18-Au22694	NCP	mg/kg	< 0.5	0.7	64	30%	Fail	Q15
Anthracene	M18-Au22694	NCP	mg/kg	< 0.5	2.0	130	30%	Fail	Q15
Benz(a)anthracene	M18-Au22694	NCP	mg/kg	1.0	3.3	100	30%	Fail	Q15
Benzo(a)pyrene	M18-Au22694	NCP	mg/kg	1.2	3.0	84	30%	Fail	Q15
Benzo(b&j)fluoranthene	M18-Au22694	NCP	mg/kg	0.9	2.1	84	30%	Fail	Q15
Benzo(g.h.i)perylene	M18-Au22694	NCP	mg/kg	1.0	1.7	51	30%	Fail	Q15
Benzo(k)fluoranthene	M18-Au22694	NCP	mg/kg	1.0	2.2	74	30%	Fail	Q15
Chrysene	M18-Au22694	NCP	mg/kg	1.1	2.8	90	30%	Fail	Q15
Dibenz(a.h)anthracene	M18-Au22694	NCP	mg/kg	< 0.5	0.6	100	30%	Fail	Q15
Fluoranthene	M18-Au22694	NCP	mg/kg	2.3	9.9	130	30%	Fail	Q02
Fluorene	M18-Au22694	NCP	mg/kg	< 0.5	0.9	130	30%	Fail	Q15
Indeno(1.2.3-cd)pyrene	M18-Au22694	NCP	mg/kg	0.6	1.5	89	30%	Fail	Q15
Naphthalene	M18-Au22694	NCP	mg/kg	0.7	< 0.5	38	30%	Fail	Q15
Phenanthrene	M18-Au22694	NCP	mg/kg	1.1	7.2	150	30%	Fail	Q02
Pyrene	M18-Au22694	NCP	mg/kg	2.1	7.7	120	30%	Fail	Q02
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M18-Au22777	NCP	%	24	24	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cadmium	M18-Au24726	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M18-Au24725	NCP	mg/kg	91	93	2.0	30%	Pass	
Copper	M18-Au24725	NCP	mg/kg	190	170	16	30%	Pass	
Lead	M18-Au24725	NCP	mg/kg	740	710	4.0	30%	Pass	
Nickel	M18-Au24725	NCP	mg/kg	84	87	3.0	30%	Pass	
Zinc	M18-Au24725	NCP	mg/kg	320	270	18	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au21817	CP	pH Units	8.8	8.9	pass	30%	Pass	
Reaction Ratings*	S18-Au21817	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M18-Oc24680	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Cyanide (total)	M18-Au26082	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M18-Au26557	NCP	mg/kg	2.4	2.5	3.0	30%	Pass	
Mercury	M18-Au26557	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-Au24196	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-Au24196	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-Au24196	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-Au24196	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-Au24196	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-Au24196	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-Au24196	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-Au24196	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-Au24196	NCP	mg/kg	< 20	< 20	<1	30%	Pass	

Comments

This report has been revised (V2) to include additional QC results for Ammonia.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q02	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
R20	This sample is a Trip Spike and therefore all results are reported as a percentage
S05	Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

Authorised By

Nibha Vaidya	Analytical Services Manager
Chris Bennett	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)
Myles Clark	Senior Analyst-SPOCAS (QLD)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Wollongong
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The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Colee Quayle**

Report **612790-W-V2**
Project name CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID 2127477-TASK 3J FOR CONTAMINATION
Received Date Aug 17, 2018

Client Sample ID			**BWS01**
Sample Matrix			**Water**
Eurofins | mgt Sample No.			**S18-Au21814**
Date Sampled			**Aug 13, 2018**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	132
Volatile Organics			
1.1-Dichloroethane	0.001	mg/L	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001
2-Butanone (MEK)	0.001	mg/L	< 0.001
2-Propanone (Acetone)	0.001	mg/L	< 0.001
4-Chlorotoluene	0.001	mg/L	< 0.001
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001
Allyl chloride	0.001	mg/L	< 0.001

Client Sample ID			BWS01
Sample Matrix			Water
Eurofins | mgt Sample No.			S18-Au21814
Date Sampled			Aug 13, 2018
Test/Reference	LOR	Unit	
Volatile Organics			
Benzene	0.001	mg/L	< 0.001
Bromobenzene	0.001	mg/L	< 0.001
Bromochloromethane	0.001	mg/L	< 0.001
Bromodichloromethane	0.001	mg/L	0.011
Bromoform	0.001	mg/L	< 0.001
Bromomethane	0.001	mg/L	< 0.001
Carbon disulfide	0.001	mg/L	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001
Chloroethane	0.001	mg/L	< 0.001
Chloroform	0.005	mg/L	0.017
Chloromethane	0.001	mg/L	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001
Dibromochloromethane	0.001	mg/L	0.005
Dibromomethane	0.001	mg/L	< 0.001
Dichlorodifluoromethane	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
Iodomethane	0.001	mg/L	< 0.001
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
Methylene Chloride	0.001	mg/L	< 0.001
o-Xylene	0.001	mg/L	< 0.001
Styrene	0.001	mg/L	< 0.001
Tetrachloroethene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001
Trichloroethene	0.001	mg/L	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
Total MAH*	0.003	mg/L	< 0.003
Vic EPA IWRG 621 CHC (Total)*	0.005	mg/L	0.017
Vic EPA IWRG 621 Other CHC (Total)*	0.005	mg/L	0.017
4-Bromofluorobenzene (surr.)	1	%	132
Toluene-d8 (surr.)	1	%	104
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.01	mg/L	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1

Client Sample ID			BWS01
Sample Matrix			Water
Eurofins | mgt Sample No.			S18-Au21814
Date Sampled			Aug 13, 2018
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	< 0.001
Fluorene	0.001	mg/L	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001
Naphthalene	0.001	mg/L	< 0.001
Phenanthrene	0.001	mg/L	< 0.001
Pyrene	0.001	mg/L	< 0.001
Total PAH*	0.001	mg/L	< 0.001
2-Fluorobiphenyl (surr.)	1	%	58
p-Terphenyl-d14 (surr.)	1	%	80
Organochlorine Pesticides			
Chlordanes - Total	0.001	mg/L	< 0.001
4.4'-DDD	0.0001	mg/L	< 0.0001
4.4'-DDE	0.0001	mg/L	< 0.0001
4.4'-DDT	0.0001	mg/L	< 0.0001
a-BHC	0.0001	mg/L	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001
b-BHC	0.0001	mg/L	< 0.0001
d-BHC	0.0001	mg/L	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001
Endosulfan II	0.0001	mg/L	< 0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001
Endrin	0.0001	mg/L	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001
Methoxychlor	0.0001	mg/L	< 0.0001
Toxaphene	0.01	mg/L	< 0.01
Aldrin and Dieldrin (Total)*	0.0001	mg/L	< 0.0001
DDT + DDE + DDD (Total)*	0.0001	mg/L	< 0.0001
Vic EPA IWRG 621 OCP (Total)*	0.001	mg/L	< 0.001
Vic EPA IWRG 621 Other OCP (Total)*	0.001	mg/L	< 0.001
Dibutylchlorendate (surr.)	1	%	54
Tetrachloro-m-xylene (surr.)	1	%	59

Client Sample ID			BWS01
Sample Matrix			Water
Eurofins | mgt Sample No.			S18-Au21814
Date Sampled			Aug 13, 2018
Test/Reference	LOR	Unit	
Organophosphorus Pesticides			
Azinphos-methyl	0.002	mg/L	< 0.002
Bolstar	0.002	mg/L	< 0.002
Chlorfenvinphos	0.002	mg/L	< 0.002
Chlorpyrifos	0.02	mg/L	< 0.02
Chlorpyrifos-methyl	0.002	mg/L	< 0.002
Coumaphos	0.02	mg/L	< 0.02
Demeton-S	0.02	mg/L	< 0.02
Demeton-O	0.002	mg/L	< 0.002
Diazinon	0.002	mg/L	< 0.002
Dichlorvos	0.002	mg/L	< 0.002
Dimethoate	0.002	mg/L	< 0.002
Disulfoton	0.002	mg/L	< 0.002
EPN	0.002	mg/L	< 0.002
Ethion	0.002	mg/L	< 0.002
Ethoprop	0.002	mg/L	< 0.002
Ethyl parathion	0.002	mg/L	< 0.002
Fenitrothion	0.002	mg/L	< 0.002
Fensulfothion	0.002	mg/L	< 0.002
Fenthion	0.002	mg/L	< 0.002
Malathion	0.002	mg/L	< 0.002
Merphos	0.002	mg/L	< 0.002
Methyl parathion	0.002	mg/L	< 0.002
Mevinphos	0.002	mg/L	< 0.002
Monocrotophos	0.002	mg/L	< 0.002
Naled	0.002	mg/L	< 0.002
Omethoate	0.002	mg/L	< 0.002
Phorate	0.002	mg/L	< 0.002
Pirimiphos-methyl	0.02	mg/L	< 0.02
Pyrazophos	0.002	mg/L	< 0.002
Ronnel	0.002	mg/L	< 0.002
Terbufos	0.002	mg/L	< 0.002
Tetrachlorvinphos	0.002	mg/L	< 0.002
Tokuthion	0.002	mg/L	< 0.002
Trichloronate	0.002	mg/L	< 0.002
Triphenylphosphate (surr.)	1	%	80
Polychlorinated Biphenyls			
Aroclor-1016	0.001	mg/L	< 0.001
Aroclor-1221	0.001	mg/L	< 0.001
Aroclor-1232	0.001	mg/L	< 0.001
Aroclor-1242	0.001	mg/L	< 0.001
Aroclor-1248	0.001	mg/L	< 0.001
Aroclor-1254	0.001	mg/L	< 0.001
Aroclor-1260	0.001	mg/L	< 0.001
Total PCB*	0.001	mg/L	< 0.001
Dibutylchlorendate (surr.)	1	%	54
Tetrachloro-m-xylene (surr.)	1	%	59
pH (at 25°C)	0.1	pH Units	8.0

Client Sample ID			BWS01
Sample Matrix			Water
Eurofins | mgt Sample No.			S18-Au21814
Date Sampled			Aug 13, 2018
Test/Reference	LOR	Unit	
Heavy Metals			
Arsenic	0.001	mg/L	0.002
Cadmium	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	0.005
Copper	0.001	mg/L	0.016
Lead	0.001	mg/L	0.003
Mercury	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	0.005
Zinc	0.005	mg/L	0.024

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Aug 22, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Aug 18, 2018	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 18, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Eurofins | mgt Suite B7			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 22, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Melbourne	Aug 22, 2018	7 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Melbourne	Aug 18, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Volatile Organics	Melbourne	Aug 18, 2018	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
pH (at 25°C)	Melbourne	Aug 18, 2018	0 Hours
- Method: LTM-GEN-7090 pH in water by ISE			
Eurofins | mgt Suite B15			
Organochlorine Pesticides	Melbourne	Aug 22, 2018	7 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Organophosphorus Pesticides	Melbourne	Aug 22, 2018	7 Day
- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS			
Polychlorinated Biphenyls	Melbourne	Aug 22, 2018	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			

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Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 612790
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 17, 2018 12:10 PM
Due: Aug 24, 2018
Priority: 5 Day
Contact Name: Colee Quayle

Project Name: CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID: 2127477-TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	CANCELLED	Cyanide (total)	pH (at 25°C)	Acid Sulfate Soils Field pH Test	BTEX	Eurofins | mgt Suite B15	Volatile Organics	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X			X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X				X	X
Brisbane Laboratory - NATA Site # 20794											X						
Perth Laboratory - NATA Site # 23736																	
External Laboratory																	
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**												
1	BWS01	Aug 13, 2018		Water	S18-Au21814					X			X	X		X	
2	BH11 0.2-0.3	Aug 13, 2018		Soil	S18-Au21815		X										
3	BH11 1.5-2.0	Aug 13, 2018		Soil	S18-Au21816										X	X	
4	BH11 3.0-3.5	Aug 13, 2018		Soil	S18-Au21817						X						
5	BH11 4.5-5.0	Aug 13, 2018		Soil	S18-Au21818						X						
6	BH11 6.0-6.4	Aug 14, 2018		Soil	S18-Au21819						X						
7	BH11 7.6-8.0	Aug 14, 2018		Soil	S18-Au21820						X						
8	BH11 9.1-9.5	Aug 14, 2018		Soil	S18-Au21821	X			X		X				X	X	
9	BH11 12.0-12.25	Aug 14, 2018		Soil	S18-Au21822						X						

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Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 17, 2018 12:10 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	612790 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Aug 24, 2018 5 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA				
Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	CANCELLED	Cyanide (total)	pH (at 25°C)	Acid Sulfate Soils Field pH Test	BTEX	Eurofins | mgt Suite B15	Volatile Organics	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X			X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X				X	X
Brisbane Laboratory - NATA Site # 20794											X						
Perth Laboratory - NATA Site # 23736																	
10	BH11 13.65-14.0	Aug 14, 2018		Soil	S18-Au21823						X						
11	BH11 15-15.3	Aug 14, 2018		Soil	S18-Au21824						X						
12	TRIP SPIKE	Aug 14, 2018		Soil	S18-Au21825							X					
13	TRIP BLANK	Aug 14, 2018		Soil	S18-Au21826												X
14	BH11 1.0-1.2	Aug 13, 2018		Soil	S18-Au21838			X									
Test Counts						1	1	1	1	1	8	1	1	1	2	3	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.1-Dichloroethene	mg/L	< 0.001			0.001	Pass	
1.1.1-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.1.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dibromoethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.2-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.3-Trichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.4-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.3.5-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.4-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
2-Butanone (MEK)	mg/L	< 0.001			0.001	Pass	
2-Propanone (Acetone)	mg/L	< 0.001			0.001	Pass	
4-Chlorotoluene	mg/L	< 0.001			0.001	Pass	
4-Methyl-2-pentanone (MIBK)	mg/L	< 0.001			0.001	Pass	
Allyl chloride	mg/L	< 0.001			0.001	Pass	
Bromobenzene	mg/L	< 0.001			0.001	Pass	
Bromochloromethane	mg/L	< 0.001			0.001	Pass	
Bromodichloromethane	mg/L	< 0.001			0.001	Pass	
Bromoform	mg/L	< 0.001			0.001	Pass	
Bromomethane	mg/L	< 0.001			0.001	Pass	
Carbon disulfide	mg/L	< 0.001			0.001	Pass	
Carbon Tetrachloride	mg/L	< 0.001			0.001	Pass	
Chlorobenzene	mg/L	< 0.001			0.001	Pass	
Chloroethane	mg/L	< 0.001			0.001	Pass	
Chloroform	mg/L	< 0.005			0.005	Pass	
Chloromethane	mg/L	< 0.001			0.001	Pass	
cis-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
cis-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Dibromochloromethane	mg/L	< 0.001			0.001	Pass	
Dibromomethane	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dichlorodifluoromethane	mg/L	< 0.001			0.001	Pass	
Iodomethane	mg/L	< 0.001			0.001	Pass	
Isopropyl benzene (Cumene)	mg/L	< 0.001			0.001	Pass	
Methylene Chloride	mg/L	< 0.001			0.001	Pass	
Styrene	mg/L	< 0.001			0.001	Pass	
Tetrachloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Trichloroethene	mg/L	< 0.001			0.001	Pass	
Trichlorofluoromethane	mg/L	< 0.001			0.001	Pass	
Vinyl chloride	mg/L	< 0.001			0.001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/L	< 0.001			0.001	Pass	
4.4'-DDD	mg/L	< 0.0001			0.0001	Pass	
4.4'-DDE	mg/L	< 0.0001			0.0001	Pass	
4.4'-DDT	mg/L	< 0.0001			0.0001	Pass	
a-BHC	mg/L	< 0.0001			0.0001	Pass	
Aldrin	mg/L	< 0.0001			0.0001	Pass	
b-BHC	mg/L	< 0.0001			0.0001	Pass	
d-BHC	mg/L	< 0.0001			0.0001	Pass	
Dieldrin	mg/L	< 0.0001			0.0001	Pass	
Endosulfan I	mg/L	< 0.0001			0.0001	Pass	
Endosulfan II	mg/L	< 0.0001			0.0001	Pass	
Endosulfan sulphate	mg/L	< 0.0001			0.0001	Pass	
Endrin	mg/L	< 0.0001			0.0001	Pass	
Endrin aldehyde	mg/L	< 0.0001			0.0001	Pass	
Endrin ketone	mg/L	< 0.0001			0.0001	Pass	
g-BHC (Lindane)	mg/L	< 0.0001			0.0001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor	mg/L	< 0.0001			0.0001	Pass	
Heptachlor epoxide	mg/L	< 0.0001			0.0001	Pass	
Hexachlorobenzene	mg/L	< 0.0001			0.0001	Pass	
Methoxychlor	mg/L	< 0.0001			0.0001	Pass	
Toxaphene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/L	< 0.002			0.002	Pass	
Bolstar	mg/L	< 0.002			0.002	Pass	
Chlorfenvinphos	mg/L	< 0.002			0.002	Pass	
Chlorpyrifos	mg/L	< 0.02			0.02	Pass	
Chlorpyrifos-methyl	mg/L	< 0.002			0.002	Pass	
Coumaphos	mg/L	< 0.02			0.02	Pass	
Demeton-S	mg/L	< 0.02			0.02	Pass	
Demeton-O	mg/L	< 0.002			0.002	Pass	
Diazinon	mg/L	< 0.002			0.002	Pass	
Dichlorvos	mg/L	< 0.002			0.002	Pass	
Dimethoate	mg/L	< 0.002			0.002	Pass	
Disulfoton	mg/L	< 0.002			0.002	Pass	
EPN	mg/L	< 0.002			0.002	Pass	
Ethion	mg/L	< 0.002			0.002	Pass	
Ethoprop	mg/L	< 0.002			0.002	Pass	
Ethyl parathion	mg/L	< 0.002			0.002	Pass	
Fenitrothion	mg/L	< 0.002			0.002	Pass	
Fensulfothion	mg/L	< 0.002			0.002	Pass	
Fenthion	mg/L	< 0.002			0.002	Pass	
Malathion	mg/L	< 0.002			0.002	Pass	
Merphos	mg/L	< 0.002			0.002	Pass	
Methyl parathion	mg/L	< 0.002			0.002	Pass	
Mevinphos	mg/L	< 0.002			0.002	Pass	
Monocrotophos	mg/L	< 0.002			0.002	Pass	
Naled	mg/L	< 0.002			0.002	Pass	
Omethoate	mg/L	< 0.002			0.002	Pass	
Phorate	mg/L	< 0.002			0.002	Pass	
Pirimiphos-methyl	mg/L	< 0.02			0.02	Pass	
Pyrazophos	mg/L	< 0.002			0.002	Pass	
Ronnel	mg/L	< 0.002			0.002	Pass	
Terbufos	mg/L	< 0.002			0.002	Pass	
Tetrachlorvinphos	mg/L	< 0.002			0.002	Pass	
Tokuthion	mg/L	< 0.002			0.002	Pass	
Trichloronate	mg/L	< 0.002			0.002	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/L	< 0.001			0.001	Pass	
Aroclor-1221	mg/L	< 0.001			0.001	Pass	
Aroclor-1232	mg/L	< 0.001			0.001	Pass	
Aroclor-1242	mg/L	< 0.001			0.001	Pass	
Aroclor-1248	mg/L	< 0.001			0.001	Pass	
Aroclor-1254	mg/L	< 0.001			0.001	Pass	
Aroclor-1260	mg/L	< 0.001			0.001	Pass	
Total PCB*	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	104			70-130	Pass	
TRH C10-C14	%	113			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	110			70-130	Pass	
Toluene	%	99			70-130	Pass	
Ethylbenzene	%	102			70-130	Pass	
m&p-Xylenes	%	99			70-130	Pass	
Xylenes - Total	%	101			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	111			70-130	Pass	
1.1.1-Trichloroethane	%	98			70-130	Pass	
1.2-Dichlorobenzene	%	90			70-130	Pass	
1.2-Dichloroethane	%	119			70-130	Pass	
Trichloroethene	%	102			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	85			70-130	Pass	
TRH C6-C10	%	106			70-130	Pass	
TRH >C10-C16	%	108			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	89			70-130	Pass	
Acenaphthylene	%	87			70-130	Pass	
Anthracene	%	77			70-130	Pass	
Benz(a)anthracene	%	105			70-130	Pass	
Benzo(a)pyrene	%	95			70-130	Pass	
Benzo(b&j)fluoranthene	%	114			70-130	Pass	
Benzo(g.h.i)perylene	%	112			70-130	Pass	
Benzo(k)fluoranthene	%	112			70-130	Pass	
Chrysene	%	107			70-130	Pass	
Dibenz(a.h)anthracene	%	113			70-130	Pass	
Fluoranthene	%	100			70-130	Pass	
Fluorene	%	89			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	115			70-130	Pass	
Naphthalene	%	82			70-130	Pass	
Phenanthrene	%	91			70-130	Pass	
Pyrene	%	103			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	101			70-130	Pass	
4.4'-DDD	%	99			70-130	Pass	
4.4'-DDE	%	106			70-130	Pass	
4.4'-DDT	%	73			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
a-BHC	%	108			70-130	Pass	
Aldrin	%	103			70-130	Pass	
b-BHC	%	102			70-130	Pass	
d-BHC	%	87			70-130	Pass	
Dieldrin	%	110			70-130	Pass	
Endosulfan I	%	83			70-130	Pass	
Endosulfan II	%	98			70-130	Pass	
Endosulfan sulphate	%	83			70-130	Pass	
Endrin	%	76			70-130	Pass	
Endrin aldehyde	%	91			70-130	Pass	
Endrin ketone	%	75			70-130	Pass	
g-BHC (Lindane)	%	110			70-130	Pass	
Heptachlor	%	85			70-130	Pass	
Heptachlor epoxide	%	100			70-130	Pass	
Hexachlorobenzene	%	96			70-130	Pass	
Methoxychlor	%	87			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							
Diazinon	%	111			70-130	Pass	
Dimethoate	%	92			70-130	Pass	
Ethion	%	107			70-130	Pass	
Fenitrothion	%	77			70-130	Pass	
Methyl parathion	%	76			70-130	Pass	
Mevinphos	%	89			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	97			80-120	Pass	
Cadmium	%	100			80-120	Pass	
Chromium	%	100			80-120	Pass	
Copper	%	98			80-120	Pass	
Lead	%	109			80-120	Pass	
Mercury	%	101			75-125	Pass	
Nickel	%	98			80-120	Pass	
Zinc	%	102			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M18-Au25124	NCP	%	94			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M18-Au25124	NCP	%	87			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M18-Au10506	NCP	%	101			70-130	Pass	
Acenaphthylene	M18-Au10506	NCP	%	100			70-130	Pass	
Anthracene	M18-Au10506	NCP	%	112			70-130	Pass	
Benz(a)anthracene	M18-Au10506	NCP	%	120			70-130	Pass	
Benzo(a)pyrene	M18-Au10506	NCP	%	117			70-130	Pass	
Benzo(b&j)fluoranthene	M18-Au10506	NCP	%	119			70-130	Pass	
Benzo(g.h.i)perylene	M18-Au10506	NCP	%	107			70-130	Pass	
Benzo(k)fluoranthene	M18-Au10506	NCP	%	120			70-130	Pass	
Chrysene	M18-Au10506	NCP	%	120			70-130	Pass	
Dibenz(a.h)anthracene	M18-Au10506	NCP	%	107			70-130	Pass	
Fluoranthene	M18-Au10506	NCP	%	115			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fluorene	M18-Au10506	NCP	%	105			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-Au10506	NCP	%	110			70-130	Pass	
Naphthalene	M18-Au10506	NCP	%	90			70-130	Pass	
Phenanthrene	M18-Au10506	NCP	%	109			70-130	Pass	
Pyrene	M18-Au10506	NCP	%	118			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	M18-Au22564	NCP	%	98			70-130	Pass	
4.4'-DDD	M18-Au22564	NCP	%	82			70-130	Pass	
4.4'-DDE	M18-Au22564	NCP	%	96			70-130	Pass	
4.4'-DDT	M18-Au22564	NCP	%	84			70-130	Pass	
a-BHC	M18-Au22564	NCP	%	92			70-130	Pass	
Aldrin	M18-Au22564	NCP	%	85			70-130	Pass	
b-BHC	M18-Au22564	NCP	%	92			70-130	Pass	
d-BHC	M18-Au22564	NCP	%	92			70-130	Pass	
Dieldrin	M18-Au22564	NCP	%	104			70-130	Pass	
Endosulfan I	M18-Au22564	NCP	%	88			70-130	Pass	
Endosulfan II	M18-Au22564	NCP	%	98			70-130	Pass	
Endosulfan sulphate	M18-Au22564	NCP	%	75			70-130	Pass	
Endrin	M18-Au22564	NCP	%	88			70-130	Pass	
Endrin aldehyde	M18-Au22564	NCP	%	88			70-130	Pass	
Endrin ketone	M18-Au22564	NCP	%	93			70-130	Pass	
g-BHC (Lindane)	M18-Au22564	NCP	%	98			70-130	Pass	
Heptachlor	M18-Au22564	NCP	%	74			70-130	Pass	
Heptachlor epoxide	M18-Au22564	NCP	%	91			70-130	Pass	
Hexachlorobenzene	M18-Au22564	NCP	%	91			70-130	Pass	
Methoxychlor	M18-Au22564	NCP	%	129			70-130	Pass	
Spike - % Recovery									
Organophosphorus Pesticides				Result 1					
Diazinon	M18-Au11671	NCP	%	109			70-130	Pass	
Dimethoate	M18-Au11671	NCP	%	82			70-130	Pass	
Ethion	M18-Au11671	NCP	%	110			70-130	Pass	
Fenitrothion	M18-Au11671	NCP	%	90			70-130	Pass	
Methyl parathion	M18-Au11671	NCP	%	83			70-130	Pass	
Mevinphos	M18-Au11671	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	P18-Au22162	NCP	%	90			75-125	Pass	
Cadmium	P18-Au22162	NCP	%	91			75-125	Pass	
Chromium	P18-Au22162	NCP	%	91			75-125	Pass	
Copper	P18-Au22162	NCP	%	89			75-125	Pass	
Lead	P18-Au22162	NCP	%	98			75-125	Pass	
Mercury	P18-Au22162	NCP	%	94			70-130	Pass	
Nickel	P18-Au22162	NCP	%	88			75-125	Pass	
Zinc	P18-Au22162	NCP	%	94			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M18-Au25123	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M18-Au25123	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M18-Au25123	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M18-Au25123	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M18-Au25123	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M18-Au25123	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g.h.i)perylene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a.h)anthracene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S18-Au14877	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
4.4'-DDD	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
4.4'-DDE	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
4.4'-DDT	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
a-BHC	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Aldrin	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
b-BHC	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
d-BHC	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Dieldrin	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan I	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan II	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan sulphate	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin aldehyde	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin ketone	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
g-BHC (Lindane)	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Heptachlor	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Heptachlor epoxide	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Hexachlorobenzene	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Methoxychlor	S18-Au14877	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Duplicate									
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Azinphos-methyl	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Bolstar	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Chlorfenvinphos	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Chlorpyrifos	S18-Au14877	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Chlorpyrifos-methyl	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Coumaphos	S18-Au14877	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Demeton-S	S18-Au14877	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Demeton-O	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Diazinon	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	

Duplicate									
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Dichlorvos	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Dimethoate	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Disulfoton	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
EPN	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Ethion	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Ethoprop	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Ethyl parathion	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Fenitrothion	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Fensulfothion	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Fenthion	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Malathion	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Merphos	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Methyl parathion	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Mevinphos	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Monocrotophos	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Naled	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Omethoate	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Phorate	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Pirimiphos-methyl	S18-Au14877	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Pyrazophos	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Ronnel	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Terbufos	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Tetrachlorvinphos	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Tokuthion	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Trichloronate	S18-Au14877	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
pH (at 25°C)	M18-Au22445	NCP	pH Units	6.7	6.7	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	P18-Au22162	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	P18-Au22162	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	P18-Au22162	NCP	mg/L	0.001	0.001	1.0	30%	Pass	
Copper	P18-Au22162	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	P18-Au22162	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	P18-Au22162	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	P18-Au22162	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	P18-Au22162	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments

This report has been revised (V2) to include additional QC results for Ammonia.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Nibha Vaidya	Analytical Services Manager
Chris Bennett	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

Attention:	Colee Quayle
Report	612790-V2-AID
Project Name	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID	2127477-TASK 3J FOR CONTAMINATION
Received Date	Aug 17, 2018
Date Reported	Oct 22, 2018

Methodology:

Asbestos Fibre Identification

Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.
NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.

Unknown Mineral Fibres

Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity.
NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.

Subsampling Soil Samples

The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed.
NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.

Bonded asbestos-containing material (ACM)

The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004.
NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.

Limit of Reporting

The performance limitation of the AS4964 method for inhomogeneous samples is around 0.1 g/kg (0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis where required, this is considered to be at the nominal reporting limit of 0.01 % (w / w).The examination of large sample sizes(500 mL is recommended) may improve the likelihood of identifying ACM in the > 2mm fraction.The NEPM screening level of 0.001 % (w / w) asbestos in soil for FA(friable asbestos) and AF(asbestos fines) then applies where they are able to be quantified by gravimetric procedures.This quantitative screening is not generally applicable to FF(free fibres) and results of Trace Analysis are referred.
NOTE: NATA News March 2014, p.7, states in relation to AS4964: "This is a qualitative method with a nominal reporting limit of 0.01%" and that currently in Australia "there is no validated method available for the quantification of asbestos". Accordingly, NATA Accreditation does not cover the performance of this service (indicated with an asterisk).
This report is consistent with the analytical procedures and reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended) and the Western Australia Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, 2009, including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil, June 2011.

Project Name CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID 2127477-TASK 3J FOR CONTAMINATION
Date Sampled Aug 13, 2018
Report 612790-V2-AID

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
BH11 0.2-0.3	18-Au21815	Aug 13, 2018	Approximate Sample 81g Sample consisted of: Brown fine-grained sandy soil	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Aug 17, 2018	Indefinite

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NATA # 1261 Site # 18217

Brisbane
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NATA # 1261 Site # 20794

Perth
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NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 612790
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 17, 2018 12:10 PM
Due: Aug 24, 2018
Priority: 5 Day
Contact Name: Colee Quayle

Project Name: CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID: 2127477-TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	CANCELLED	Cyanide (total)	pH (at 25°C)	Acid Sulfate Soils Field pH Test	BTEX	Eurofins | mgt Suite B15	Volatile Organics	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X			X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X				X	X
Brisbane Laboratory - NATA Site # 20794											X						
Perth Laboratory - NATA Site # 23736																	
External Laboratory																	
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**												
1	BWS01	Aug 13, 2018		Water	S18-Au21814					X			X	X		X	
2	BH11 0.2-0.3	Aug 13, 2018		Soil	S18-Au21815		X										
3	BH11 1.5-2.0	Aug 13, 2018		Soil	S18-Au21816										X	X	
4	BH11 3.0-3.5	Aug 13, 2018		Soil	S18-Au21817						X						
5	BH11 4.5-5.0	Aug 13, 2018		Soil	S18-Au21818						X						
6	BH11 6.0-6.4	Aug 14, 2018		Soil	S18-Au21819						X						
7	BH11 7.6-8.0	Aug 14, 2018		Soil	S18-Au21820						X						
8	BH11 9.1-9.5	Aug 14, 2018		Soil	S18-Au21821	X			X		X				X	X	
9	BH11 12.0-12.25	Aug 14, 2018		Soil	S18-Au21822						X						

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Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
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NSW 2500

Order No.:
Report #: 612790
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 17, 2018 12:10 PM
Due: Aug 24, 2018
Priority: 5 Day
Contact Name: Colee Quayle

Project Name: CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID: 2127477-TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	CANCELLED	Cyanide (total)	pH (at 25°C)	Acid Sulfate Soils Field pH Test	BTEX	Eurofins | mgt Suite B15	Volatile Organics	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X			X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X				X	X
Brisbane Laboratory - NATA Site # 20794											X						
Perth Laboratory - NATA Site # 23736																	
10	BH11 13.65-14.0	Aug 14, 2018		Soil	S18-Au21823						X						
11	BH11 15-15.3	Aug 14, 2018		Soil	S18-Au21824						X						
12	TRIP SPIKE	Aug 14, 2018		Soil	S18-Au21825							X					
13	TRIP BLANK	Aug 14, 2018		Soil	S18-Au21826												X
14	BH11 1.0-1.2	Aug 13, 2018		Soil	S18-Au21838			X									
Test Counts						1	1	1	1	1	8	1	1	1	2	3	1

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Sample is dried by heating prior to analysis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)
NEPM	National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
AF	Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to “non-bonded / friable”.
FA	Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres in the matrix.

Comments

This report has been revised (V2) to include additional QC results for Ammonia.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Laxman Dias	Senior Analyst-Asbestos (NSW)

Authorised by:

Sayeed Abu	Senior Analyst-Asbestos (NSW)



Glenn Jackson
National Operations Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Colee Quayle
Project name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID:	2127477-TASK 3J FOR CONTAMINATION
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Aug 17, 2018 12:10 PM
Eurofins | mgt reference:	**612790**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

BH11 4.0-4.5 logged as BH11 4.5-5.0(as per ID on sample). ASSpH bag not received for BH11 0.2-0.3 & BH11 1.5-2.0; analysis cancelled. Only asbestos bag received for BH11 1.0-1.2; analysis cancelled.

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Colee Quayle - colee.quayle@ghd.com.

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipelin, Port Kembla	Data output format: ESDAT

Special Directions & C

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	BWS01	-	13/08/2018	W	X	X										X	X	
2	BH11	0.2-0.3	13/08/2018	S				X			X							
3	BH11	1.0-1.2	13/08/2018	S	X						X							
4	BH11	1.5-2.0	13/08/2018	S							X							
5	BH11	3.0-3.5	13/08/2018	S							X							
6	BH11	4.0-4.5	13/08/2018	S							X							
7	BH11	6.0-6.4	14/08/2018	S							X							
8	BH11	7.6-8.0	14/08/2018	S							X							
9	BH11	9.1-9.5	14/08/2018	S	X						X	X	X	X	X			
10	BH11	12.0-12.25	14/08/2018	S							X							
11	BH11	13.65-14.0	14/08/2018	S							X							
12	BH11	15.0-15.3	14/08/2018	S							X							
13	Trip Spike			S					X									
14	Trip Blank			S						X								
15				S														
16				S														

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

	Jar	Zip lock	Vial	Amber 1L	Plastic				Sample comments:
1			X	X	X				
2	X	X							
3	X	X							
4	X	X							
5	X	X							
6	X	X							
7	X	X							
8	X	X							
9	X	X							
10	X	X							
11	X	X							
12			X						
13			X						
14									
15									
16									

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By: Elvis D	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	9.6°c
Date & Time 16/8/2018	Date & Time:	Date & Time: 17/8/18 12:10pm	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 612790
Signature: I. Lindley	Signature:	Signature:			

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NATA # 1261 Site # 20794

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Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 17, 2018 12:10 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	612790 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Aug 24, 2018 5 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA				
Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	CANCELLED	Cyanide (total)	pH (at 25°C)	Acid Sulfate Soils Field pH Test	BTEX	Eurofins | mgt Suite B15	Volatile Organics	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X			X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X				X	X
Brisbane Laboratory - NATA Site # 20794											X						
Perth Laboratory - NATA Site # 23736																	
External Laboratory																	
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**												
1	BWS01	Aug 13, 2018		Water	S18-Au21814					X			X	X		X	
2	BH11 0.2-0.3	Aug 13, 2018		Soil	S18-Au21815		X										
3	BH11 1.5-2.0	Aug 13, 2018		Soil	S18-Au21816										X	X	
4	BH11 3.0-3.5	Aug 13, 2018		Soil	S18-Au21817						X						
5	BH11 4.5-5.0	Aug 13, 2018		Soil	S18-Au21818						X						
6	BH11 6.0-6.4	Aug 14, 2018		Soil	S18-Au21819						X						
7	BH11 7.6-8.0	Aug 14, 2018		Soil	S18-Au21820						X						
8	BH11 9.1-9.5	Aug 14, 2018		Soil	S18-Au21821	X			X		X				X	X	
9	BH11 12.0-12.25	Aug 14, 2018		Soil	S18-Au21822						X						

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Site # 1254 & 14271

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Perth
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NATA # 1261
Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 17, 2018 12:10 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	612790 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Aug 24, 2018 5 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA				
Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	CANCELLED	Cyanide (total)	pH (at 25°C)	Acid Sulfate Soils Field pH Test	BTEX	Eurofins | mgt Suite B15	Volatile Organics	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X			X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X				X	X
Brisbane Laboratory - NATA Site # 20794											X						
Perth Laboratory - NATA Site # 23736																	
10	BH11 13.65-14.0	Aug 14, 2018		Soil	S18-Au21823						X						
11	BH11 15-15.3	Aug 14, 2018		Soil	S18-Au21824						X						
12	TRIP SPIKE	Aug 14, 2018		Soil	S18-Au21825							X					
13	TRIP BLANK	Aug 14, 2018		Soil	S18-Au21826												X
14	BH11 1.0-1.2	Aug 13, 2018		Soil	S18-Au21838			X									
Test Counts						1	1	1	1	1	8	1	1	1	2	3	1

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Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

Attention: **Colee Quayle**

Report **613184-S**
Project name CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID 2127477-TASK 3J FOR CONTAMINATION
Received Date Aug 17, 2018

Client Sample ID			**BH11 9.1-9.5**
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**S18-Au24791**
Date Sampled			**Aug 14, 2018**
Test/Reference	LOR	Unit	
Polychlorinated dioxins and furans (PCDD/F)			see attached
Tributyltin (TBT)			see attached

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time

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NATA # 1261
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2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 17, 2018 12:10 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	613184 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Aug 31, 2018 10 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA				
Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Polychlorinated dioxins and furans (PCDD/F)	Tributyltin (TBT)
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory						X	X
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	BH11 9.1-9.5	Aug 14, 2018		Soil	S18-Au24791	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Comments

Polychlorinated dioxins and furans (PCDD/F) and Organotins analysed by: analysis analysed by: Eurofins GfA Lab Service GmbH, DAkkS accreditation D-PL-14629-01-00, report references AR-18-GF-033218-02.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	Yes

Authorised By

Nibha Vaidya Analytical Services Manager



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Eurofins Environment Testing Australia Pty Ltd
attn. Results
2-5 Kingston Town Close
Vic 3166 Oakleigh
AUSTRALIEN

Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 18.09.2018

Analytical report AR-18-GF-033218-02

This report replaces report number: AR-18-GF-033218-01

Sample Code 710-2018-17446001

Reference	SOIL
Sample sender	Mr. Onur Mehmet
Reception date time	27.08.2018
Transport by	DHL
Purchase order date	14.08.2018
Client sample code	18-Au24791
Number of containers	1
Reception temperature	room temperature
End analysis	18.09.2018

Test results

GFDRY Dry Residue (°) (#)

Method EC 152/2009, , Gravimetry

dry residue	86.6	%

GFU04 polychlorinated dibenzodioxins and -furans (17 PCDD/F): (wet) sewage sludge, slag, ash, soil (°) (#)

Method Internal, GLS DF 130, GC-HRMS

2,3,7,8-TetraCDD	< 1.38	ng/kg dw
1,2,3,7,8-PentaCDD	< 1.84	ng/kg dw
1,2,3,4,7,8-HexaCDD	< 3.67	ng/kg dw
1,2,3,6,7,8-HexaCDD	< 3.67	ng/kg dw
1,2,3,7,8,9-HexaCDD	< 3.67	ng/kg dw
1,2,3,4,6,7,8-HeptaCDD	< 4.13	ng/kg dw
OctaCDD	37.3	ng/kg dw
2,3,7,8-TetraCDF	< 2.45	ng/kg dw

The results of examination refer exclusively to the checked samples.
Duplicates - even in parts - must be authorized by the test laboratory in written form.
Eurofins GfA Lab Service GmbH · Neuländer Kamp 1 a · D-21079 Hamburg
Headquarters: Eurofins GfA Lab Service GmbH – Neuländer Kamp 1a D-21079 Hamburg
HRB 115907 AG Hamburg
General Managers: Dr. Scarlett Biselli
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DIN EN ISO/IEC 17025:2005
Die Akkreditierung gilt nur für die in der Urkunde aufgeführten Prüfverfahren

Analytical report AR-18-GF-033218-02

Sample Code 710-2018-17446001

This report replaces report number: AR-18-GF-033218-01

1,2,3,7,8-PentaCDF	< 3.37	ng/kg dw
2,3,4,7,8-PentaCDF	< 3.37	ng/kg dw
1,2,3,4,7,8-HexaCDF	< 3.06	ng/kg dw
1,2,3,6,7,8-HexaCDF	< 3.06	ng/kg dw
1,2,3,7,8,9-HexaCDF	< 3.06	ng/kg dw
2,3,4,6,7,8-HexaCDF	< 3.06	ng/kg dw
1,2,3,4,6,7,8-HeptaCDF	< 3.98	ng/kg dw
1,2,3,4,7,8,9-HeptaCDF	< 2.91	ng/kg dw
OctaCDF	< 24.5	ng/kg dw
WHO(2005)-PCDD/F TEQ (lower-bound)	0.0112	ng/kg dw
WHO(2005)-PCDD/F TEQ (upper-bound)	7.02	ng/kg dw
I-TEQ (NATO/CCMS) (lower-bound)	0.0373	ng/kg dw
I-TEQ (NATO/CCMS) (upper-bound)	6.89	ng/kg dw

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)

Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	< 0.60	µg/kg dw
Monobutyltin (MBT) - Sn	< 0.41	µg/kg dw
Dibutyltin (DBT)	1.7	µg/kg dw
Dibutyltin (DBT) - Sn	0.88	µg/kg dw
Tributyltin (TBT)	< 0.60	µg/kg dw
Tributyltin (TBT) - Sn	< 0.25	µg/kg dw
Tetrabutyltin (TTBT)	< 0.60	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.21	µg/kg dw
Monooctyltin (MOT)	< 0.60	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.31	µg/kg dw
Dioctyltin (DOT)	< 0.60	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.21	µg/kg dw
Triphenyltin (TPhT)	< 0.60	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.21	µg/kg dw
Tricyclohexyltin (TCyT)	< 2.3	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.73	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4

(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

The results of examination refer exclusively to the checked samples.
Duplicates - even in parts - must be authorized by the test laboratory in written form.
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Analytical report AR-18-GF-033218-02

Sample Code 710-2018-17446001

This report replaces report number: AR-18-GF-033218-01

Analytical Service Manager (Fernando Schmidt)

The results of examination refer exclusively to the checked samples.
Duplicates - even in parts - must be authorized by the test laboratory in written form.
Eurofins GfA Lab Service GmbH · Neuländer Kamp 1 a · D-21079 Hamburg
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D-PL-14629-01-00

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NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Colee Quayle
Project name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID:	2127477-TASK 3J FOR CONTAMINATION
COC number:	Not provided
Turn around time:	10 Day
Date/Time received:	Aug 17, 2018 12:10 PM
Eurofins | mgt reference:	**613184**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☑ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

Sample sent for TBT & Dioxins analysis

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Colee Quayle - colee.quayle@ghd.com.

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd
Office Address : Level 11, 200 Crown Street
Wollongong, NSW 2500

Contact Name: Iain Lindley 0459 353 385
Project Manager : Colee Quayle 0403 242 431
Email for results : iain.lindley@ghd.com

Purchase Order :
PROJECT Number : 2127477 - Task 3J for Contamination
PROJECT Name : Contamination Assessment - East Coast Gas Pipelin, Port Kembla

COC Number :
Eurofins | mgt quote ID :
Data output format: ESDAT

Special Directions & C

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	BWS01	-	13/08/2018	W	X	X										X	X	
2	BH11	0.2-0.3	13/08/2018	S				X			X							
3	BH11	1.0-1.2	13/08/2018	S	X						X							
4	BH11	1.5-2.0	13/08/2018	S							X							
5	BH11	3.0-3.5	13/08/2018	S							X							
6	BH11	4.0-4.5	13/08/2018	S							X							
7	BH11	6.0-6.4	14/08/2018	S							X							
8	BH11	7.6-8.0	14/08/2018	S							X							
9	BH11	9.1-9.5	14/08/2018	S	X						X	X	X	X	X			
10	BH11	12.0-12.25	14/08/2018	S							X							
11	BH11	13.65-14.0	14/08/2018	S							X							
12	BH11	15.0-15.3	14/08/2018	S							X							
13	Trip Spike			S					X									
14	Trip Blank			S						X								
15				S														
16				S														

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

Jar	Zip lock	Vial	Amber 1L	Plastic
		X	X	X
X	X			
X	X			
X	X			
X	X			
X	X			
X	X			
X	X			
X	X			
X	X			
X	X			
		X		
		X		

Sample comments:

GHD Staff
Relinquished By: Iain Lindley
Date & Time 16/8/2018
Signature: I. Lindley

Courier
Received By:
Date & Time:
Signature:

Laboratory Staff
Received By: Elvis D
Date & Time: 17/8/18 12:10PM
Signature:

Turn around time
☐ 1 DAY ☐ 2 DAY ☐ 3 DAY ☐ 5 DAY ☑ 10 DAY ☐ Other:

Method Of Shipment
☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 9.6°c

Report number: 612790

613184

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Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 17, 2018 12:10 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	613184 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Aug 31, 2018 10 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA				
Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Polychlorinated dioxins and furans (PCDD/F)	Tributyltin (TBT)
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory						X	X
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	BH11 9.1-9.5	Aug 14, 2018		Soil	S18-Au24791	X	X
Test Counts						1	1

Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Iain Lindley**

Report **614911-S**
Project name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 21247477- TASK 3J FOR CONTAMINATION
Received Date Aug 29, 2018

Client Sample ID			**GBH24 0.0-0.3**	**GBH24 2.0-2.2**	**GBH24 3.7-3.9**	**GBH24 4.7-4.9**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Au38662**	**S18-Au38663**	**S18-Au38664**	**S18-Au38666**
Date Sampled			**Aug 21, 2018**	**Aug 21, 2018**	**Aug 21, 2018**	**Aug 21, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	-
TRH >C10-C16	50	mg/kg	98	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	98	-	< 50	-
TRH >C16-C34	100	mg/kg	390	-	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	488	-	< 100	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
TRH C10-C14	20	mg/kg	61	-	< 20	-
TRH C15-C28	50	mg/kg	290	-	< 50	-
TRH C29-C36	50	mg/kg	150	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	501	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	98	-	61	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.7	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	2.9	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	0.6	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	0.7	-	< 0.5	-
Chrysene	0.5	mg/kg	1.1	-	< 0.5	-

Client Sample ID			GBH24 0.0-0.3	GBH24 2.0-2.2	GBH24 3.7-3.9	GBH24 4.7-4.9
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38662	S18-Au38663	S18-Au38664	S18-Au38666
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	0.7	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	2.7	-	< 0.5	-
Pyrene	0.5	mg/kg	0.7	-	< 0.5	-
Total PAH*	0.5	mg/kg	9.4	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	83	-	58	-
p-Terphenyl-d14 (surr.)	1	%	84	-	82	-
Ammonia (as N)	5	mg/kg	-	-	< 5	-
Cyanide (total)	5	mg/kg	-	-	< 5	-
% Moisture	1	%	6.8	-	17	-
Heavy Metals						
Arsenic	2	mg/kg	2.3	-	5.1	-
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	-
Chromium	5	mg/kg	17	-	< 5	-
Copper	5	mg/kg	140	-	< 5	-
Lead	5	mg/kg	50	-	9.1	-
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	-
Nickel	5	mg/kg	9.9	-	< 5	-
Zinc	5	mg/kg	330	-	68	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	9.3	9.3	9.1
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	10	9.1	7.3
Reaction Ratings*[S05]		comment	-	4.0	4.0	4.0

Client Sample ID			GBH26 0.05-0.4	GBH26 0.4-0.6	GBH26 1.8-2.0	GBH26 2.8-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38667	S18-Au38668	S18-Au38669	S18-Au38670
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	-	-
TRH C6-C10	20	mg/kg	< 20	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-	-
TRH >C10-C16	50	mg/kg	< 50	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	-	-
TRH >C16-C34	100	mg/kg	290	< 100	-	-
TRH >C34-C40	100	mg/kg	290	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	580	< 100	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	-	-
TRH C10-C14	20	mg/kg	31	< 20	-	-
TRH C15-C28	50	mg/kg	140	< 50	-	-
TRH C29-C36	50	mg/kg	240	< 50	-	-
TRH C10-36 (Total)	50	mg/kg	411	< 50	-	-

Client Sample ID			GBH26 0.05-0.4	GBH26 0.4-0.6	GBH26 1.8-2.0	GBH26 2.8-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38667	S18-Au38668	S18-Au38669	S18-Au38670
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	83	97	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	-	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Anthracene	0.5	mg/kg	0.8	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	-
Phenanthrene	0.5	mg/kg	0.7	< 0.5	-	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PAH*	0.5	mg/kg	1.5	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	76	67	-	-
p-Terphenyl-d14 (surr.)	1	%	75	84	-	-
Ammonia (as N)	5	mg/kg	-	< 5	-	-
Cyanide (total)	5	mg/kg	-	< 5	-	-
% Moisture	1	%	7.8	2.4	-	-
Heavy Metals						
Arsenic	2	mg/kg	2.3	3.2	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	-
Chromium	5	mg/kg	15	< 5	-	-
Copper	5	mg/kg	220	< 5	-	-
Lead	5	mg/kg	11	5.1	-	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	-	-
Nickel	5	mg/kg	6.5	< 5	-	-
Zinc	5	mg/kg	76	27	-	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	-	9.1	9.3
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	-	7.4	7.5
Reaction Ratings*[S05]		comment	-	-	4.0	4.0

Client Sample ID			GBH26 3.8-4.0	GBH26 4.75-4.9	GBH28 1.4-1.6	GBH28 2.3-2.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38671	S18-Au38672	S18-Au38674	S18-Au38675
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	-	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	-
TRH >C10-C16	50	mg/kg	-	160	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	160	< 50	-
TRH >C16-C34	100	mg/kg	-	4100	< 100	-
TRH >C34-C40	100	mg/kg	-	350	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	4610	< 100	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	-
TRH C10-C14	20	mg/kg	-	45	< 20	-
TRH C15-C28	50	mg/kg	-	3000	< 50	-
TRH C29-C36	50	mg/kg	-	1200	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	4245	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	101	91	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	110	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	110	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	110	1.2	-
Acenaphthene	0.5	mg/kg	-	4.9	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	12	< 0.5	-
Anthracene	0.5	mg/kg	-	71	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	79	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	72	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	63	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	42	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	57	< 0.5	-
Chrysene	0.5	mg/kg	-	80	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	7.3	< 0.5	-
Fluoranthene	0.5	mg/kg	-	240	< 0.5	-
Fluorene	0.5	mg/kg	-	12	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	47	< 0.5	-
Naphthalene	0.5	mg/kg	-	3.4	< 0.5	-
Phenanthrene	0.5	mg/kg	-	160	< 0.5	-
Pyrene	0.5	mg/kg	-	160	< 0.5	-
Total PAH*	0.5	mg/kg	-	1110.6	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	54	92	-
p-Terphenyl-d14 (surr.)	1	%	-	62	112	-
% Moisture	1	%	-	22	4.3	-

Client Sample ID			GBH26 3.8-4.0	GBH26 4.75-4.9	GBH28 1.4-1.6	GBH28 2.3-2.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38671	S18-Au38672	S18-Au38674	S18-Au38675
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	-	7.5	2.9	-
Cadmium	0.4	mg/kg	-	< 0.4	< 0.4	-
Chromium	5	mg/kg	-	7.3	< 5	-
Copper	5	mg/kg	-	6.1	< 5	-
Lead	5	mg/kg	-	19	5.3	-
Mercury	0.1	mg/kg	-	< 0.1	< 0.1	-
Nickel	5	mg/kg	-	< 5	< 5	-
Zinc	5	mg/kg	-	140	30	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.4	9.1	9.6	9.1
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.5	7.2	7.5	7.1
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			GBH28 3.8-4.0	GBH29 0.03-0.2	GBH29 2.4-2.5	GBH29 2.4-2.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38676	S18-Au38677	S18-Au38679	S18-Au38680
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	-
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	-
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	-
TRH C15-C28	50	mg/kg	< 50	< 50	61	-
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	61	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	90	85	84	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	0.8	< 0.5	2.8	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.1	0.6	3.1	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.3	1.2	3.3	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-

Client Sample ID			GBH28 3.8-4.0	GBH29 0.03-0.2	GBH29 2.4-2.5	GBH29 2.4-2.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38676	S18-Au38677	S18-Au38679	S18-Au38680
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	0.6	< 0.5	1.6	-
Benzo(a)pyrene	0.5	mg/kg	0.6	< 0.5	2.1	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	0.5	< 0.5	1.9	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	1.4	-
Benzo(k)fluoranthene	0.5	mg/kg	0.7	< 0.5	1.9	-
Chrysene	0.5	mg/kg	0.8	< 0.5	2.0	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	1.6	< 0.5	3.4	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	1.4	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	0.5	< 0.5	0.7	-
Pyrene	0.5	mg/kg	1.1	< 0.5	2.7	-
Total PAH*	0.5	mg/kg	6.4	< 0.5	19.1	-
2-Fluorobiphenyl (surr.)	1	%	96	95	92	-
p-Terphenyl-d14 (surr.)	1	%	96	114	87	-
Ammonia (as N)	5	mg/kg	-	-	< 5	-
Cyanide (total)	5	mg/kg	-	-	< 5	-
% Moisture	1	%	3.9	14	3.9	-
Heavy Metals						
Arsenic	2	mg/kg	5.8	< 2	5.7	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	< 5	5.8	< 5	-
Copper	5	mg/kg	< 5	< 5	< 5	-
Lead	5	mg/kg	7.4	< 5	9.0	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Nickel	5	mg/kg	< 5	< 5	< 5	-
Zinc	5	mg/kg	22	< 5	34	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.4	-	-	9.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	9.8	-	-	7.3
Reaction Ratings*[S05]		comment	4.0	-	-	4.0

Client Sample ID			GBH29 4.0-4.2	GBH29	GBH33 0.05-0.2	GBH33 0.2-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38681	S18-Au38682	S18-Au38683	S18-Au38684
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 20, 2018	Aug 20, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	-	-	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	< 20
TRH >C10-C16	50	mg/kg	-	-	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	< 50
TRH >C16-C34	100	mg/kg	-	-	< 100	< 100

Client Sample ID			GBH29 4.0-4.2	GBH29	GBH33 0.05-0.2	GBH33 0.2-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38681	S18-Au38682	S18-Au38683	S18-Au38684
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 20, 2018	Aug 20, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C34-C40	100	mg/kg	-	-	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	< 100
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	< 20
TRH C10-C14	20	mg/kg	-	-	< 20	< 20
TRH C15-C28	50	mg/kg	-	-	81	< 50
TRH C29-C36	50	mg/kg	-	-	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	-	-	81	< 50
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	84	81
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	1.7
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	2.0
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	2.2
Acenaphthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	1.6
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	1.2
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	1.1
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	0.7
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	1.4
Chrysene	0.5	mg/kg	-	-	< 0.5	1.6
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	-	< 0.5	2.7
Fluorene	0.5	mg/kg	-	-	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	0.9
Naphthalene	0.5	mg/kg	-	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	-	< 0.5	2.0
Total PAH*	0.5	mg/kg	-	-	< 0.5	13.2
2-Fluorobiphenyl (surr.)	1	%	-	-	102	95
p-Terphenyl-d14 (surr.)	1	%	-	-	105	88
Ammonia (as N)	5	mg/kg	-	-	-	< 5
Cyanide (total)	5	mg/kg	-	-	-	< 5
% Moisture	1	%	-	-	9.2	5.0
Heavy Metals						
Arsenic	2	mg/kg	-	-	2.8	4.4
Cadmium	0.4	mg/kg	-	-	< 0.4	< 0.4
Chromium	5	mg/kg	-	-	15	< 5
Copper	5	mg/kg	-	-	81	7.8

Client Sample ID			GBH29 4.0-4.2	GBH29	GBH33 0.05-0.2	GBH33 0.2-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38681	S18-Au38682	S18-Au38683	S18-Au38684
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 20, 2018	Aug 20, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	5	mg/kg	-	-	15	7.3
Mercury	0.1	mg/kg	-	-	< 0.1	< 0.1
Nickel	5	mg/kg	-	-	9.8	< 5
Zinc	5	mg/kg	-	-	140	28
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.3	11	-	9.3
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.5	11	-	9.5
Reaction Ratings*[S05]		comment	4.0	4.0	-	4.0

Client Sample ID			GBH33 1.4-1.6	GBH33 3.8-4.0	GBH33 4.8-5.0	GBH34 0.1-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38685	S18-Au38686	S18-Au38687	S18-Au38689
Date Sampled			Aug 20, 2018	Aug 20, 2018	Aug 20, 2018	Aug 20, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	-	< 0.5
TRH C6-C10	20	mg/kg	-	-	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	-	< 20
TRH >C10-C16	50	mg/kg	-	-	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	-	220
TRH >C34-C40	100	mg/kg	-	-	-	150
TRH >C10-C40 (total)*	100	mg/kg	-	-	-	370
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	-	< 20
TRH C10-C14	20	mg/kg	-	-	-	< 20
TRH C15-C28	50	mg/kg	-	-	-	130
TRH C29-C36	50	mg/kg	-	-	-	160
TRH C10-36 (Total)	50	mg/kg	-	-	-	290
BTEX						
Benzene	0.1	mg/kg	-	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	-	< 0.2
o-Xylene	0.1	mg/kg	-	-	-	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	-	89
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	-	1.2
Acenaphthene	0.5	mg/kg	-	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	-	0.7
Benz(a)anthracene	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	-	< 0.5

Client Sample ID			GBH33 1.4-1.6	GBH33 3.8-4.0	GBH33 4.8-5.0	GBH34 0.1-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38685	S18-Au38686	S18-Au38687	S18-Au38689
Date Sampled			Aug 20, 2018	Aug 20, 2018	Aug 20, 2018	Aug 20, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Chrysene	0.5	mg/kg	-	-	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Fluorene	0.5	mg/kg	-	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	-	0.6
Pyrene	0.5	mg/kg	-	-	-	< 0.5
Total PAH*	0.5	mg/kg	-	-	-	1.3
2-Fluorobiphenyl (surr.)	1	%	-	-	-	91
p-Terphenyl-d14 (surr.)	1	%	-	-	-	91
% Moisture	1	%	-	-	-	8.6
Heavy Metals						
Arsenic	2	mg/kg	-	-	-	4.1
Cadmium	0.4	mg/kg	-	-	-	< 0.4
Chromium	5	mg/kg	-	-	-	15
Copper	5	mg/kg	-	-	-	120
Lead	5	mg/kg	-	-	-	38
Mercury	0.1	mg/kg	-	-	-	< 0.1
Nickel	5	mg/kg	-	-	-	9.9
Zinc	5	mg/kg	-	-	-	130
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.5	9.6	9.4	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.5	10	7.9	-
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	-

Client Sample ID			GBH34 0.6-0.8	GBH34 1.0-1.2	GBH34 1.9-2.1	GBH34 2.8-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38690	S18-Au38691	S18-Au38692	S18-Au38693
Date Sampled			Aug 20, 2018	Aug 20, 2018	Aug 20, 2018	Aug 20, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	-	< 0.5
TRH C6-C10	20	mg/kg	-	-	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	-	< 20
TRH >C10-C16	50	mg/kg	-	-	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	-	110
TRH >C34-C40	100	mg/kg	-	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	-	110
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	-	< 20
TRH C10-C14	20	mg/kg	-	-	-	< 20
TRH C15-C28	50	mg/kg	-	-	-	90
TRH C29-C36	50	mg/kg	-	-	-	< 50
TRH C10-36 (Total)	50	mg/kg	-	-	-	90

Client Sample ID			GBH34 0.6-0.8	GBH34 1.0-1.2	GBH34 1.9-2.1	GBH34 2.8-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38690	S18-Au38691	S18-Au38692	S18-Au38693
Date Sampled			Aug 20, 2018	Aug 20, 2018	Aug 20, 2018	Aug 20, 2018
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	-	< 0.2
o-Xylene	0.1	mg/kg	-	-	-	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	-	91
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	-	3.9
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	-	4.1
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	-	4.4
Acenaphthene	0.5	mg/kg	-	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	-	0.9
Benz(a)anthracene	0.5	mg/kg	-	-	-	2.9
Benzo(a)pyrene	0.5	mg/kg	-	-	-	2.8
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	-	2.7
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	-	1.9
Benzo(k)fluoranthene	0.5	mg/kg	-	-	-	2.5
Chrysene	0.5	mg/kg	-	-	-	3.0
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	-	6.6
Fluorene	0.5	mg/kg	-	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	-	2.1
Naphthalene	0.5	mg/kg	-	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	-	3.6
Pyrene	0.5	mg/kg	-	-	-	4.7
Total PAH*	0.5	mg/kg	-	-	-	33.7
2-Fluorobiphenyl (surr.)	1	%	-	-	-	81
p-Terphenyl-d14 (surr.)	1	%	-	-	-	77
Ammonia (as N)	5	mg/kg	-	-	-	< 5
Cyanide (total)	5	mg/kg	-	-	-	< 5
% Moisture	1	%	-	-	-	3.0
Heavy Metals						
Arsenic	2	mg/kg	-	-	-	5.4
Cadmium	0.4	mg/kg	-	-	-	< 0.4
Chromium	5	mg/kg	-	-	-	< 5
Copper	5	mg/kg	-	-	-	< 5
Lead	5	mg/kg	-	-	-	8.8
Mercury	0.1	mg/kg	-	-	-	< 0.1
Nickel	5	mg/kg	-	-	-	< 5
Zinc	5	mg/kg	-	-	-	32
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.7	9.2	9.2	9.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	9.3	9.0	9.4	9.4
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	GBH34 4.8-5.0 Soil S18-Au38694 Aug 20, 2018	GBH37 0.6-0.8 Soil S18-Au38697 Aug 21, 2018	GBH37 1.9-2.1 Soil S18-Au38698 Aug 21, 2018	GBH37 2.4-2.6 Soil S18-Au38699 Aug 21, 2018
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	-
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	-	95	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH*	0.5	mg/kg	-	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	-	80	-
p-Terphenyl-d14 (surr.)	1	%	-	-	88	-
Ammonia (as N)	5	mg/kg	-	-	< 5	-
Cyanide (total)	5	mg/kg	-	-	< 5	-
% Moisture	1	%	-	-	6.9	-

Client Sample ID			GBH34 4.8-5.0	GBH37 0.6-0.8	GBH37 1.9-2.1	GBH37 2.4-2.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38694	S18-Au38697	S18-Au38698	S18-Au38699
Date Sampled			Aug 20, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	-	-	3.8	-
Cadmium	0.4	mg/kg	-	-	< 0.4	-
Chromium	5	mg/kg	-	-	9.1	-
Copper	5	mg/kg	-	-	24	-
Lead	5	mg/kg	-	-	6.2	-
Mercury	0.1	mg/kg	-	-	< 0.1	-
Nickel	5	mg/kg	-	-	5.7	-
Zinc	5	mg/kg	-	-	27	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.1	10	-	9.5
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	11	9.6	-	9.8
Reaction Ratings*[S05]		comment	4.0	4.0	-	4.0

Client Sample ID			GBH37 3.8-4.0	GBH37 4.8-5.0	QC1	QC2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38700	S18-Au38701	S18-Au38702	S18-Au38703
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 20, 2018	Aug 20, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	-	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	-	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	-	< 100	250	< 100
TRH >C34-C40	100	mg/kg	-	< 100	160	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	410	< 100
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	-	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	-	< 50	120	63
TRH C29-C36	50	mg/kg	-	< 50	180	< 50
TRH C10-36 (Total)	50	mg/kg	-	< 50	300	63
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	-	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	91	68	77
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	< 0.5	3.1
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	0.6	3.3
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.2	3.6
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5

Client Sample ID			GBH37 3.8-4.0	GBH37 4.8-5.0	QC1	QC2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38700	S18-Au38701	S18-Au38702	S18-Au38703
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 20, 2018	Aug 20, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	3.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	2.2
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	< 0.5	2.1
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	1.4
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	1.9
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	2.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	5.8
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	1.1
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	< 0.5	0.6	1.1
Pyrene	0.5	mg/kg	-	< 0.5	< 0.5	4.1
Total PAH*	0.5	mg/kg	-	< 0.5	0.6	25.7
2-Fluorobiphenyl (surr.)	1	%	-	70	78	73
p-Terphenyl-d14 (surr.)	1	%	-	107	81	83
Ammonia (as N)	5	mg/kg	-	-	-	< 5
Cyanide (total)	5	mg/kg	-	-	-	< 5
% Moisture	1	%	-	15	8.0	5.3
Heavy Metals						
Arsenic	2	mg/kg	-	5.6	4.0	4.5
Cadmium	0.4	mg/kg	-	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	-	< 5	14	7.7
Copper	5	mg/kg	-	< 5	130	17
Lead	5	mg/kg	-	< 5	26	8.9
Mercury	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	-	< 5	9.5	< 5
Zinc	5	mg/kg	-	< 5	130	36
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	10.0	-	-	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	10.0	-	-	-
Reaction Ratings*[S05]		comment	4.0	-	-	-

Client Sample ID			QC4	BH11 16.5-16.9	BH11 18.1-18.5	BH11 19.6-20.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38705	S18-Au38708	S18-Au38709	S18-Au38710
Date Sampled			Aug 21, 2018	Aug 15, 2018	Aug 15, 2018	Aug 15, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	-	< 0.5
TRH C6-C10	20	mg/kg	< 20	-	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	-	< 20
TRH >C10-C16	50	mg/kg	< 50	-	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	-	< 50
TRH >C16-C34	100	mg/kg	< 100	-	-	< 100
TRH >C34-C40	100	mg/kg	< 100	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	-	< 100

Client Sample ID			QC4	BH11 16.5-16.9	BH11 18.1-18.5	BH11 19.6-20.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38705	S18-Au38708	S18-Au38709	S18-Au38710
Date Sampled			Aug 21, 2018	Aug 15, 2018	Aug 15, 2018	Aug 15, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	-	< 20
TRH C10-C14	20	mg/kg	< 20	-	-	< 20
TRH C15-C28	50	mg/kg	< 50	-	-	< 50
TRH C29-C36	50	mg/kg	< 50	-	-	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	-	-	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	-	< 0.1
Toluene	0.1	mg/kg	< 0.1	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	-	-	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	89	-	-	72
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	1.1	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.3	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.6	-	-	1.2
Acenaphthene	0.5	mg/kg	< 0.5	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	< 0.5
Anthracene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	0.9	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	0.8	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	0.6	-	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	1.0	-	-	< 0.5
Chrysene	0.5	mg/kg	1.1	-	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	< 0.5
Fluoranthene	0.5	mg/kg	2.3	-	-	< 0.5
Fluorene	0.5	mg/kg	< 0.5	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	-	-	< 0.5
Phenanthrene	0.5	mg/kg	0.8	-	-	< 0.5
Pyrene	0.5	mg/kg	1.5	-	-	< 0.5
Total PAH*	0.5	mg/kg	9	-	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	71	-	-	59
p-Terphenyl-d14 (surr.)	1	%	79	-	-	109
Ammonia (as N)	5	mg/kg	-	-	-	16
Cyanide (total)	5	mg/kg	-	-	-	< 5
% Moisture	1	%	5.7	-	-	21
Heavy Metals						
Arsenic	2	mg/kg	5.4	-	-	15
Cadmium	0.4	mg/kg	< 0.4	-	-	< 0.4
Chromium	5	mg/kg	< 5	-	-	25
Copper	5	mg/kg	< 5	-	-	29
Lead	5	mg/kg	8.6	-	-	10
Mercury	0.1	mg/kg	< 0.1	-	-	< 0.1
Nickel	5	mg/kg	< 5	-	-	< 5
Zinc	5	mg/kg	21	-	-	11

Client Sample ID			QC4	BH11 16.5-16.9	BH11 18.1-18.5	BH11 19.6-20.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38705	S18-Au38708	S18-Au38709	S18-Au38710
Date Sampled			Aug 21, 2018	Aug 15, 2018	Aug 15, 2018	Aug 15, 2018
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	7.5	6.5	6.2
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	6.8	6.9	6.2
Reaction Ratings*[S05]		comment	-	4.0	4.0	4.0

Client Sample ID			BH11 21.1-21.5	GBH33 2.4-2.6	GBH02 0.1-0.4	GBH02 0.4-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38711	S18-Au38713	S18-Au38714	S18-Au38715
Date Sampled			Aug 15, 2018	Aug 20, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	-	-	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	< 20
TRH >C10-C16	50	mg/kg	-	-	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	< 50
TRH >C16-C34	100	mg/kg	-	-	< 100	< 100
TRH >C34-C40	100	mg/kg	-	-	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	< 100
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	< 20
TRH C10-C14	20	mg/kg	-	-	< 20	< 20
TRH C15-C28	50	mg/kg	-	-	< 50	< 50
TRH C29-C36	50	mg/kg	-	-	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	84	100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	1.2
Acenaphthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluorene	0.5	mg/kg	-	-	< 0.5	< 0.5

Client Sample ID			BH11 21.1-21.5	GBH33 2.4-2.6	GBH02 0.1-0.4	GBH02 0.4-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38711	S18-Au38713	S18-Au38714	S18-Au38715
Date Sampled			Aug 15, 2018	Aug 20, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	-	-	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	72	83
p-Terphenyl-d14 (surr.)	1	%	-	-	110	114
Ammonia (as N)	5	mg/kg	-	-	-	< 5
Cyanide (total)	5	mg/kg	-	-	-	< 5
% Moisture	1	%	-	-	7.6	7.5
Heavy Metals						
Arsenic	2	mg/kg	-	-	< 2	< 2
Cadmium	0.4	mg/kg	-	-	< 0.4	< 0.4
Chromium	5	mg/kg	-	-	< 5	33
Copper	5	mg/kg	-	-	< 5	< 5
Lead	5	mg/kg	-	-	< 5	< 5
Mercury	0.1	mg/kg	-	-	< 0.1	< 0.1
Nickel	5	mg/kg	-	-	< 5	< 5
Zinc	5	mg/kg	-	-	< 5	< 5
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	6.8	9.5	11	12
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	6.8	10	11	11
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			GBH02 1.2-1.4	GBH02 4.2-4.45	GBH02 4.8-5.0	GBH08 0.1-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38716	S18-Au38717	S18-Au38718	S18-Au38719
Date Sampled			Aug 23, 2018	Aug 23, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	-	< 0.5
TRH C6-C10	20	mg/kg	-	-	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	-	< 20
TRH >C10-C16	50	mg/kg	-	-	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	-	< 100
TRH >C34-C40	100	mg/kg	-	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	-	< 100
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	-	< 20
TRH C10-C14	20	mg/kg	-	-	-	< 20
TRH C15-C28	50	mg/kg	-	-	-	72
TRH C29-C36	50	mg/kg	-	-	-	< 50
TRH C10-36 (Total)	50	mg/kg	-	-	-	72

Client Sample ID			GBH02 1.2-1.4	GBH02 4.2-4.45	GBH02 4.8-5.0	GBH08 0.1-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38716	S18-Au38717	S18-Au38718	S18-Au38719
Date Sampled			Aug 23, 2018	Aug 23, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	-	0.1
Ethylbenzene	0.1	mg/kg	-	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	-	< 0.2
o-Xylene	0.1	mg/kg	-	-	-	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	-	112
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	-	1.2
Acenaphthene	0.5	mg/kg	-	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Chrysene	0.5	mg/kg	-	-	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Fluorene	0.5	mg/kg	-	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	-	< 0.5
Pyrene	0.5	mg/kg	-	-	-	< 0.5
Total PAH*	0.5	mg/kg	-	-	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	-	76
p-Terphenyl-d14 (surr.)	1	%	-	-	-	81
% Moisture	1	%	-	-	-	10
Heavy Metals						
Arsenic	2	mg/kg	-	-	-	< 2
Cadmium	0.4	mg/kg	-	-	-	< 0.4
Chromium	5	mg/kg	-	-	-	6.9
Copper	5	mg/kg	-	-	-	5.5
Lead	5	mg/kg	-	-	-	< 5
Mercury	0.1	mg/kg	-	-	-	< 0.1
Nickel	5	mg/kg	-	-	-	< 5
Zinc	5	mg/kg	-	-	-	9.8
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.5	8.3	9.4	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.3	6.3	7.1	-
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	-

Client Sample ID			GBH08 1.2-1.4	GBH08 2.2-2.4	GBH08 4.3-4.5	GBH08 4.8-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38720	S18-Au38721	S18-Au38722	S18-Au38723
Date Sampled			Aug 23, 2018	Aug 23, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.5	9.5	9.5	9.5
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.6	7.6	7.2	7.8
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			GBH13 1.0-1.1	GBH13 1.2-1.3	GBH13 2.7-3.0	GBH13 3.7-4.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38725	S18-Au38726	S18-Au38727	S18-Au38728
Date Sampled			Aug 22, 2018	Aug 22, 2018	Aug 22, 2018	Aug 22, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	-
TRH >C10-C16	50	mg/kg	< 50	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-	170	-
TRH >C34-C40	100	mg/kg	< 100	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	170	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
TRH C10-C14	20	mg/kg	< 20	-	< 20	-
TRH C15-C28	50	mg/kg	< 50	-	130	-
TRH C29-C36	50	mg/kg	< 50	-	62	-
TRH C10-36 (Total)	50	mg/kg	< 50	-	192	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	102	-	95	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	6.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	6.5	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	6.5	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	1.1	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	4.6	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	4.3	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	3.6	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	2.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	4.4	-
Chrysene	0.5	mg/kg	< 0.5	-	4.4	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	0.6	-
Fluoranthene	0.5	mg/kg	< 0.5	-	8.4	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-

Client Sample ID			GBH13 1.0-1.1	GBH13 1.2-1.3	GBH13 2.7-3.0	GBH13 3.7-4.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38725	S18-Au38726	S18-Au38727	S18-Au38728
Date Sampled			Aug 22, 2018	Aug 22, 2018	Aug 22, 2018	Aug 22, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	3.1	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-	3.9	-
Pyrene	0.5	mg/kg	< 0.5	-	6.0	-
Total PAH*	0.5	mg/kg	< 0.5	-	46.9	-
2-Fluorobiphenyl (surr.)	1	%	78	-	86	-
p-Terphenyl-d14 (surr.)	1	%	91	-	76	-
Ammonia (as N)	5	mg/kg	-	-	< 5	-
Cyanide (total)	5	mg/kg	-	-	< 5	-
% Moisture	1	%	8.1	-	4.1	-
Heavy Metals						
Arsenic	2	mg/kg	< 2	-	5.8	-
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	-
Chromium	5	mg/kg	6.8	-	< 5	-
Copper	5	mg/kg	< 5	-	< 5	-
Lead	5	mg/kg	< 5	-	7.9	-
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	-
Nickel	5	mg/kg	< 5	-	< 5	-
Zinc	5	mg/kg	< 5	-	29	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	10.0	9.4	9.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	7.8	7.8	8.2
Reaction Ratings*[S05]		comment	-	4.0	4.0	4.0

Client Sample ID			GBH13 4.7-5.0	GBH13 5.7-6.0	GBH22 0.4-0.5	GBH22 3.2-3.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38729	S18-Au38730	S18-Au38731	S18-Au38733
Date Sampled			Aug 22, 2018	Aug 22, 2018	Aug 22, 2018	Aug 22, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	-	-	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	< 20
TRH >C10-C16	50	mg/kg	-	-	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	< 50
TRH >C16-C34	100	mg/kg	-	-	< 100	< 100
TRH >C34-C40	100	mg/kg	-	-	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	< 100
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	< 20
TRH C10-C14	20	mg/kg	-	-	< 20	< 20
TRH C15-C28	50	mg/kg	-	-	< 50	< 50
TRH C29-C36	50	mg/kg	-	-	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	< 50

Client Sample ID			GBH13 4.7-5.0	GBH13 5.7-6.0	GBH22 0.4-0.5	GBH22 3.2-3.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38729	S18-Au38730	S18-Au38731	S18-Au38733
Date Sampled			Aug 22, 2018	Aug 22, 2018	Aug 22, 2018	Aug 22, 2018
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	86	90
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	1.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	1.8	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	2.0	1.2
Acenaphthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	-	0.8	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	1.2	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	1.1	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	1.0	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	0.8	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	1.2	< 0.5
Chrysene	0.5	mg/kg	-	-	1.4	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	-	4.3	< 0.5
Fluorene	0.5	mg/kg	-	-	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	0.8	< 0.5
Naphthalene	0.5	mg/kg	-	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	-	4.4	< 0.5
Pyrene	0.5	mg/kg	-	-	2.9	< 0.5
Total PAH*	0.5	mg/kg	-	-	19.9	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	85	83
p-Terphenyl-d14 (surr.)	1	%	-	-	80	101
Ammonia (as N)	5	mg/kg	-	-	-	< 5
Cyanide (total)	5	mg/kg	-	-	-	< 5
% Moisture	1	%	-	-	7.1	6.8
Heavy Metals						
Arsenic	2	mg/kg	-	-	5.2	4.9
Cadmium	0.4	mg/kg	-	-	< 0.4	< 0.4
Chromium	5	mg/kg	-	-	13	< 5
Copper	5	mg/kg	-	-	16	< 5
Lead	5	mg/kg	-	-	11	11
Mercury	0.1	mg/kg	-	-	< 0.1	< 0.1
Nickel	5	mg/kg	-	-	6.8	< 5
Zinc	5	mg/kg	-	-	62	81
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.3	9.2	-	9.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.6	7.3	-	8.9
Reaction Ratings*[S05]		comment	4.0	4.0	-	4.0

Client Sample ID			GBH22 4.2-4.5	GBH22 5.2-5.5	GBH21 0.5-0.7	GBH21 1.5-1.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38734	S18-Au38735	S18-Au38736	S18-Au38737
Date Sampled			Aug 22, 2018	Aug 22, 2018	Aug 22, 2018	Aug 22, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	-	-	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	< 20
TRH >C10-C16	50	mg/kg	-	-	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	< 50
TRH >C16-C34	100	mg/kg	-	-	< 100	< 100
TRH >C34-C40	100	mg/kg	-	-	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	< 100
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	< 20
TRH C10-C14	20	mg/kg	-	-	< 20	< 20
TRH C15-C28	50	mg/kg	-	-	< 50	< 50
TRH C29-C36	50	mg/kg	-	-	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	86	86
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	1.2
Acenaphthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluorene	0.5	mg/kg	-	-	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	-	-	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	85	78
p-Terphenyl-d14 (surr.)	1	%	-	-	104	98
% Moisture	1	%	-	-	8.3	11

Client Sample ID			GBH22 4.2-4.5	GBH22 5.2-5.5	GBH21 0.5-0.7	GBH21 1.5-1.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38734	S18-Au38735	S18-Au38736	S18-Au38737
Date Sampled			Aug 22, 2018	Aug 22, 2018	Aug 22, 2018	Aug 22, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	-	-	6.2	6.1
Cadmium	0.4	mg/kg	-	-	< 0.4	< 0.4
Chromium	5	mg/kg	-	-	21	16
Copper	5	mg/kg	-	-	17	21
Lead	5	mg/kg	-	-	16	33
Mercury	0.1	mg/kg	-	-	< 0.1	< 0.1
Nickel	5	mg/kg	-	-	9.7	6.7
Zinc	5	mg/kg	-	-	81	170
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.2	9.3	9.6	9.8
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	8.2	8.5	8.2	8.9
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			GBH21 3.7-4.0	GBH21 4.7-5.0	GBH03 0.1-0.4	GBH03 1.0-1.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38738	S18-Au38739	S18-Au38740	S18-Au38741
Date Sampled			Aug 22, 2018	Aug 22, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	-
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	-	78	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			GBH21 3.7-4.0	GBH21 4.7-5.0	GBH03 0.1-0.4	GBH03 1.0-1.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38738	S18-Au38739	S18-Au38740	S18-Au38741
Date Sampled			Aug 22, 2018	Aug 22, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH*	0.5	mg/kg	-	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	-	87	-
p-Terphenyl-d14 (surr.)	1	%	-	-	117	-
% Moisture	1	%	-	-	8.4	-
Heavy Metals						
Arsenic	2	mg/kg	-	-	< 2	-
Cadmium	0.4	mg/kg	-	-	< 0.4	-
Chromium	5	mg/kg	-	-	61	-
Copper	5	mg/kg	-	-	< 5	-
Lead	5	mg/kg	-	-	< 5	-
Mercury	0.1	mg/kg	-	-	< 0.1	-
Nickel	5	mg/kg	-	-	< 5	-
Zinc	5	mg/kg	-	-	9.8	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.4	9.2	-	9.9
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	8.4	10	-	9.8
Reaction Ratings*[S05]		comment	4.0	4.0	-	4.0

Client Sample ID			GBH03 2.3-2.5	GBH03 4.0-4.2	BH05 15.5-15.95	BH05 12.1-12.85
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38742	S18-Au38743	S18-Au38744	S18-Au38746
Date Sampled			Aug 23, 2018	Aug 23, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	-
TRH >C10-C16	50	mg/kg	< 50	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	< 100	-

Client Sample ID			GBH03 2.3-2.5	GBH03 4.0-4.2	BH05 15.5-15.95	BH05 12.1-12.85
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38742	S18-Au38743	S18-Au38744	S18-Au38746
Date Sampled			Aug 23, 2018	Aug 23, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
TRH C10-C14	20	mg/kg	< 20	-	< 20	-
TRH C15-C28	50	mg/kg	< 50	-	< 50	-
TRH C29-C36	50	mg/kg	< 50	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	< 50	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	83	-	77	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	89	-	80	-
p-Terphenyl-d14 (surr.)	1	%	106	-	90	-
Ammonia (as N)	5	mg/kg	< 5	-	< 5	-
Cyanide (total)	5	mg/kg	< 5	-	< 5	-
% Moisture	1	%	6.3	-	17	-
Heavy Metals						
Arsenic	2	mg/kg	2.4	-	6.5	-
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	-
Chromium	5	mg/kg	< 5	-	8.2	-
Copper	5	mg/kg	< 5	-	9.0	-
Lead	5	mg/kg	< 5	-	< 5	-
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	-
Nickel	5	mg/kg	< 5	-	< 5	-
Zinc	5	mg/kg	7.1	-	12	-

Client Sample ID			GBH03 2.3-2.5	GBH03 4.0-4.2	BH05 15.5-15.95	BH05 12.1-12.85
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38742	S18-Au38743	S18-Au38744	S18-Au38746
Date Sampled			Aug 23, 2018	Aug 23, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.5	9.4	-	8.9
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.8	9.9	-	7.4
Reaction Ratings*[S05]		comment	4.0	4.0	-	1.0

Client Sample ID			BH05 20.0-20.45	QC7	GBH32 1.0-1.2	GBH32 4.1-4.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38747	S18-Au38748	S18-Au38751	S18-Au38752
Date Sampled			Aug 23, 2018	Aug 23, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	-	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	-	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	-	< 100	150	< 100
TRH >C34-C40	100	mg/kg	-	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	150	< 100
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	-	< 20	23	< 20
TRH C15-C28	50	mg/kg	-	< 50	110	< 50
TRH C29-C36	50	mg/kg	-	< 50	59	< 50
TRH C10-36 (Total)	50	mg/kg	-	< 50	192	< 50
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	-	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	87	80	82
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5

Client Sample ID			BH05 20.0-20.45	QC7	GBH32 1.0-1.2	GBH32 4.1-4.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38747	S18-Au38748	S18-Au38751	S18-Au38752
Date Sampled			Aug 23, 2018	Aug 23, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	< 0.5	1.1	< 0.5
Pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	-	< 0.5	1.1	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	91	87	73
p-Terphenyl-d14 (surr.)	1	%	-	64	81	98
Ammonia (as N)	5	mg/kg	-	-	< 5	-
Cyanide (total)	5	mg/kg	-	-	< 5	-
% Moisture	1	%	-	5.5	7.2	6.5
Heavy Metals						
Arsenic	2	mg/kg	-	4.9	2.0	6.0
Cadmium	0.4	mg/kg	-	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	-	< 5	190	< 5
Copper	5	mg/kg	-	< 5	9.2	< 5
Lead	5	mg/kg	-	< 5	< 5	5.3
Mercury	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	-	< 5	11	< 5
Zinc	5	mg/kg	-	16	46	20
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	8.4	-	-	9.4
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	8.5	-	-	10
Reaction Ratings*[S05]		comment	4.0	-	-	4.0

Client Sample ID			GBH09 0.75-1.0	GBH09 2.2-2.4	GBH09 4.2-4.4	BH09 13
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38754	S18-Au38755	S18-Au38756	S18-Au38757
Date Sampled			Aug 23, 2018	Aug 23, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	-
TRH >C10-C16	50	mg/kg	< 50	-	130	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	130	-
TRH >C16-C34	100	mg/kg	< 100	-	5400	-
TRH >C34-C40	100	mg/kg	< 100	-	500	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	6030	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
TRH C10-C14	20	mg/kg	32	-	42	-
TRH C15-C28	50	mg/kg	78	-	3800	-
TRH C29-C36	50	mg/kg	< 50	-	1600	-
TRH C10-36 (Total)	50	mg/kg	110	-	5442	-

Client Sample ID			GBH09 0.75-1.0	GBH09 2.2-2.4	GBH09 4.2-4.4	BH09 13
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38754	S18-Au38755	S18-Au38756	S18-Au38757
Date Sampled			Aug 23, 2018	Aug 23, 2018	Aug 23, 2018	Aug 23, 2018
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	81	-	74	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	150	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	150	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	150	-
Acenaphthene	0.5	mg/kg	< 0.5	-	0.7	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	14	-
Anthracene	0.5	mg/kg	< 0.5	-	82	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	110	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	100	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	87	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	66	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	81	-
Chrysene	0.5	mg/kg	< 0.5	-	110	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	12	-
Fluoranthene	0.5	mg/kg	< 0.5	-	350	-
Fluorene	0.5	mg/kg	< 0.5	-	25	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	80	-
Naphthalene	0.5	mg/kg	< 0.5	-	4.4	-
Phenanthrene	0.5	mg/kg	< 0.5	-	190	-
Pyrene	0.5	mg/kg	< 0.5	-	240	-
Total PAH*	0.5	mg/kg	< 0.5	-	1552.1	-
2-Fluorobiphenyl (surr.)	1	%	79	-	63	-
p-Terphenyl-d14 (surr.)	1	%	78	-	68	-
% Moisture	1	%	7.8	-	27	-
Heavy Metals						
Arsenic	2	mg/kg	2.4	-	16	-
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	-
Chromium	5	mg/kg	87	-	11	-
Copper	5	mg/kg	8.1	-	20	-
Lead	5	mg/kg	9.8	-	20	-
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	-
Nickel	5	mg/kg	8.3	-	7.6	-
Zinc	5	mg/kg	32	-	76	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	9.4	8.5	8.2
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	8.7	7.5	7.0
Reaction Ratings*[S05]		comment	-	4.0	4.0	1.0

Client Sample ID			BH09 15.15-15.25	BH09 16	SOIL TRIP BLANK	[R20]SOIL TRIP SPIKE
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38758	S18-Au38759	S18-Au39005	S18-Au39006
Date Sampled			Aug 23, 2018	Aug 23, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	-	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	-
TRH >C10-C16	50	mg/kg	-	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	-	-
TRH >C16-C34	100	mg/kg	-	< 100	-	-
TRH >C34-C40	100	mg/kg	-	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	-
TRH C10-C14	20	mg/kg	-	< 20	-	-
TRH C15-C28	50	mg/kg	-	< 50	-	-
TRH C29-C36	50	mg/kg	-	< 50	-	-
TRH C10-36 (Total)	50	mg/kg	-	< 50	-	-
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	110
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	110
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	110
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	110
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	110
Xylenes - Total	0.3	mg/kg	-	< 0.3	< 0.3	110
4-Bromofluorobenzene (surr.)	1	%	-	60	90	89
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	-	-
Acenaphthene	0.5	mg/kg	-	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	-
Anthracene	0.5	mg/kg	-	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Chrysene	0.5	mg/kg	-	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	-
Fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Fluorene	0.5	mg/kg	-	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	-
Naphthalene	0.5	mg/kg	-	< 0.5	-	-
Phenanthrene	0.5	mg/kg	-	< 0.5	-	-
Pyrene	0.5	mg/kg	-	< 0.5	-	-
Total PAH*	0.5	mg/kg	-	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	-	77	-	-
p-Terphenyl-d14 (surr.)	1	%	-	97	-	-
Ammonia (as N)	5	mg/kg	-	5.0	-	-
Cyanide (total)	5	mg/kg	-	< 5	-	-
% Moisture	1	%	-	23	-	-

Client Sample ID			BH09 15.15-15.25	BH09 16	SOIL TRIP BLANK	[R20]SOIL TRIP SPIKE
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Au38758**	**S18-Au38759**	**S18-Au39005**	**S18-Au39006**
Date Sampled			**Aug 23, 2018**	**Aug 23, 2018**	**Aug 21, 2018**	**Aug 21, 2018**
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	-	15	-	-
Cadmium	0.4	mg/kg	-	< 0.4	-	-
Chromium	5	mg/kg	-	18	-	-
Copper	5	mg/kg	-	17	-	-
Lead	5	mg/kg	-	9.8	-	-
Mercury	0.1	mg/kg	-	< 0.1	-	-
Nickel	5	mg/kg	-	11	-	-
Zinc	5	mg/kg	-	29	-	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	8.0	-	-	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	2.1	-	-	-
Reaction Ratings*[S05]		comment	4.0	-	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 04, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons	Sydney	Aug 31, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Sep 04, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
BTEX	Melbourne	Sep 04, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Eurofins | mgt Suite B7			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 04, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Sep 04, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Melbourne	Sep 04, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Ammonia (as N)	Melbourne	Sep 05, 2018	7 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Cyanide (total)	Melbourne	Sep 04, 2018	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Acid Sulfate Soils Field pH Test	Brisbane	Aug 30, 2018	7 Days
- Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests			
% Moisture	Melbourne	Aug 30, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261
Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**	
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	614911 02 4222 2300 02 4222 2301
Received:	Aug 29, 2018 11:42 AM		
Due:	Sep 5, 2018		
Priority:	5 Day		
Contact Name:	Iain Lindley		

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
External Laboratory																	
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**												
1	GBH24 0.0-0.3	Aug 21, 2018		Soil	S18-Au38662										X	X	
2	GBH24 2.0-2.2	Aug 21, 2018		Soil	S18-Au38663								X				
3	GBH24 3.7-3.9	Aug 21, 2018		Soil	S18-Au38664	X			X				X		X	X	
4	GBH24 4.6-4.7	Aug 21, 2018		Soil	S18-Au38665					X							
5	GBH24 4.7-4.9	Aug 21, 2018		Soil	S18-Au38666								X				
6	GBH26 0.05-0.4	Aug 21, 2018		Soil	S18-Au38667		X								X	X	
7	GBH26 0.4-0.6	Aug 21, 2018		Soil	S18-Au38668	X			X						X	X	
8	GBH26 1.8-2.0	Aug 21, 2018		Soil	S18-Au38669								X				
9	GBH26 2.8-3.0	Aug 21, 2018		Soil	S18-Au38670								X				

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Company Name: GHD Pty Ltd WOLLONGONG
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Order No.:
Report #: 614911
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 29, 2018 11:42 AM
Due: Sep 5, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
10	GBH26 3.8-4.0	Aug 21, 2018		Soil	S18-Au38671								X				
11	GBH26 4.75-4.9	Aug 21, 2018		Soil	S18-Au38672								X		X	X	
12	GBH28 0.05-0.2	Aug 21, 2018		Soil	S18-Au38673					X							
13	GBH28 1.4-1.6	Aug 21, 2018		Soil	S18-Au38674		X						X		X	X	
14	GBH28 2.3-2.5	Aug 21, 2018		Soil	S18-Au38675								X				
15	GBH28 3.8-4.0	Aug 21, 2018		Soil	S18-Au38676								X		X	X	
16	GBH29 0.03-0.2	Aug 21, 2018		Soil	S18-Au38677		X								X	X	
17	GBH29 1.9-2.1	Aug 21, 2018		Soil	S18-Au38678					X							
18	GBH29 2.4-2.5	Aug 21, 2018		Soil	S18-Au38679	X			X						X	X	
19	GBH29 2.4-2.6	Aug 21, 2018		Soil	S18-Au38680								X				

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
20	GBH29 4.0-4.2	Aug 21, 2018		Soil	S18-Au38681								X				
21	GBH29	Aug 21, 2018		Soil	S18-Au38682								X				
22	GBH33 0.05-0.2	Aug 20, 2018		Soil	S18-Au38683		X								X	X	
23	GBH33 0.2-0.4	Aug 20, 2018		Soil	S18-Au38684	X	X		X				X		X	X	
24	GBH33 1.4-1.6	Aug 20, 2018		Soil	S18-Au38685								X				
25	GBH33 3.8-4.0	Aug 20, 2018		Soil	S18-Au38686								X				
26	GBH33 4.8-5.0	Aug 20, 2018		Soil	S18-Au38687								X				
27	GBH34 0.05-0.3	Aug 20, 2018		Soil	S18-Au38688						X						
28	GBH34 0.1-0.4	Aug 20, 2018		Soil	S18-Au38689										X	X	
29	GBH34 0.6-0.8	Aug 20, 2018		Soil	S18-Au38690								X				
30	GBH34 1.0-1.2	Aug 20, 2018		Soil	S18-Au38691								X				

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

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Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
31	GBH34 1.9-2.1	Aug 20, 2018		Soil	S18-Au38692								X				
32	GBH34 2.8-3.0	Aug 20, 2018		Soil	S18-Au38693	X			X				X		X	X	
33	GBH34 4.8-5.0	Aug 20, 2018		Soil	S18-Au38694								X				
34	GBH36 0.0-0.15	Aug 21, 2018		Soil	S18-Au38695							X					
35	GBH37 0.05-0.3	Aug 21, 2018		Soil	S18-Au38696					X							
36	GBH37 0.6-0.8	Aug 21, 2018		Soil	S18-Au38697		X						X				
37	GBH37 1.9-2.1	Aug 21, 2018		Soil	S18-Au38698	X	X		X						X	X	
38	GBH37 2.4-2.6	Aug 21, 2018		Soil	S18-Au38699								X				
39	GBH37 3.8-4.0	Aug 21, 2018		Soil	S18-Au38700								X				
40	GBH37 4.8-5.0	Aug 21, 2018		Soil	S18-Au38701										X	X	
41	QC1	Aug 20, 2018		Soil	S18-Au38702										X	X	

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
42	QC2	Aug 20, 2018		Soil	S18-Au38703	X			X						X	X	
43	QC3	Aug 20, 2018		Soil	S18-Au38704					X							
44	QC4	Aug 21, 2018		Soil	S18-Au38705										X	X	
45	QC5	Aug 21, 2018		Soil	S18-Au38706					X							
46	QC6	Aug 21, 2018		Soil	S18-Au38707					X							
47	BH11 16.5-16.9	Aug 15, 2018		Soil	S18-Au38708								X				
48	BH11 18.1-18.5	Aug 15, 2018		Soil	S18-Au38709								X				
49	BH11 19.6-20.0	Aug 15, 2018		Soil	S18-Au38710	X			X				X		X	X	
50	BH11 21.1-21.5	Aug 15, 2018		Soil	S18-Au38711								X				

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Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
51	GBH29 1.7-1.9	Aug 21, 2018		Soil	S18-Au38712							X					
52	GBH33 2.4-2.6	Aug 20, 2018		Soil	S18-Au38713								X				
53	GBH02 0.1-0.4	Aug 23, 2018		Soil	S18-Au38714		X						X		X	X	
54	GBH02 0.4-0.6	Aug 23, 2018		Soil	S18-Au38715	X			X				X		X	X	
55	GBH02 1.2-1.4	Aug 23, 2018		Soil	S18-Au38716								X				
56	GBH02 4.2-4.45	Aug 23, 2018		Soil	S18-Au38717								X				
57	GBH02 4.8-5.0	Aug 23, 2018		Soil	S18-Au38718								X				
58	GBH08 0.1-0.3	Aug 23, 2018		Soil	S18-Au38719		X								X	X	
59	GBH08 1.2-1.4	Aug 23, 2018		Soil	S18-Au38720								X				
60	GBH08 2.2-2.4	Aug 23, 2018		Soil	S18-Au38721								X				
61	GBH08 4.3-4.5	Aug 23, 2018		Soil	S18-Au38722								X				

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Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	614911 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Sep 5, 2018 5 Day Iain Lindley
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	21247477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
62	GBH08 4.8-5.0	Aug 23, 2018		Soil	S18-Au38723								X				
63	GBH13 0.1-0.2	Aug 22, 2018		Soil	S18-Au38724					X							
64	GBH13 1.0-1.1	Aug 22, 2018		Soil	S18-Au38725		X								X	X	
65	GBH13 1.2-1.3	Aug 22, 2018		Soil	S18-Au38726								X				
66	GBH13 2.7-3.0	Aug 22, 2018		Soil	S18-Au38727	X			X				X		X	X	
67	GBH13 3.7-4.0	Aug 22, 2018		Soil	S18-Au38728								X				
68	GBH13 4.7-5.0	Aug 22, 2018		Soil	S18-Au38729								X				
69	GBH13 5.7-6.0	Aug 22, 2018		Soil	S18-Au38730								X				
70	GBH22 0.4-0.5	Aug 22, 2018		Soil	S18-Au38731		X								X	X	
71	GBH22 1.5-1.8	Aug 22, 2018		Soil	S18-Au38732					X							
72	GBH22 3.2-3.5	Aug 22, 2018		Soil	S18-Au38733	X			X				X		X	X	
73	GBH22 4.2-4.5	Aug 22, 2018		Soil	S18-Au38734								X				

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Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
74	GBH22 5.2-5.5	Aug 22, 2018		Soil	S18-Au38735								X				
75	GBH21 0.5-0.7	Aug 22, 2018		Soil	S18-Au38736		X						X		X	X	
76	GBH21 1.5-1.8	Aug 22, 2018		Soil	S18-Au38737								X		X	X	
77	GBH21 3.7-4.0	Aug 22, 2018		Soil	S18-Au38738								X				
78	GBH21 4.7-5.0	Aug 22, 2018		Soil	S18-Au38739								X				
79	GBH03 0.1-0.4	Aug 23, 2018		Soil	S18-Au38740		X								X	X	
80	GBH03 1.0-1.2	Aug 23, 2018		Soil	S18-Au38741								X				
81	GBH03 2.3-2.5	Aug 23, 2018		Soil	S18-Au38742	X			X				X		X	X	
82	GBH03 4.0-4.2	Aug 23, 2018		Soil	S18-Au38743								X				
83	BH05 15.5-15.95	Aug 23, 2018		Soil	S18-Au38744	X			X						X	X	
84	BH05 17.0-17.45	Aug 23, 2018		Soil	S18-Au38745					X							

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Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
85	BH05 12.1-12.85	Aug 23, 2018		Soil	S18-Au38746								X				
86	BH05 20.0-20.45	Aug 23, 2018		Soil	S18-Au38747								X				
87	QC7	Aug 23, 2018		Soil	S18-Au38748										X	X	
88	GBH32 0.1-0.4	Aug 23, 2018		Soil	S18-Au38749					X							
89	GBH32 0.4-0.5	Aug 23, 2018		Soil	S18-Au38750					X							
90	GBH32 1.0-1.2	Aug 23, 2018		Soil	S18-Au38751	X	X		X						X	X	
91	GBH32 4.1-4.2	Aug 23, 2018		Soil	S18-Au38752								X		X	X	
92	GBH09 0.1-0.3	Aug 23, 2018		Soil	S18-Au38753		X										
93	GBH09 0.75-1.0	Aug 23, 2018		Soil	S18-Au38754										X	X	
94	GBH09 2.2-2.4	Aug 23, 2018		Soil	S18-Au38755								X				

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Due: Sep 5, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
95	GBH09 4.2-4.4	Aug 23, 2018		Soil	S18-Au38756								X		X	X	
96	BH09 13	Aug 23, 2018		Soil	S18-Au38757								X				
97	BH09 15.15-15.25	Aug 23, 2018		Soil	S18-Au38758								X				
98	BH09 16	Aug 23, 2018		Soil	S18-Au38759	X			X						X	X	
99	GBH03 0.4-0.6	Aug 23, 2018		Soil	S18-Au38975					X							
100	GBH33 2.4-2.6	Aug 20, 2018		Soil	S18-Au38998							X					
101	PACM1	Aug 21, 2018		Building Materials	S18-Au39000			X									
102	PACM2	Aug 21, 2018		Building Materials	S18-Au39001			X									
103	SOIL TRIP BLANK	Aug 21, 2018		Soil	S18-Au39005												X

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Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 29, 2018 11:42 AM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	614911 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Sep 5, 2018 5 Day Iain Lindley
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Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
104	SOIL TRIP SPIKE	Aug 21, 2018		Soil	S18-Au39006									X			
Test Counts						15	15	2	15	17	17	17	61	1	37	37	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Ammonia (as N)	mg/kg	< 5			5	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	107			70-130	Pass	
Naphthalene	%	96			70-130	Pass	
TRH C6-C10	%	94			70-130	Pass	
TRH C6-C10	%	85			70-130	Pass	
TRH >C10-C16	%	88			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	96			70-130	Pass	
TRH C10-C14	%	89			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	74			70-130	Pass	
Toluene	%	85			70-130	Pass	
Ethylbenzene	%	115			70-130	Pass	
m&p-Xylenes	%	117			70-130	Pass	
Xylenes - Total	%	118			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	96			70-130	Pass	
Acenaphthylene	%	96			70-130	Pass	
Anthracene	%	104			70-130	Pass	
Benz(a)anthracene	%	86			70-130	Pass	
Benzo(a)pyrene	%	102			70-130	Pass	
Benzo(b&j)fluoranthene	%	82			70-130	Pass	
Benzo(g.h.i)perylene	%	80			70-130	Pass	
Benzo(k)fluoranthene	%	119			70-130	Pass	
Chrysene	%	94			70-130	Pass	
Dibenz(a.h)anthracene	%	71			70-130	Pass	
Fluoranthene	%	83			70-130	Pass	
Fluorene	%	98			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	99			70-130	Pass	
Naphthalene	%	87			70-130	Pass	
Phenanthrene	%	99			70-130	Pass	
Pyrene	%	83			70-130	Pass	
LCS - % Recovery							
Cyanide (total)	%	95			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	110			80-120	Pass	
Cadmium	%	108			80-120	Pass	
Chromium	%	119			80-120	Pass	
Copper	%	116			80-120	Pass	
Lead	%	114			80-120	Pass	
Mercury	%	92			75-125	Pass	
Nickel	%	120			80-120	Pass	
Zinc	%	116			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M18-Au39739	NCP	%	87			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M18-Au39739	NCP	%	87			70-130	Pass	
Spike - % Recovery									
				Result 1					
Cyanide (total)	M18-Au40622	NCP	%	84			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S18-Au38676	CP	%	83			70-130	Pass	
Acenaphthylene	S18-Au38676	CP	%	90			70-130	Pass	
Anthracene	S18-Au38676	CP	%	103			70-130	Pass	
Benz(a)anthracene	S18-Au38676	CP	%	94			70-130	Pass	
Benzo(a)pyrene	S18-Au38676	CP	%	100			70-130	Pass	
Benzo(b&j)fluoranthene	S18-Au38676	CP	%	112			70-130	Pass	
Benzo(g.h.i)perylene	S18-Au38676	CP	%	73			70-130	Pass	
Benzo(k)fluoranthene	S18-Au38676	CP	%	109			70-130	Pass	
Chrysene	S18-Au38676	CP	%	100			70-130	Pass	
Dibenz(a.h)anthracene	S18-Au38676	CP	%	73			70-130	Pass	
Fluoranthene	S18-Au38676	CP	%	108			70-130	Pass	
Fluorene	S18-Au38676	CP	%	89			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S18-Au38676	CP	%	100			70-130	Pass	
Naphthalene	S18-Au38676	CP	%	76			70-130	Pass	
Phenanthrene	S18-Au38676	CP	%	109			70-130	Pass	
Pyrene	S18-Au38676	CP	%	97			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-Au38676	CP	%	106			75-125	Pass	
Cadmium	S18-Au38676	CP	%	102			75-125	Pass	
Chromium	S18-Au38676	CP	%	112			75-125	Pass	
Copper	S18-Au38676	CP	%	113			75-125	Pass	
Lead	S18-Au38676	CP	%	102			75-125	Pass	
Mercury	S18-Au38676	CP	%	92			70-130	Pass	
Nickel	S18-Au38676	CP	%	112			75-125	Pass	
Zinc	S18-Au38676	CP	%	101			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-Au38684	CP	%	100			70-130	Pass	
TRH C6-C10	S18-Au38684	CP	%	92			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Au38684	CP	%	92			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Au38684	CP	%	75			70-130	Pass	
Toluene	S18-Au38684	CP	%	82			70-130	Pass	
Ethylbenzene	S18-Au38684	CP	%	87			70-130	Pass	
m&p-Xylenes	S18-Au38684	CP	%	83			70-130	Pass	
o-Xylene	S18-Au38684	CP	%	85			70-130	Pass	
Xylenes - Total	S18-Au38684	CP	%	84			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Naphthalene	S18-Au38705	CP	%	93			70-130	Pass	
TRH C6-C10	S18-Au38705	CP	%	88			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Au38705	CP	%	91			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Au38705	CP	%	73			70-130	Pass	
Toluene	S18-Au38705	CP	%	100			70-130	Pass	
Ethylbenzene	S18-Au38705	CP	%	112			70-130	Pass	
m&p-Xylenes	S18-Au38705	CP	%	113			70-130	Pass	
o-Xylene	S18-Au38705	CP	%	114			70-130	Pass	
Xylenes - Total	S18-Au38705	CP	%	113			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-Au38715	CP	%	98			75-125	Pass	
Cadmium	S18-Au38715	CP	%	97			75-125	Pass	
Chromium	S18-Au38715	CP	%	101			75-125	Pass	
Copper	S18-Au38715	CP	%	101			75-125	Pass	
Lead	S18-Au38715	CP	%	91			75-125	Pass	
Mercury	S18-Au38715	CP	%	82			70-130	Pass	
Nickel	S18-Au38715	CP	%	101			75-125	Pass	
Zinc	S18-Au38715	CP	%	98			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-Au38744	CP	%	104			75-125	Pass	
Cadmium	S18-Au38744	CP	%	105			75-125	Pass	
Chromium	S18-Au38744	CP	%	109			75-125	Pass	
Copper	S18-Au38744	CP	%	114			75-125	Pass	
Lead	S18-Au38744	CP	%	108			75-125	Pass	
Mercury	S18-Au38744	CP	%	92			70-130	Pass	
Nickel	S18-Au38744	CP	%	112			75-125	Pass	
Zinc	S18-Au38744	CP	%	109			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-Au38752	CP	%	92			70-130	Pass	
TRH C6-C10	S18-Au38752	CP	%	82			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Au38752	CP	%	81			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Au38752	CP	%	74			70-130	Pass	
Toluene	S18-Au38752	CP	%	77			70-130	Pass	
Ethylbenzene	S18-Au38752	CP	%	74			70-130	Pass	
m&p-Xylenes	S18-Au38752	CP	%	74			70-130	Pass	
o-Xylene	S18-Au38752	CP	%	76			70-130	Pass	
Xylenes - Total	S18-Au38752	CP	%	75			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38663	CP	pH Units	9.3	9.2	pass	30%	Pass	
Reaction Ratings*	S18-Au38663	CP	comment	4.0	4.0	pass	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S18-Au38674	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Au38674	CP	mg/kg	2.9	3.0	3.0	30%	Pass	
Cadmium	S18-Au38674	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Au38674	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S18-Au38674	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S18-Au38674	CP	mg/kg	5.3	< 5	10	30%	Pass	
Mercury	S18-Au38674	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Au38674	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Au38674	CP	mg/kg	30	28	8.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Au38676	CP	mg/kg	5.8	5.4	7.0	30%	Pass	
Cadmium	S18-Au38676	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Au38676	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S18-Au38676	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S18-Au38676	CP	mg/kg	7.4	6.8	9.0	30%	Pass	
Mercury	S18-Au38676	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Au38676	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Au38676	CP	mg/kg	22	22	3.0	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38676	CP	pH Units	9.4	9.5	pass	30%	Pass	
Reaction Ratings*	S18-Au38676	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-Au38683	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-Au38683	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-Au38683	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-Au38683	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-Au38683	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-Au38683	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-Au38683	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-Au38683	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-Au38683	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38693	CP	pH Units	9.6	9.5	pass	30%	Pass	
Reaction Ratings*	S18-Au38693	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-Au38702	CP	%	8.0	8.2	2.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-Au38703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-Au38703	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-Au38703	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-Au38703	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-Au38703	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-Au38703	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-Au38703	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-Au38703	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-Au38703	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Au38714	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S18-Au38714	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Au38714	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S18-Au38714	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S18-Au38714	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S18-Au38714	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Au38714	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Au38714	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38714	CP	pH Units	11	12	pass	30%	Pass	
Reaction Ratings*	S18-Au38714	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Au38715	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S18-Au38715	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Au38715	CP	mg/kg	33	36	9.0	30%	Pass	
Copper	S18-Au38715	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S18-Au38715	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S18-Au38715	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Au38715	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Au38715	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S18-Au38719	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S18-Au38719	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S18-Au38719	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S18-Au38719	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S18-Au38719	CP	mg/kg	72	77	6.0	30%	Pass	
TRH C29-C36	S18-Au38719	CP	mg/kg	< 50	< 50	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-Au38725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-Au38725	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-Au38725	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-Au38725	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-Au38725	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-Au38725	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-Au38725	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-Au38725	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-Au38725	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38727	CP	pH Units	9.4	9.4	pass	30%	Pass	
Reaction Ratings*	S18-Au38727	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-Au38733	CP	%	6.8	6.8	<1	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38739	CP	pH Units	9.2	9.2	pass	30%	Pass	
Reaction Ratings*	S18-Au38739	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Au38742	CP	mg/kg	2.4	2.3	2.0	30%	Pass	
Cadmium	S18-Au38742	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Au38742	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S18-Au38742	CP	mg/kg	< 5	9.2	95	30%	Fail	Q15
Lead	S18-Au38742	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S18-Au38742	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Au38742	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Au38742	CP	mg/kg	7.1	9.8	32	30%	Fail	Q15
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Au38744	CP	mg/kg	6.5	6.6	2.0	30%	Pass	
Cadmium	S18-Au38744	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Au38744	CP	mg/kg	8.2	8.6	4.0	30%	Pass	
Copper	S18-Au38744	CP	mg/kg	9.0	9.2	2.0	30%	Pass	
Lead	S18-Au38744	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S18-Au38744	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Au38744	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Au38744	CP	mg/kg	12	13	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Cyanide (total)	S18-Au38751	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-Au38756	CP	%	27	25	5.0	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38758	CP	pH Units	8.0	8.1	pass	30%	Pass	
Reaction Ratings*	S18-Au38758	CP	comment	4.0	4.0	pass	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M18-Au38831	NCP	mg/kg	24	25	3.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
R20	This sample is a Trip Spike and therefore all results are reported as a percentage
S05	Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Michael Brancati	Senior Analyst-Inorganic (VIC)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

Attention:	Iain Lindley
Report	614911-AID
Project Name	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID	21247477- TASK 3J FOR CONTAMINATION
Received Date	Aug 29, 2018
Date Reported	Sep 06, 2018

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS4964 method for inhomogeneous samples is around 0.1 g/kg (0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis where required, this is considered to be at the nominal reporting limit of 0.01 % (w / w).The examination of large sample sizes(500 mL is recommended) may improve the likelihood of identifying ACM in the > 2mm fraction.The NEPM screening level of 0.001 % (w / w) asbestos in soil for FA(friable asbestos) and AF(asbestos fines) then applies where they are able to be quantified by gravimetric procedures.This quantitative screening is not generally applicable to FF(free fibres) and results of Trace Analysis are referred. *NOTE: NATA News March 2014, p.7, states in relation to AS4964: "This is a qualitative method with a nominal reporting limit of 0.01%" and that currently in Australia "there is no validated method available for the quantification of asbestos". Accordingly, NATA Accreditation does not cover the performance of this service (indicated with an asterisk).* *This report is consistent with the analytical procedures and reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended) and the Western Australia Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, 2009, including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil, June 2011.*

Project Name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 21247477- TASK 3J FOR CONTAMINATION
Date Sampled Aug 20, 2018 to Aug 23, 2018
Report 614911-AID

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
GBH26 0.05-0.4	18-Au38667	Aug 21, 2018	Approximate Sample 125g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH28 1.4-1.6	18-Au38674	Aug 21, 2018	Approximate Sample 75g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH29 0.03-0.2	18-Au38677	Aug 21, 2018	Approximate Sample 76g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH33 0.05-0.2	18-Au38683	Aug 20, 2018	Approximate Sample 111g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH33 0.2-0.4	18-Au38684	Aug 20, 2018	Approximate Sample 119g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH37 0.6-0.8	18-Au38697	Aug 21, 2018	Approximate Sample 105g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH37 1.9-2.1	18-Au38698	Aug 21, 2018	Approximate Sample 83g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH02 0.1-0.4	18-Au38714	Aug 23, 2018	Approximate Sample 110g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH08 0.1-0.3	18-Au38719	Aug 23, 2018	Approximate Sample 124g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH13 1.0-1.1	18-Au38725	Aug 22, 2018	Approximate Sample 84g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
GBH22 0.4-0.5	18-Au38731	Aug 22, 2018	Approximate Sample 101g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH21 0.5-0.7	18-Au38736	Aug 22, 2018	Approximate Sample 84g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH03 0.1-0.4	18-Au38740	Aug 23, 2018	Approximate Sample 96g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH32 1.0-1.2	18-Au38751	Aug 23, 2018	Approximate Sample 111g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH09 0.1-0.3	18-Au38753	Aug 23, 2018	Approximate Sample 94g Sample consisted of: Brown coarse- grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
PACM1	18-Au39000	Aug 21, 2018	Approximate Sample 21g / 80x25x5mm Sample consisted of: Grey compressed fibre cement material	Chrysotile, amosite and crocidolite asbestos detected.
PACM2	18-Au39001	Aug 21, 2018	Approximate Sample 16g / 50x25x5mm Sample consisted of: Grey compressed fibre cement material	Chrysotile and amosite asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Aug 30, 2018	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Aug 30, 2018	Indefinite

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Phone: 02 4222 2300
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Received: Aug 29, 2018 11:42 AM
Due: Sep 5, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
External Laboratory																	
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**												
1	GBH24 0.0-0.3	Aug 21, 2018		Soil	S18-Au38662										X	X	
2	GBH24 2.0-2.2	Aug 21, 2018		Soil	S18-Au38663								X				
3	GBH24 3.7-3.9	Aug 21, 2018		Soil	S18-Au38664	X			X				X		X	X	
4	GBH24 4.6-4.7	Aug 21, 2018		Soil	S18-Au38665					X							
5	GBH24 4.7-4.9	Aug 21, 2018		Soil	S18-Au38666								X				
6	GBH26 0.05-0.4	Aug 21, 2018		Soil	S18-Au38667		X								X	X	
7	GBH26 0.4-0.6	Aug 21, 2018		Soil	S18-Au38668	X			X						X	X	
8	GBH26 1.8-2.0	Aug 21, 2018		Soil	S18-Au38669								X				
9	GBH26 2.8-3.0	Aug 21, 2018		Soil	S18-Au38670								X				

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Company Name: GHD Pty Ltd WOLLONGONG
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Order No.:
Report #: 614911
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 29, 2018 11:42 AM
Due: Sep 5, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
10	GBH26 3.8-4.0	Aug 21, 2018		Soil	S18-Au38671								X				
11	GBH26 4.75-4.9	Aug 21, 2018		Soil	S18-Au38672								X		X	X	
12	GBH28 0.05-0.2	Aug 21, 2018		Soil	S18-Au38673					X							
13	GBH28 1.4-1.6	Aug 21, 2018		Soil	S18-Au38674		X						X		X	X	
14	GBH28 2.3-2.5	Aug 21, 2018		Soil	S18-Au38675								X				
15	GBH28 3.8-4.0	Aug 21, 2018		Soil	S18-Au38676								X		X	X	
16	GBH29 0.03-0.2	Aug 21, 2018		Soil	S18-Au38677		X								X	X	
17	GBH29 1.9-2.1	Aug 21, 2018		Soil	S18-Au38678					X							
18	GBH29 2.4-2.5	Aug 21, 2018		Soil	S18-Au38679	X			X						X	X	
19	GBH29 2.4-2.6	Aug 21, 2018		Soil	S18-Au38680								X				

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

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Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
20	GBH29 4.0-4.2	Aug 21, 2018		Soil	S18-Au38681								X				
21	GBH29	Aug 21, 2018		Soil	S18-Au38682								X				
22	GBH33 0.05-0.2	Aug 20, 2018		Soil	S18-Au38683		X								X	X	
23	GBH33 0.2-0.4	Aug 20, 2018		Soil	S18-Au38684	X	X		X				X		X	X	
24	GBH33 1.4-1.6	Aug 20, 2018		Soil	S18-Au38685								X				
25	GBH33 3.8-4.0	Aug 20, 2018		Soil	S18-Au38686								X				
26	GBH33 4.8-5.0	Aug 20, 2018		Soil	S18-Au38687								X				
27	GBH34 0.05-0.3	Aug 20, 2018		Soil	S18-Au38688						X						
28	GBH34 0.1-0.4	Aug 20, 2018		Soil	S18-Au38689										X	X	
29	GBH34 0.6-0.8	Aug 20, 2018		Soil	S18-Au38690								X				
30	GBH34 1.0-1.2	Aug 20, 2018		Soil	S18-Au38691								X				

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Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
31	GBH34 1.9-2.1	Aug 20, 2018		Soil	S18-Au38692								X				
32	GBH34 2.8-3.0	Aug 20, 2018		Soil	S18-Au38693	X			X				X		X	X	
33	GBH34 4.8-5.0	Aug 20, 2018		Soil	S18-Au38694								X				
34	GBH36 0.0-0.15	Aug 21, 2018		Soil	S18-Au38695							X					
35	GBH37 0.05-0.3	Aug 21, 2018		Soil	S18-Au38696					X							
36	GBH37 0.6-0.8	Aug 21, 2018		Soil	S18-Au38697		X						X				
37	GBH37 1.9-2.1	Aug 21, 2018		Soil	S18-Au38698	X	X		X						X	X	
38	GBH37 2.4-2.6	Aug 21, 2018		Soil	S18-Au38699								X				
39	GBH37 3.8-4.0	Aug 21, 2018		Soil	S18-Au38700								X				
40	GBH37 4.8-5.0	Aug 21, 2018		Soil	S18-Au38701										X	X	
41	QC1	Aug 20, 2018		Soil	S18-Au38702										X	X	

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Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
42	QC2	Aug 20, 2018		Soil	S18-Au38703	X			X						X	X	
43	QC3	Aug 20, 2018		Soil	S18-Au38704					X							
44	QC4	Aug 21, 2018		Soil	S18-Au38705										X	X	
45	QC5	Aug 21, 2018		Soil	S18-Au38706					X							
46	QC6	Aug 21, 2018		Soil	S18-Au38707					X							
47	BH11 16.5-16.9	Aug 15, 2018		Soil	S18-Au38708								X				
48	BH11 18.1-18.5	Aug 15, 2018		Soil	S18-Au38709								X				
49	BH11 19.6-20.0	Aug 15, 2018		Soil	S18-Au38710	X			X				X		X	X	
50	BH11 21.1-21.5	Aug 15, 2018		Soil	S18-Au38711								X				

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Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
51	GBH29 1.7-1.9	Aug 21, 2018		Soil	S18-Au38712							X					
52	GBH33 2.4-2.6	Aug 20, 2018		Soil	S18-Au38713								X				
53	GBH02 0.1-0.4	Aug 23, 2018		Soil	S18-Au38714		X						X		X	X	
54	GBH02 0.4-0.6	Aug 23, 2018		Soil	S18-Au38715	X			X				X		X	X	
55	GBH02 1.2-1.4	Aug 23, 2018		Soil	S18-Au38716								X				
56	GBH02 4.2-4.45	Aug 23, 2018		Soil	S18-Au38717								X				
57	GBH02 4.8-5.0	Aug 23, 2018		Soil	S18-Au38718								X				
58	GBH08 0.1-0.3	Aug 23, 2018		Soil	S18-Au38719		X								X	X	
59	GBH08 1.2-1.4	Aug 23, 2018		Soil	S18-Au38720								X				
60	GBH08 2.2-2.4	Aug 23, 2018		Soil	S18-Au38721								X				
61	GBH08 4.3-4.5	Aug 23, 2018		Soil	S18-Au38722								X				

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Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
62	GBH08 4.8-5.0	Aug 23, 2018		Soil	S18-Au38723								X				
63	GBH13 0.1-0.2	Aug 22, 2018		Soil	S18-Au38724					X							
64	GBH13 1.0-1.1	Aug 22, 2018		Soil	S18-Au38725		X								X	X	
65	GBH13 1.2-1.3	Aug 22, 2018		Soil	S18-Au38726								X				
66	GBH13 2.7-3.0	Aug 22, 2018		Soil	S18-Au38727	X			X				X		X	X	
67	GBH13 3.7-4.0	Aug 22, 2018		Soil	S18-Au38728								X				
68	GBH13 4.7-5.0	Aug 22, 2018		Soil	S18-Au38729								X				
69	GBH13 5.7-6.0	Aug 22, 2018		Soil	S18-Au38730								X				
70	GBH22 0.4-0.5	Aug 22, 2018		Soil	S18-Au38731		X								X	X	
71	GBH22 1.5-1.8	Aug 22, 2018		Soil	S18-Au38732					X							
72	GBH22 3.2-3.5	Aug 22, 2018		Soil	S18-Au38733	X			X				X		X	X	
73	GBH22 4.2-4.5	Aug 22, 2018		Soil	S18-Au38734								X				

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Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
74	GBH22 5.2-5.5	Aug 22, 2018		Soil	S18-Au38735								X				
75	GBH21 0.5-0.7	Aug 22, 2018		Soil	S18-Au38736		X						X		X	X	
76	GBH21 1.5-1.8	Aug 22, 2018		Soil	S18-Au38737								X		X	X	
77	GBH21 3.7-4.0	Aug 22, 2018		Soil	S18-Au38738								X				
78	GBH21 4.7-5.0	Aug 22, 2018		Soil	S18-Au38739								X				
79	GBH03 0.1-0.4	Aug 23, 2018		Soil	S18-Au38740		X								X	X	
80	GBH03 1.0-1.2	Aug 23, 2018		Soil	S18-Au38741								X				
81	GBH03 2.3-2.5	Aug 23, 2018		Soil	S18-Au38742	X			X				X		X	X	
82	GBH03 4.0-4.2	Aug 23, 2018		Soil	S18-Au38743								X				
83	BH05 15.5-15.95	Aug 23, 2018		Soil	S18-Au38744	X			X						X	X	
84	BH05 17.0-17.45	Aug 23, 2018		Soil	S18-Au38745					X							

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Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
85	BH05 12.1-12.85	Aug 23, 2018		Soil	S18-Au38746								X				
86	BH05 20.0-20.45	Aug 23, 2018		Soil	S18-Au38747								X				
87	QC7	Aug 23, 2018		Soil	S18-Au38748										X	X	
88	GBH32 0.1-0.4	Aug 23, 2018		Soil	S18-Au38749					X							
89	GBH32 0.4-0.5	Aug 23, 2018		Soil	S18-Au38750					X							
90	GBH32 1.0-1.2	Aug 23, 2018		Soil	S18-Au38751	X	X		X						X	X	
91	GBH32 4.1-4.2	Aug 23, 2018		Soil	S18-Au38752								X		X	X	
92	GBH09 0.1-0.3	Aug 23, 2018		Soil	S18-Au38753		X										
93	GBH09 0.75-1.0	Aug 23, 2018		Soil	S18-Au38754										X	X	
94	GBH09 2.2-2.4	Aug 23, 2018		Soil	S18-Au38755								X				

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
95	GBH09 4.2-4.4	Aug 23, 2018		Soil	S18-Au38756								X		X	X	
96	BH09 13	Aug 23, 2018		Soil	S18-Au38757								X				
97	BH09 15.15-15.25	Aug 23, 2018		Soil	S18-Au38758								X				
98	BH09 16	Aug 23, 2018		Soil	S18-Au38759	X			X						X	X	
99	GBH03 0.4-0.6	Aug 23, 2018		Soil	S18-Au38975					X							
100	GBH33 2.4-2.6	Aug 20, 2018		Soil	S18-Au38998							X					
101	PACM1	Aug 21, 2018		Building Materials	S18-Au39000			X									
102	PACM2	Aug 21, 2018		Building Materials	S18-Au39001			X									
103	SOIL TRIP BLANK	Aug 21, 2018		Soil	S18-Au39005												X

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NATA # 1261 Site # 20794

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Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 614911
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 29, 2018 11:42 AM
Due: Sep 5, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
104	SOIL TRIP SPIKE	Aug 21, 2018		Soil	S18-Au39006									X			
Test Counts						15	15	2	15	17	17	17	61	1	37	37	1

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Western Australia Department of Health
NOHSC	National Occupational Health and Safety Commission
ACM	Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition, although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential for fibre release.
FA	FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or was previously bonded and is now significantly degraded (crumbling).
PACM	Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.
AF	Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. (Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substatntial degree of damage which increases the potential for fibre release.)
AC	Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Sayeed Abu	Senior Analyst-Asbestos (NSW)

Authorised by:

Laxman Dias	Senior Analyst-Asbestos (NSW)



Glenn Jackson
National Operations Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Iain Lindley
Project name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT
Project ID:	21247477 PORT KEMBLA TASK 3J FOR CONTAMINATION
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Aug 29, 2018 11:42 AM
Eurofins | mgt reference:	**614911**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

Triplicate samples sent to ALS for analysis. ASSpH bag not received for GBH37 4.8-5.0, GBH32 1.0-1.2; ASSpH analysis cancelled. Asbestos bag for GBH29 1.9-2.1 not received. Additional asbestos bag for sample GBH33 2.4-2.6 placed on hold.

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Iain Lindley - iain.lindley@ghd.com.

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	ASS	Asbestos	Vial	Sample comments:
1	GBH24	0.0-0.3	21/08/2018	S	x														X		X		
2	GBH24	2.0-2.2	21/08/2018	S							x								X	X	X		
3	GBH24	3.7-3.9	21/08/2018	S	x						x	x	x	x	x				X	X	X		
4	GBH24	4.6-4.7	21/08/2018	S														x	X		X		
5	GBH24	4.7-4.9	21/08/2018	S							x								X	X	X		
6	GBH26	0.05-0.4	21/08/2018	S	x			x											X		X		
7	GBH26	0.4-0.6	21/08/2018	S	x							x	x	x	x				X	X	X		
8	GBH26	1.8-2.0	21/08/2018	S							x								X	X	X		
9	GBH26	2.8-3.0	21/08/2018	S							x								X	X	X		
10	GBH26	3.8-4.0	21/08/2018	S							x								X	X	X		
11	GBH26	4.75-4.9	21/08/2018	S	x						x								X	X	X		
12	GBH28	0.05-0.2	21/08/2018	S														x	X		X		
13	GBH28	1.4-1.6	21/08/2018	S	x			x			x								X	X	X		
14	GBH28	2.3-2.5	21/08/2018	S							x								X	X	X		
15	GBH28	3.8-4.0	21/08/2018	S	x						x								X	X	X		
16	GBH29	0.03-0.2	21/08/2018	S	x			x											X		X		

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	2.26°C
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8 11.42am	5 DAY ☑ 10 DAY ☐ Other:	☐ Hand Delivered ☐ Postal	Report number:
Signature: I. Lindley	Signature:	Signature:		Courier Consignment # :	61494

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH								Hold
1	GBH29	1.9-2.1	21/08/2018	S																					x
2	GBH29	2.4-2.5	21/08/2018	S	x							x	x	x	x										
3	GBH29	2.4-2.6	21/08/2018	S							x														
4	GBH29	4.0-4.2	21/08/2018	S							x														
5	GBH29		21/08/2018	S							x														
6	GBH33	0.05-0.2	20/08/2018	S	x			x																	
7	GBH33	0.2-0.4	20/08/2018	S	x						x	x	x	x	x										
8	GBH33	1.4-1.6	20/08/2018	S							x														
9	GBH33	3.8-4.0	20/08/2018	S							x														
10	GBH33	4.8-5.0	20/08/2018	S							x														
11	GBH34	0.05-0.3	20/08/2018	S																					x
12	GBH34	0.1-0.4	20/08/2018	S	x																				
13	GBH34	0.6-0.8	20/08/2018	S							x														
14	GBH34	1.0-1.2	20/08/2018	S							x														
15	GBH34	1.9-2.1	20/08/2018	S							x														
16	GBH34	2.8-3.0	21/08/2018	S	x						x	x	x	x	x										

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Containers:								Sample comments:
	Jar	ASS	Asbestos	Vial					
1	X		X						
2	X								
3		X	X						
4	X	X	X						
5		X							
6	X		X						
7	X	X	X						
8	X	X	X						2 jars
9	X	X	X						
10	X	X	X						
11		X	X						
12	X		X						
13	X	X	X						
14	X	X	X						
15		X							
16	X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	2.2°C
Date & Time 23/8/2018	Date & Time:	Date & Time: 24/8 1:42pm	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614911
Signature: I. Lindley	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	ASS	Asbestos	Amber 1L	Plastic	Sample comments:
1	GBH34	4.8-5.0	20/08/2018	S							x								X	X	X			
2	GBH36	0.0-0.15	21/08/2018	S														x			X			
3	GBH37	0.05-0.3	21/08/2018	S														x	X					
4	GBH37	0.6-0.8	21/08/2018	S				x			x								X	X	X			
5	GBH37	1.9-2.1	21/08/2018	S	x							x	x	x	x				X		X			
6	GBH37	2.4-2.6	21/08/2018	S							x								X	X	X			
7	GBH37	3.8-4.0	21/08/2018	S							x								X	X	X			
8	GBH37	4.8-5.0	21/08/2018	S	x						x								X	X	X			
9	PACM 1	-	21/08/2018	M				x												X	X			
10	PACM 2	-	21/08/2018	M				x												X	X			
11	QC1		20/08/2018	S	x														X					
12	QC2		20/08/2018	S	x							x	x	x	x				X					
13	QC2a		20/08/2018	S	x							x	x	x	x				X					Forward to ALS
14	QC3		20/08/2018	S														x	X					
15	QC3a		20/08/2018	S														x	X					Forward to ALS
16	QC4		21/08/2018	S	x														X					

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	2.2 °C
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8/18 9am	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614911
Signature: I. Lindley	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS — Page 4 of 7

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	ASS	Asbestos	Vial	Sample comments:
1	QC5	-	21/08/2018	S														x	X				
2	QC5a	-	21/08/2018	S														x	X				Forward to ALS
3	QC6	-	22/08/2018	S														x	X				
4	Soil Trip Blank	-	21/08/2018	S					x	x												X	
5	Soil Trip Spike	-	21/08/2018	S					x													X	
6	BH11	16.5-16.9	15/08/2018	S							x								X	X	X		
7	BH11	18.1-18.5	15/08/2018	S							x								X	X	X		
8	BH11	19.6-20.0	15/08/2018	S	x						x	x	x	x	x				X	X	X		
9	BH11	21.1-21.5	15/08/2018	S							x								X	X	X		
10	GBH29	1.7-1.9	21/08/2018	S														x			X		
11	GBH33	2.4-2.6	20/08/2018	S							x										X		
12	GBH02	0.1-0.4	23/08/2018	S	x			x			x								X	X	X		
13	GBH02	0.4-0.6	23/08/2018	S	x						x	x	x	x	x				X	X	X		
14	GBH02	1.2-1.4	23/08/2018	S							x								X	X	X		
15	GBH02	4.2-4.45	23/08/2018	S							x								X	X	X		
16	GBH02	4.8-5.0	23/08/2018	S							x								X	X	X		

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By: VLONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	2.2°C
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8 11:47	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614911
Signature: I. Lindley	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	ASS	Asbestos	Vial	Sample comments:
1	GBH08	0.1-0.3	23/08/2018	S	x			x											X		X		
2	GBH08	1.2-1.4	23/08/2018	S							x								X	X	X		
3	GBH08	2.2-2.4	23/08/2018	S							x								X	X	X		
4	GBH08	4.3-4.5	23/08/2018	S							x								X	X	X		
5	GBH08	4.8-5.0	23/08/2018	S							x								X	X	X		
6	GBH13	0.1-0.2	22/08/2018	S														x	X		X		
7	GBH13	1.0-1.1	22/08/2018	S	x			x											X		X		
8	GBH13	1.2-1.3	22/08/2018	S							x								X	X	X		
9	GBH13	2.7-3.0	22/08/2018	S	x						x	x	x	x	x				X	X	X		
10	GBH13	3.7-4.0	22/08/2018	S							x								X	X	X		
11	GBH13	4.7-5.0	22/08/2018	S							x								X	X	X		
12	GBH13	5.7-6.0	22/08/2018	S							x								X	X	X		
13	GBH22	0.4-0.5	22/08/2018	S	x			x											X		X		
14	GBH22	1.5-1.8	22/08/2018	S														x	X				
15	GBH22	3.2-3.5	22/08/2018	S	x						x	x	x	x	x				X	X	X		
16	GBH22	4.2-4.5	22/08/2018	S							x								X	X	X		

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	2·26°C
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8/18 4pm	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614911
Signature: I. Lindley	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	ASS	Asbestos	Vial	Sample comments:
1	GBH22	5.2-5.5	22/08/2018	S							x								X	X	X		
2	GBH21	0.5-0.7	22/08/2018	S	x			x			x								X	X	X		
3	GBH21	1.5-1.8	22/08/2018	S	x						x								X	X	X		
4	GBH21	3.7-4.0	22/08/2018	S							x								X	X	X		
5	GBH21	4.7-5.0	22/08/2018	S							x								X	X	X		
6	GBH03	0.1-0.4	23/08/2018	S	x			x											X	X			
7	GBH03	0.4-0.6	23/08/2018	S														x	X	X			
8	GBH03	1.0-1.2	23/08/2018	S							x								X	X	X		
9	GBH03	2.3-2.5	23/08/2018	S	x						x	x	x	x	x				X	X	X		
10	GBH03	4.0-4.2	23/08/2018	S							x								X	X	X		
11	BH05	15.5-15.95	23/08/2018	S	x							x	x	x	x				X				
12	BH05	17.0-17.45	23/08/2018	S														x	X				
13	BH05	12.1-12.85	23/08/2018	S							x									X			
14	BH05	20.0-20.45	23/08/2018	S	x						x								X	X			
15	QC7	-	-	S	x														X				
16	QC7a	-	-	S	x														X				Forward to ALS

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	2.2°C
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8 11.42pm	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614911
Signature: I. Lindley	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	ASS	Asbestos	Vial	Sample comments:
1	GBH32	0.1-0.4	23/08/2018	S														x	X		X		
2	GBH32	0.4-0.5	23/08/2018	S														x	X		X		
3	GBH32	1.0-1.2	23/08/2018	S	x			x			x	x	x	x	x				X	x	X		
4	GBH32	4.1-4.2	23/08/2018	S	x						x								X	X	X		
5	GBH09	0.1-0.3	23/08/2018	S				x											X	X	X		
6	GBH09	0.75-1.0	23/08/2018	S	x														X	X	X		
7	GBH09	2.2-2.4	23/08/2018	S							x								X	X	X		
8	GBH09	4.2-4.4	23/08/2018	S	x						x								X	X	X		
9	BH09	13	23/08/2018	S							x									X			
10	BH09	15.15-15.25	23/08/2018	S							x									X			
11	BH09	16	23/08/2018	S	x							x	x	x	x				X				
12																							
13																							
14																							
15																							
16																							

Analytes

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By: CHONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	2.2°C
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8/11.42am	5 DAY ☑ 10 DAY ☐ Other:	☐ Hand Delivered	Report number:
Signature: I. Lindley	Signature:	Signature:		☐ Postal	614911
				Courier Consignment # :	

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NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 614911
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 29, 2018 11:42 AM
Due: Sep 5, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
External Laboratory																	
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**												
1	GBH24 0.0-0.3	Aug 21, 2018		Soil	S18-Au38662										X	X	
2	GBH24 2.0-2.2	Aug 21, 2018		Soil	S18-Au38663								X				
3	GBH24 3.7-3.9	Aug 21, 2018		Soil	S18-Au38664	X			X				X		X	X	
4	GBH24 4.6-4.7	Aug 21, 2018		Soil	S18-Au38665					X							
5	GBH24 4.7-4.9	Aug 21, 2018		Soil	S18-Au38666								X				
6	GBH26 0.05-0.4	Aug 21, 2018		Soil	S18-Au38667		X								X	X	
7	GBH26 0.4-0.6	Aug 21, 2018		Soil	S18-Au38668	X			X						X	X	
8	GBH26 1.8-2.0	Aug 21, 2018		Soil	S18-Au38669								X				
9	GBH26 2.8-3.0	Aug 21, 2018		Soil	S18-Au38670								X				

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Received: Aug 29, 2018 11:42 AM
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Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
10	GBH26 3.8-4.0	Aug 21, 2018		Soil	S18-Au38671								X				
11	GBH26 4.75-4.9	Aug 21, 2018		Soil	S18-Au38672								X		X	X	
12	GBH28 0.05-0.2	Aug 21, 2018		Soil	S18-Au38673					X							
13	GBH28 1.4-1.6	Aug 21, 2018		Soil	S18-Au38674		X						X		X	X	
14	GBH28 2.3-2.5	Aug 21, 2018		Soil	S18-Au38675								X				
15	GBH28 3.8-4.0	Aug 21, 2018		Soil	S18-Au38676								X		X	X	
16	GBH29 0.03-0.2	Aug 21, 2018		Soil	S18-Au38677		X								X	X	
17	GBH29 1.9-2.1	Aug 21, 2018		Soil	S18-Au38678					X							
18	GBH29 2.4-2.5	Aug 21, 2018		Soil	S18-Au38679	X			X						X	X	
19	GBH29 2.4-2.6	Aug 21, 2018		Soil	S18-Au38680								X				

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Site # 23736

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NSW 2500

Order No.:
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Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 29, 2018 11:42 AM
Due: Sep 5, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
20	GBH29 4.0-4.2	Aug 21, 2018		Soil	S18-Au38681								X				
21	GBH29	Aug 21, 2018		Soil	S18-Au38682								X				
22	GBH33 0.05-0.2	Aug 20, 2018		Soil	S18-Au38683		X								X	X	
23	GBH33 0.2-0.4	Aug 20, 2018		Soil	S18-Au38684	X	X		X				X		X	X	
24	GBH33 1.4-1.6	Aug 20, 2018		Soil	S18-Au38685								X				
25	GBH33 3.8-4.0	Aug 20, 2018		Soil	S18-Au38686								X				
26	GBH33 4.8-5.0	Aug 20, 2018		Soil	S18-Au38687								X				
27	GBH34 0.05-0.3	Aug 20, 2018		Soil	S18-Au38688						X						
28	GBH34 0.1-0.4	Aug 20, 2018		Soil	S18-Au38689										X	X	
29	GBH34 0.6-0.8	Aug 20, 2018		Soil	S18-Au38690								X				
30	GBH34 1.0-1.2	Aug 20, 2018		Soil	S18-Au38691								X				

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Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
31	GBH34 1.9-2.1	Aug 20, 2018		Soil	S18-Au38692								X				
32	GBH34 2.8-3.0	Aug 20, 2018		Soil	S18-Au38693	X			X				X		X	X	
33	GBH34 4.8-5.0	Aug 20, 2018		Soil	S18-Au38694								X				
34	GBH36 0.0-0.15	Aug 21, 2018		Soil	S18-Au38695							X					
35	GBH37 0.05-0.3	Aug 21, 2018		Soil	S18-Au38696					X							
36	GBH37 0.6-0.8	Aug 21, 2018		Soil	S18-Au38697		X						X				
37	GBH37 1.9-2.1	Aug 21, 2018		Soil	S18-Au38698	X	X		X						X	X	
38	GBH37 2.4-2.6	Aug 21, 2018		Soil	S18-Au38699								X				
39	GBH37 3.8-4.0	Aug 21, 2018		Soil	S18-Au38700								X				
40	GBH37 4.8-5.0	Aug 21, 2018		Soil	S18-Au38701										X	X	
41	QC1	Aug 20, 2018		Soil	S18-Au38702										X	X	

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Company Name: GHD Pty Ltd WOLLONGONG
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Order No.:
Report #: 614911
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 29, 2018 11:42 AM
Due: Sep 5, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
42	QC2	Aug 20, 2018		Soil	S18-Au38703	X			X						X	X	
43	QC3	Aug 20, 2018		Soil	S18-Au38704					X							
44	QC4	Aug 21, 2018		Soil	S18-Au38705										X	X	
45	QC5	Aug 21, 2018		Soil	S18-Au38706					X							
46	QC6	Aug 21, 2018		Soil	S18-Au38707					X							
47	BH11 16.5-16.9	Aug 15, 2018		Soil	S18-Au38708								X				
48	BH11 18.1-18.5	Aug 15, 2018		Soil	S18-Au38709								X				
49	BH11 19.6-20.0	Aug 15, 2018		Soil	S18-Au38710	X			X				X		X	X	
50	BH11 21.1-21.5	Aug 15, 2018		Soil	S18-Au38711								X				

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Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
51	GBH29 1.7-1.9	Aug 21, 2018		Soil	S18-Au38712							X					
52	GBH33 2.4-2.6	Aug 20, 2018		Soil	S18-Au38713								X				
53	GBH02 0.1-0.4	Aug 23, 2018		Soil	S18-Au38714		X						X		X	X	
54	GBH02 0.4-0.6	Aug 23, 2018		Soil	S18-Au38715	X			X				X		X	X	
55	GBH02 1.2-1.4	Aug 23, 2018		Soil	S18-Au38716								X				
56	GBH02 4.2-4.45	Aug 23, 2018		Soil	S18-Au38717								X				
57	GBH02 4.8-5.0	Aug 23, 2018		Soil	S18-Au38718								X				
58	GBH08 0.1-0.3	Aug 23, 2018		Soil	S18-Au38719		X								X	X	
59	GBH08 1.2-1.4	Aug 23, 2018		Soil	S18-Au38720								X				
60	GBH08 2.2-2.4	Aug 23, 2018		Soil	S18-Au38721								X				
61	GBH08 4.3-4.5	Aug 23, 2018		Soil	S18-Au38722								X				

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Phone: 02 4222 2300
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Received: Aug 29, 2018 11:42 AM
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Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
62	GBH08 4.8-5.0	Aug 23, 2018		Soil	S18-Au38723								X				
63	GBH13 0.1-0.2	Aug 22, 2018		Soil	S18-Au38724					X							
64	GBH13 1.0-1.1	Aug 22, 2018		Soil	S18-Au38725		X								X	X	
65	GBH13 1.2-1.3	Aug 22, 2018		Soil	S18-Au38726								X				
66	GBH13 2.7-3.0	Aug 22, 2018		Soil	S18-Au38727	X			X				X		X	X	
67	GBH13 3.7-4.0	Aug 22, 2018		Soil	S18-Au38728								X				
68	GBH13 4.7-5.0	Aug 22, 2018		Soil	S18-Au38729								X				
69	GBH13 5.7-6.0	Aug 22, 2018		Soil	S18-Au38730								X				
70	GBH22 0.4-0.5	Aug 22, 2018		Soil	S18-Au38731		X								X	X	
71	GBH22 1.5-1.8	Aug 22, 2018		Soil	S18-Au38732					X							
72	GBH22 3.2-3.5	Aug 22, 2018		Soil	S18-Au38733	X			X				X		X	X	
73	GBH22 4.2-4.5	Aug 22, 2018		Soil	S18-Au38734								X				

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Received: Aug 29, 2018 11:42 AM
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Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
74	GBH22 5.2-5.5	Aug 22, 2018		Soil	S18-Au38735								X				
75	GBH21 0.5-0.7	Aug 22, 2018		Soil	S18-Au38736		X						X		X	X	
76	GBH21 1.5-1.8	Aug 22, 2018		Soil	S18-Au38737								X		X	X	
77	GBH21 3.7-4.0	Aug 22, 2018		Soil	S18-Au38738								X				
78	GBH21 4.7-5.0	Aug 22, 2018		Soil	S18-Au38739								X				
79	GBH03 0.1-0.4	Aug 23, 2018		Soil	S18-Au38740		X								X	X	
80	GBH03 1.0-1.2	Aug 23, 2018		Soil	S18-Au38741								X				
81	GBH03 2.3-2.5	Aug 23, 2018		Soil	S18-Au38742	X			X				X		X	X	
82	GBH03 4.0-4.2	Aug 23, 2018		Soil	S18-Au38743								X				
83	BH05 15.5-15.95	Aug 23, 2018		Soil	S18-Au38744	X			X						X	X	
84	BH05 17.0-17.45	Aug 23, 2018		Soil	S18-Au38745					X							

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Received: Aug 29, 2018 11:42 AM
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Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
85	BH05 12.1-12.85	Aug 23, 2018		Soil	S18-Au38746								X				
86	BH05 20.0-20.45	Aug 23, 2018		Soil	S18-Au38747								X				
87	QC7	Aug 23, 2018		Soil	S18-Au38748										X	X	
88	GBH32 0.1-0.4	Aug 23, 2018		Soil	S18-Au38749					X							
89	GBH32 0.4-0.5	Aug 23, 2018		Soil	S18-Au38750					X							
90	GBH32 1.0-1.2	Aug 23, 2018		Soil	S18-Au38751	X	X		X						X	X	
91	GBH32 4.1-4.2	Aug 23, 2018		Soil	S18-Au38752								X		X	X	
92	GBH09 0.1-0.3	Aug 23, 2018		Soil	S18-Au38753		X										
93	GBH09 0.75-1.0	Aug 23, 2018		Soil	S18-Au38754										X	X	
94	GBH09 2.2-2.4	Aug 23, 2018		Soil	S18-Au38755								X				

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Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
95	GBH09 4.2-4.4	Aug 23, 2018		Soil	S18-Au38756								X		X	X	
96	BH09 13	Aug 23, 2018		Soil	S18-Au38757								X				
97	BH09 15.15-15.25	Aug 23, 2018		Soil	S18-Au38758								X				
98	BH09 16	Aug 23, 2018		Soil	S18-Au38759	X			X						X	X	
99	GBH03 0.4-0.6	Aug 23, 2018		Soil	S18-Au38975					X							
100	GBH33 2.4-2.6	Aug 20, 2018		Soil	S18-Au38998							X					
101	PACM1	Aug 21, 2018		Building Materials	S18-Au39000			X									
102	PACM2	Aug 21, 2018		Building Materials	S18-Au39001			X									
103	SOIL TRIP BLANK	Aug 21, 2018		Soil	S18-Au39005												X

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Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 29, 2018 11:42 AM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	614911 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Sep 5, 2018 5 Day Iain Lindley
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	21247477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Asbestos Absence /Presence	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271						X			X	X					X	X	X
Sydney Laboratory - NATA Site # 18217							X	X				X		X		X	X
Brisbane Laboratory - NATA Site # 20794											X		X				
Perth Laboratory - NATA Site # 23736																	
104	SOIL TRIP SPIKE	Aug 21, 2018		Soil	S18-Au39006									X			
Test Counts						15	15	2	15	17	17	17	61	1	37	37	1

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Order No.:
Report #: 614912
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 30, 2018 12:12 PM
Due: Sep 6, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477 - TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Moisture Set	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
External Laboratory																	
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**												
1	GBH10 0.1-0.3	Aug 24, 2018		Soil	S18-Au38587	X	X	X							X	X	
2	GBH10 2.0-2.2	Aug 24, 2018		Soil	S18-Au38588							X					
3	GBH10 4.4-4.6	Aug 24, 2018		Soil	S18-Au38589							X					
4	QC8	Aug 24, 2018		Soil	S18-Au38590	X		X					X			X	
5	GBH11 0.05-0.3	Aug 24, 2018		Soil	S18-Au38591								X			X	
6	GBH11 1.4-1.6	Aug 24, 2018		Soil	S18-Au38592	X	X	X							X	X	
7	GBH11 2.1-2.3	Aug 24, 2018		Soil	S18-Au38593							X					
8	GBH11 5.0-5.1	Aug 24, 2018		Soil	S18-Au38594							X					
9	GBH30 0.3-0.5	Aug 24, 2018		Soil	S18-Au38595		X						X			X	

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Received: Aug 30, 2018 12:12 PM
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Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477 - TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Moisture Set	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
10	GBH30 1.2-1.4	Aug 24, 2018		Soil	S18-Au38596							X	X			X	
11	GBH30 3.8-4.0	Aug 24, 2018		Soil	S18-Au38597							X					
12	GBH30 4.8-5.0	Aug 24, 2018		Soil	S18-Au38598							X					
13	GBH35 2.5-2.7	Aug 24, 2018		Soil	S18-Au38599							X	X			X	
14	GBH35 4.5-4.7	Aug 24, 2018		Soil	S18-Au38600							X					
15	GBH39 1.0-1.2	Aug 24, 2018		Soil	S18-Au38601							X					
16	GBH39 2.2-2.4	Aug 24, 2018		Soil	S18-Au38602	X		X				X			X	X	
17	GBH39 4.5-4.7	Aug 24, 2018		Soil	S18-Au38603							X					
18	GBH12 0.5-0.7	Aug 27, 2018		Soil	S18-Au38604		X										
19	GBH12 1.7-1.2	Aug 27, 2018		Soil	S18-Au38605							X	X			X	
20	GBH12 2.7-3.0	Aug 27, 2018		Soil	S18-Au38606							X					
21	GBH12 3.7-4.0	Aug 27, 2018		Soil	S18-Au38607							X					

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Order No.:
Report #: 614912
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 30, 2018 12:12 PM
Due: Sep 6, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477 - TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Moisture Set	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
22	GBH12 4.0-5.0	Aug 27, 2018		Soil	S18-Au38608							X					
23	GBH15 1.7-1.9	Aug 27, 2018		Soil	S18-Au38609							X					
24	GBH15 2.7-3.0	Aug 27, 2018		Soil	S18-Au38610							X	X			X	
25	GBH15 3.7-4.0	Aug 27, 2018		Soil	S18-Au38611							X					
26	GBH15 4.2-4.5	Aug 27, 2018		Soil	S18-Au38612							X					
27	GBH17 1.5-1.7	Aug 27, 2018		Soil	S18-Au38613								X			X	
28	GBH17 2.7-3.0	Aug 27, 2018		Soil	S18-Au38614							X					
29	GBH17 3.7-4.0	Aug 27, 2018		Soil	S18-Au38615	X		X				X		X		X	
30	GBH17 4.7-5.0	Aug 27, 2018		Soil	S18-Au38616							X					
31	GBH18 0.5-0.7	Aug 28, 2018		Soil	S18-Au38617		X						X			X	
32	GBH18 1.5-1.7	Aug 28, 2018		Soil	S18-Au38618							X					
33	GBH18 2.7-3.0	Aug 28, 2018		Soil	S18-Au38619							X					

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Moisture Set	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
34	GBH18 3.7-4.0	Aug 28, 2018		Soil	S18-Au38620							X					
35	GBH18 4.7-5.0	Aug 28, 2018		Soil	S18-Au38621							X	X			X	
36	GBH19 0.5-0.7	Aug 27, 2018		Soil	S18-Au38622		X						X			X	
37	GBH19 1.4-1.7	Aug 27, 2018		Soil	S18-Au38623							X					
38	GBH19 2.7-3.0	Aug 27, 2018		Soil	S18-Au38624							X					
39	GBH19 3.7-4.0	Aug 27, 2018		Soil	S18-Au38625							X					
40	GBH19 4.7-5.0	Aug 27, 2018		Soil	S18-Au38626							X					
41	GBH25 1.5-1.7	Aug 27, 2018		Soil	S18-Au38627							X					
42	GBH25 2.5-2.7	Aug 27, 2018		Soil	S18-Au38628		X					X	X			X	
43	GBH25 3.5-3.7	Aug 27, 2018		Soil	S18-Au38629							X					
44	GBH27 1.7-2.0	Aug 28, 2018		Soil	S18-Au38630		X					X					
45	GBH27 2.7-3.0	Aug 28, 2018		Soil	S18-Au38631							X					

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
46	GBH27 3.7-4.0	Aug 28, 2018		Soil	S18-Au38632							X					
47	GBH27 4.7-5.0	Aug 28, 2018		Soil	S18-Au38633							X					
48	GBH27 5.7-6.0	Aug 28, 2018		Soil	S18-Au38634	X		X				X			X	X	
49	GBH38 0.5-0.7	Aug 27, 2018		Soil	S18-Au38635		X						X			X	
50	GBH38 1.7-2.0	Aug 27, 2018		Soil	S18-Au38636							X					
51	GBH38 2.7-3.0	Aug 27, 2018		Soil	S18-Au38637							X					
52	GBH38 3.7-4.0	Aug 27, 2018		Soil	S18-Au38638	X		X				X			X	X	
53	GBH38 4.7-5.0	Aug 27, 2018		Soil	S18-Au38639							X					
54	GBH10 0.6-0.8	Aug 24, 2018		Soil	S18-Au38933				X								
55	GBH30 0.1-0.3	Aug 24, 2018		Soil	S18-Au38934				X								
56	GBH35 0.05-0.3	Aug 24, 2018		Soil	S18-Au38935				X								

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Moisture Set	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
57	GBH35 0.8-1.0	Aug 24, 2018		Soil	S18-Au38936				X								
58	GBH39 0.1-0.3	Aug 24, 2018		Soil	S18-Au38937				X								
59	QC10	Aug 27, 2018		Soil	S18-Au38938				X								
60	GBH15 0.5-0.7	Aug 27, 2018		Soil	S18-Au38939				X								
61	GBH17 0.5-0.7	Aug 27, 2018		Soil	S18-Au38940				X								
62	GBH27 0.5-0.6	Aug 27, 2018		Soil	S18-Au38941				X								
63	GBH27 6.7-7.0	Aug 27, 2018		Soil	S18-Au38960							X					
64	GBH27 7.7-8.0	Aug 27, 2018		Soil	S18-Au38961						X						
65	QC09	Aug 27, 2018		Soil	S18-Au38962						X						
66	BH08 16M-16.45M	Aug 27, 2018		Soil	S18-Au38963										X		X
67	BH08 13M-13.45M	Aug 27, 2018		Soil	S18-Au38964						X						

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Project ID: 2127477 - TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Moisture Set	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
68	BH08 17.5-17.95	Aug 27, 2018		Soil	S18-Au38965						X						
69	BH08 10.0-10.45	Aug 27, 2018		Soil	S18-Au38966					X							
70	GBH25 0.5-0.7	Aug 27, 2018		Soil	S18-Au38974				X								
Test Counts						7	9	7	15	15	15	44	20	20	20	20	20

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NSW 2500

Attention:	Iain Lindley
Report	614912-V2-AID
Project Name	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID	2127477 - TASK 3J FOR CONTAMINATION
Received Date	Aug 30, 2018
Date Reported	Oct 22, 2018

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS4964 method for inhomogeneous samples is around 0.1 g/kg (0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis where required, this is considered to be at the nominal reporting limit of 0.01 % (w / w).The examination of large sample sizes(500 mL is recommended) may improve the likelihood of identifying ACM in the > 2mm fraction.The NEPM screening level of 0.001 % (w / w) asbestos in soil for FA(friable asbestos) and AF(asbestos fines) then applies where they are able to be quantified by gravimetric procedures.This quantitative screening is not generally applicable to FF(free fibres) and results of Trace Analysis are referred. *NOTE: NATA News March 2014, p.7, states in relation to AS4964: "This is a qualitative method with a nominal reporting limit of 0.01%" and that currently in Australia "there is no validated method available for the quantification of asbestos". Accordingly, NATA Accreditation does not cover the performance of this service (indicated with an asterisk).* *This report is consistent with the analytical procedures and reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended) and the Western Australia Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, 2009, including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil, June 2011.*

Project Name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 2127477 - TASK 3J FOR CONTAMINATION
Date Sampled Aug 24, 2018 to Aug 28, 2018
Report 614912-V2-AID

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
GBH10 0.1-0.3	18-Au38587	Aug 24, 2018	Approximate Sample 37g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH11 1.4-1.6	18-Au38592	Aug 24, 2018	Approximate Sample 37g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH30 0.3-0.5	18-Au38595	Aug 24, 2018	Approximate Sample 140g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH12 0.5-0.7	18-Au38604	Aug 27, 2018	Approximate Sample 130g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH18 0.5-0.7	18-Au38617	Aug 28, 2018	Approximate Sample 123g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH19 0.5-0.7	18-Au38622	Aug 27, 2018	Approximate Sample 209g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH25 2.5-2.7	18-Au38628	Aug 27, 2018	Approximate Sample 63g Sample consisted of: Brown fine- grained sandy soil	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH27 1.7-2.0	18-Au38630	Aug 28, 2018	Approximate Sample 101g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
GBH38 0.5-0.7	18-Au38635	Aug 27, 2018	Approximate Sample 235g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Aug 30, 2018	Indefinite

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Moisture Set	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
External Laboratory																	
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**												
1	GBH10 0.1-0.3	Aug 24, 2018		Soil	S18-Au38587	X	X	X							X	X	
2	GBH10 2.0-2.2	Aug 24, 2018		Soil	S18-Au38588							X					
3	GBH10 4.4-4.6	Aug 24, 2018		Soil	S18-Au38589							X					
4	QC8	Aug 24, 2018		Soil	S18-Au38590	X		X					X			X	
5	GBH11 0.05-0.3	Aug 24, 2018		Soil	S18-Au38591								X			X	
6	GBH11 1.4-1.6	Aug 24, 2018		Soil	S18-Au38592	X	X	X							X	X	
7	GBH11 2.1-2.3	Aug 24, 2018		Soil	S18-Au38593							X					
8	GBH11 5.0-5.1	Aug 24, 2018		Soil	S18-Au38594							X					
9	GBH30 0.3-0.5	Aug 24, 2018		Soil	S18-Au38595		X						X			X	

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Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
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NSW 2500

Order No.:
Report #: 614912
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 30, 2018 12:12 PM
Due: Sep 6, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477 - TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Moisture Set	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
10	GBH30 1.2-1.4	Aug 24, 2018		Soil	S18-Au38596							X	X			X	
11	GBH30 3.8-4.0	Aug 24, 2018		Soil	S18-Au38597							X					
12	GBH30 4.8-5.0	Aug 24, 2018		Soil	S18-Au38598							X					
13	GBH35 2.5-2.7	Aug 24, 2018		Soil	S18-Au38599							X	X			X	
14	GBH35 4.5-4.7	Aug 24, 2018		Soil	S18-Au38600							X					
15	GBH39 1.0-1.2	Aug 24, 2018		Soil	S18-Au38601							X					
16	GBH39 2.2-2.4	Aug 24, 2018		Soil	S18-Au38602	X		X				X			X	X	
17	GBH39 4.5-4.7	Aug 24, 2018		Soil	S18-Au38603							X					
18	GBH12 0.5-0.7	Aug 27, 2018		Soil	S18-Au38604		X										
19	GBH12 1.7-1.2	Aug 27, 2018		Soil	S18-Au38605							X	X			X	
20	GBH12 2.7-3.0	Aug 27, 2018		Soil	S18-Au38606							X					
21	GBH12 3.7-4.0	Aug 27, 2018		Soil	S18-Au38607							X					

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
22	GBH12 4.0-5.0	Aug 27, 2018		Soil	S18-Au38608							X					
23	GBH15 1.7-1.9	Aug 27, 2018		Soil	S18-Au38609							X					
24	GBH15 2.7-3.0	Aug 27, 2018		Soil	S18-Au38610							X	X			X	
25	GBH15 3.7-4.0	Aug 27, 2018		Soil	S18-Au38611							X					
26	GBH15 4.2-4.5	Aug 27, 2018		Soil	S18-Au38612							X					
27	GBH17 1.5-1.7	Aug 27, 2018		Soil	S18-Au38613								X			X	
28	GBH17 2.7-3.0	Aug 27, 2018		Soil	S18-Au38614							X					
29	GBH17 3.7-4.0	Aug 27, 2018		Soil	S18-Au38615	X		X				X		X		X	
30	GBH17 4.7-5.0	Aug 27, 2018		Soil	S18-Au38616							X					
31	GBH18 0.5-0.7	Aug 28, 2018		Soil	S18-Au38617		X						X			X	
32	GBH18 1.5-1.7	Aug 28, 2018		Soil	S18-Au38618							X					
33	GBH18 2.7-3.0	Aug 28, 2018		Soil	S18-Au38619							X					

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Project ID: 2127477 - TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Moisture Set	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
34	GBH18 3.7-4.0	Aug 28, 2018		Soil	S18-Au38620							X					
35	GBH18 4.7-5.0	Aug 28, 2018		Soil	S18-Au38621							X	X			X	
36	GBH19 0.5-0.7	Aug 27, 2018		Soil	S18-Au38622		X						X			X	
37	GBH19 1.4-1.7	Aug 27, 2018		Soil	S18-Au38623							X					
38	GBH19 2.7-3.0	Aug 27, 2018		Soil	S18-Au38624							X					
39	GBH19 3.7-4.0	Aug 27, 2018		Soil	S18-Au38625							X					
40	GBH19 4.7-5.0	Aug 27, 2018		Soil	S18-Au38626							X					
41	GBH25 1.5-1.7	Aug 27, 2018		Soil	S18-Au38627							X					
42	GBH25 2.5-2.7	Aug 27, 2018		Soil	S18-Au38628		X					X	X			X	
43	GBH25 3.5-3.7	Aug 27, 2018		Soil	S18-Au38629							X					
44	GBH27 1.7-2.0	Aug 28, 2018		Soil	S18-Au38630		X					X					
45	GBH27 2.7-3.0	Aug 28, 2018		Soil	S18-Au38631							X					

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
46	GBH27 3.7-4.0	Aug 28, 2018		Soil	S18-Au38632							X					
47	GBH27 4.7-5.0	Aug 28, 2018		Soil	S18-Au38633							X					
48	GBH27 5.7-6.0	Aug 28, 2018		Soil	S18-Au38634	X		X				X			X	X	
49	GBH38 0.5-0.7	Aug 27, 2018		Soil	S18-Au38635		X						X			X	
50	GBH38 1.7-2.0	Aug 27, 2018		Soil	S18-Au38636							X					
51	GBH38 2.7-3.0	Aug 27, 2018		Soil	S18-Au38637							X					
52	GBH38 3.7-4.0	Aug 27, 2018		Soil	S18-Au38638	X		X				X			X	X	
53	GBH38 4.7-5.0	Aug 27, 2018		Soil	S18-Au38639							X					
54	GBH10 0.6-0.8	Aug 24, 2018		Soil	S18-Au38933				X								
55	GBH30 0.1-0.3	Aug 24, 2018		Soil	S18-Au38934				X								
56	GBH35 0.05-0.3	Aug 24, 2018		Soil	S18-Au38935				X								

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
57	GBH35 0.8-1.0	Aug 24, 2018		Soil	S18-Au38936				X								
58	GBH39 0.1-0.3	Aug 24, 2018		Soil	S18-Au38937				X								
59	QC10	Aug 27, 2018		Soil	S18-Au38938				X								
60	GBH15 0.5-0.7	Aug 27, 2018		Soil	S18-Au38939				X								
61	GBH17 0.5-0.7	Aug 27, 2018		Soil	S18-Au38940				X								
62	GBH27 0.5-0.6	Aug 27, 2018		Soil	S18-Au38941				X								
63	GBH27 6.7-7.0	Aug 27, 2018		Soil	S18-Au38960							X					
64	GBH27 7.7-8.0	Aug 27, 2018		Soil	S18-Au38961						X						
65	QC09	Aug 27, 2018		Soil	S18-Au38962						X						
66	BH08 16M-16.45M	Aug 27, 2018		Soil	S18-Au38963										X		X
67	BH08 13M-13.45M	Aug 27, 2018		Soil	S18-Au38964						X						

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
68	BH08 17.5-17.95	Aug 27, 2018		Soil	S18-Au38965						X						
69	BH08 10.0-10.45	Aug 27, 2018		Soil	S18-Au38966					X							
70	GBH25 0.5-0.7	Aug 27, 2018		Soil	S18-Au38974				X								
Test Counts						7	9	7	15	15	15	44	20	20	20	20	20

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Sample is dried by heating prior to analysis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)
NEPM	National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
AF	Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to “non-bonded / friable”.
FA	Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres in the matrix.

Comments

This report has been revised (V2) to include additional QC results for Ammonia.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Sayeed Abu	Senior Analyst-Asbestos (NSW)

Authorised by:

Laxman Dias	Senior Analyst-Asbestos (NSW)



Glenn Jackson
National Operations Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Iain Lindley
Project name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT
Project ID:	21217 - TASK 3J FOR CONTAMINATION
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Aug 30, 2018 12:12 PM
Eurofins | mgt reference:	**614912**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☑ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

QC8A and QC10A forwarded to ALS (no bags received). Extra samples received for GBH27 6.7-7 and GBH27 7.7-8 (Asb+AsspH+Jar). Extra Jars received for QC09,BH08 16m-16.45m, BH 13m-13.45m, BH 17.5-17.95. ASSPH bag received for BH08 10-10.45.

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Iain Lindley - iain.lindley@ghd.com.

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	**Contact Name:** Iain Lindley 0459 353 385	**Purchase Order :**	**COC Number :**
Office Address : Level 11, 200 Crown Street	**Project Manager :** Colee Quayle 0403 242 431	**PROJECT Number :** 2127477 - Task 3J for Contamination	**Eurofins | mgt quote ID :**
Wollongong, NSW 2500	**Email for results :** iain.lindley@ghd.com	**PROJECT Name :** Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH10	0.1-0.3	24/08/2018	S	x			x				x	x	x	x			
2	GBH10	0.6-0.8	24/08/2018	S							x							
3	GBH10	2.0-2.2	24/08/2018	S							x							
4	GBH10	4.4-4.6	24/08/2018	S							x							
5	QC8	-	24/08/2018	S	x							x	x	x	x			
6	QC8A	-	24/08/2018	S	x							x	x	x	x			
7	GBH11	0.05-0.3	24/08/2018	S	x													
8	GBH11	1.4-1.6	24/08/2018	S	x			x				x	x	x	x			
9	GBH11	2.1-2.3	24/08/2018	S							x							
10	GBH11	5.0-5.1	24/08/2018	S							x							
11	GBH30	0.1-0.3	24/08/2018	S														
12	GBH30	0.3-0.5	24/08/2018	S	x			x										
13	GBH30	1.2-1.4	24/08/2018	S	x						x							
14	GBH30	3.8-4.0	24/08/2018	S							x							
15	GBH30	4.8-5.0	24/08/2018	S							x							
16	GBH35	0.05-0.3	24/08/2018	S														

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Containers:								Sample comments:
	Jar	Zip lock	ASS	Amber 1L	Plastic				
1	X	X							
2	X	X							
3	X	X	X						
4	X	X	X						
5	X	X							
6	X	X							Forward to ALS
7	X	X							
8	X	X							
9	X	X	X						
10	X	X	X						
11	X	X							
12	X	X							
13	X	X	X						
14	X	X	X						
15	X	X	X						
16	X	X							

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	**Received By:**	**Received By:** VLONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 29/8/2018	**Date & Time:**	**Date & Time:** 30/8 12.12am	5 DAY ☑ 10 DAY ☐ Other:	**Courier Consignment # :**	**Report number:** 614912
Signature: C. Quayle	**Signature:**	**Signature:**			

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	**Contact Name:** Iain Lindley 0459 353 385	**Purchase Order :**	**COC Number :**
Office Address : Level 11, 200 Crown Street	**Project Manager :** Colee Quayle 0403 242 431	**PROJECT Number :** 2127477 - Task 3J for Contamination	**Eurofins | mgt quote ID :**
Wollongong, NSW 2500	**Email for results :** iain.lindley@ghd.com	**PROJECT Name :** Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH35	0.8-1.0	24/08/2018	S														
2	GBH35	2.5-2.7	24/08/2018	S	x						x							
3	GBH35	4.5-4.7	24/08/2018	S							x							
4	GBH39	0.1-0.3	24/08/2018	S														
5	GBH39	1.0-1.2	24/08/2018	S							x							
6	GBH39	2.2-2.4	24/08/2018	S	x						x	x	x	x	x			
7	GBH39	4.5-4.7	24/08/2018	S							x							
8	GBH12	0.5-0.7	27/08/2018	S				x										
9	GBH12	1.7-2.0	27/08/2018	S	x						x							
10	GBH12	2.7-3.0	27/08/2018	S							x							
11	GBH12	3.7-4.0	27/08/2018	S							x							
12	GBH12	4.0-5.0	27/08/2018	S							x							
13	QC10	-	27/08/2018	S														x
14	QC10A	-	27/08/2018	S														x
15	GBH15	0.5-0.7	27/08/2018	S														
16	GBH15	1.7-1.9	27/08/2018	S							x							

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

Jar	Zip lock	ASS	Amber 1L	Plastic				Sample comments:
X	X							
X	X	X						
X	X	X						
X	X							
X	X	X						
X	X	X						
X	X	X						
X	X							
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X							
X	X							Forward to ALS
X	X							
X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	**Received By:**	**Received By:** Vinod N G	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 29/8/2018	**Date & Time:**	**Date & Time:** 30/8 12-Ka	5 DAY ☑ 10 DAY ☐ Other:	**Courier Consignment # :**	**Report number:** 614912
Signature: C. Quayle	**Signature:**	**Signature:**			

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD Pty Ltd	**Contact Name:**	Iain Lindley 0459 353 385	**Purchase Order :**	**COC Number :**
Office Address :	Level 11, 200 Crown Street	**Project Manager :**	Colee Quayle 0403 242 431	**PROJECT Number :** 2127477 - Task 3J for Contamination	**Eurofins | mgt quote ID :**
Wollongong, NSW 2500		**Email for results :**	iain.lindley@ghd.com	**PROJECT Name :** Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH								Hold	Containers: Jar	Zip lock	ASS	Amber 1L	Plastic				Sample comments:
1	GBH15	2.7-3.0	27/08/2018	S	x						x															X	X	X						
2	GBH15	3.7-4.0	27/08/2018	S							x															X	X	X						
3	GBH15	4.2-4.5	27/08/2018	S							x															X	X	X						
4	GBH17	0.5-0.7	27/08/2018	S																					x	X	X						
5	GBH17	1.5-1.7	27/08/2018	S	x						x															X	X	X						
6	GBH17	2.7-3.0	27/08/2018	S							x															X	X	X						
7	GBH17	3.7-4.0	27/08/2018	S	x						x	x	x	x	x											X	X	X						
8	GBH17	4.7-5.0	27/08/2018	S							x															X	X	X						
9	GBH18	0.5-0.7	28/08/2018	S	x			x																		X	X							
10	GBH18	1.5-1.7	28/08/2018	S							x															X	X	X						
11	GBH18	2.7-3.0	28/08/2018	S							x															X	X	X						
12	GBH18	3.7-4.0	28/08/2018	S							x															X	X	X						
13	GBH18	4.7-5.0	28/08/2018	S	x						x															X	X	X						
14	GBH19	0.5-0.7	27/08/2018	S	x			x																		X	X							
15	GBH19	1.4-1.7	27/08/2018	S							x															X	X	X						
16	GBH19	2.7-3.0	27/08/2018	S							x															X	X	X						

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	**Received By:**	**Received By:** VLONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 29/8/2018	**Date & Time:**	**Date & Time:** 30/8 12-Ran	5 DAY ☑ 10 DAY ☐ Other:	**Courier Consignment # :**	**Report number:** 614912
Signature: C. Quayle	**Signature:**	**Signature:**			

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	**Contact Name:** Iain Lindley 0459 353 385	**Purchase Order :**	**COC Number :**
Office Address : Level 11, 200 Crown Street	**Project Manager :** Colee Quayle 0403 242 431	**PROJECT Number :** 2127477 - Task 3J for Contamination	**Eurofins | mgt quote ID :**
Wollongong, NSW 2500	**Email for results :** iain.lindley@ghd.com	**PROJECT Name :** Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH19	3.7-4.0	27/08/2018	S							x							
2	GBH19	4.7-5.0	27/08/2018	S							x							
3	GBH25	0.5-0.7	27/08/2018	S														
4	GBH25	1.5-1.7	27/08/2018	S							x							
5	GBH25	2.5-2.7	27/08/2018	S	x			x			x							
6	GBH25	3.5-3.7	27/08/2018	S							x							
7	GBH27	0.5-0.6	28/08/2018	S														
8	GBH27	1.7-2.0	28/08/2018	S				x			x							
9	GBH27	2.7-3.0	28/08/2018	S							x							
10	GBH27	3.7-4.0	28/08/2018	S							x							
11	GBH27	4.7-5.0	28/08/2018	S							x							
12	GBH27	5.7-6.0	28/08/2018	S	x						x	x	x	x	x			
13	GBH38	0.5-0.7	27/08/2018	S	x			x										
14	GBH38	1.7-2.0	27/08/2018	S							x							
15	GBH38	2.7-3.0	27/08/2018	S							x							
16	GBH38	3.7-4.0	27/08/2018	S	x						x	x	x	x	x			

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

Jar	Zip lock	ASS	Amber 1L	Plastic				Sample comments:
X	X	X						
X	X	X						
X	X							
X	X	X						
X	X	X						
X	X	X						
X	X							
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X							
X	X	X						
X	X	X						
X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	**Received By:**	**Received By:** VLoNG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 29/8/2018	**Date & Time:**	**Date & Time:** 30/8 12-12am	5 DAY ☑ 10 DAY ☐ Other:	**Courier Consignment # :**	**Report number:** 614912
Signature: C. Quayle	**Signature:**	**Signature:**			

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH38	4.7-5.0	27/08/2018	S							x							
2				S														
3				S														
4				S														
5				S														
6				S														
7				S														
8				S														
9				S														
10				S														
11				S														
12				S														
13				S														
14				S														
15				S														
16				S														

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

	Jar	Zip lock	ASS	Amber 1L	Plastic				Sample comments:
1	X	X	X						

GHD Staff	Courier	Laboratory Staff
Relinquished By: Colee Quayle	Received By:	Received By: VCoNG
Date & Time 29/8/2018	Date & Time:	Date & Time: 30/8/12-Vam
Signature: C. Quayle	Signature:	Signature:

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☑ 10 DAY ☐ Other:

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival:

Report number: 614912

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	**Contact Name:** Iain Lindley 0459 353 385	**Purchase Order :**	**COC Number :**
Office Address : Level 11, 200 Crown Street	**Project Manager :** Colee Quayle 0403 242 431	**PROJECT Number :** 2127477 - Task 3J for Contamination	**Eurofins | mgt quote ID :**
Wollongong, NSW 2500	**Email for results :** iain.lindley@ghd.com	**PROJECT Name :** Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	BH08	10-10.45	27/08/2018	S	x													
2	BH08	13-13.45	27/08/2018	S														x
3	BH08	16.0-16.45	27/08/2018	S	x													
4	BH08	17.5-19.95	27/08/2018	S														x
5	BH08	20.5-20.95	29/08/2018	S														x
6	BH12	0.0-0.5	29/08/2018	S							x							
7	BH12	0.5-1.0	29/08/2018	S							x							
8	BH12	1.0-1.5	29/08/2018	S							x							
9	BH12	6.0-6.45	29/08/2018	S							x							
10	BH12	7.65-7.95	29/08/2018	S	x													
11	BH12	9.0-9.45	29/08/2018	S							x							
12	BH12	12.25-12.45	29/08/2018	S							x							
13	BH12	13.5-13.95	29/08/2018	S							x							
14	GBH06	7.7-8.0	30/08/2018	S							x							
15	GBH05	0.5-0.7	30/08/2018	S							x							
16	GBH05	1.7-2.0	30/08/2018	S							x							

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

	Jar	Zip lock	ASS	Amber 1L	Plastic				**Sample comments:**
1	X								
2	X								
3	X								
4	X								
5	X								
6			X						
7			X						
8			X						
9			X						
10	X								
11			x						
12			x						
13			x						
14	x	x	x						
15	x	x	x						
16	x	x	x						

GHD Staff	**Courier**	**Laboratory Staff**	**Turn around time**	**Method Of Shipment**	**Temperature on arrival:**
Relinquished By: Colee Quayle	**Received By:**	**Received By:** Elvis D	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 31/8/2018	**Date & Time:**	**Date & Time:** 2/9/18 10:09am	5 DAY ☑ 10 DAY ☐ Other:	**Courier Consignment # :**	**Report number:**
Signature: C. Quayle	**Signature:**	**Signature:**			

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH								Hold
1	GBH05	2.7-3.0	30/08/2018	S	x						x														
2	GBH27	6.7-7.0	28/08/2018	S							x														
3	GBH27	7.7-7.8	28/08/2018	S							x														
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
16																									

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:								Sample comments:
Jar	Zip lock	ASS	Amber 1L	Plastic				
x	x	x						
x	x	x						
x	x	x						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 31/8/2018	Date & Time:	Date & Time:	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number:
Signature: C. Quayle	Signature:	Signature:			

Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Iain Lindley**

Report **614912-S-V2**
Project name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 2127477 - TASK 3J FOR CONTAMINATION
Received Date Aug 30, 2018

Client Sample ID			**GBH10 0.1-0.3**	**GBH10 2.0-2.2**	**GBH10 4.4-4.6**	[G01] **QC8**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Au38587**	**S18-Au38588**	**S18-Au38589**	**S18-Au38590**
Date Sampled			**Aug 24, 2018**	**Aug 24, 2018**	**Aug 24, 2018**	**Aug 24, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	-	< 40
TRH C10-C14	20	mg/kg	< 20	-	-	< 20
TRH C15-C28	50	mg/kg	< 50	-	-	< 50
TRH C29-C36	50	mg/kg	< 50	-	-	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	-	-	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	-	< 0.2
Toluene	0.1	mg/kg	< 0.1	-	-	< 0.2
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	< 0.2
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	< 0.4
o-Xylene	0.1	mg/kg	< 0.1	-	-	< 0.2
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	< 0.6
4-Bromofluorobenzene (surr.)	1	%	128	-	-	94
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	-	< 1
TRH C6-C10	20	mg/kg	< 20	-	-	< 40
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	-	< 40
TRH >C10-C16	50	mg/kg	< 50	-	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	-	< 50
TRH >C16-C34	100	mg/kg	< 100	-	-	< 100
TRH >C34-C40	100	mg/kg	< 100	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	-	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	-	1.2
Acenaphthene	0.5	mg/kg	< 0.5	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	< 0.5
Anthracene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	-	< 0.5
Chrysene	0.5	mg/kg	< 0.5	-	-	< 0.5

Client Sample ID			GBH10 0.1-0.3	GBH10 2.0-2.2	GBH10 4.4-4.6	[G01]QC8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38587	S18-Au38588	S18-Au38589	S18-Au38590
Date Sampled			Aug 24, 2018	Aug 24, 2018	Aug 24, 2018	Aug 24, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	-	-	< 0.5
Fluorene	0.5	mg/kg	< 0.5	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	-	-	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Pyrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	70	-	-	86
p-Terphenyl-d14 (surr.)	1	%	76	-	-	97
Ammonia (as N)	5	mg/kg	< 5	-	-	< 10
Cyanide (total)	5	mg/kg	< 5	-	-	< 5
% Moisture	1	%	7.5	-	-	7.0
Heavy Metals						
Arsenic	2	mg/kg	< 2	-	-	< 2
Cadmium	0.4	mg/kg	< 0.4	-	-	< 0.4
Chromium	5	mg/kg	< 5	-	-	8.1
Copper	5	mg/kg	< 5	-	-	< 5
Lead	5	mg/kg	< 5	-	-	< 5
Mercury	0.1	mg/kg	< 0.1	-	-	< 0.1
Nickel	5	mg/kg	< 5	-	-	< 5
Zinc	5	mg/kg	< 5	-	-	< 5
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	9.1	10	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	7.9	8.7	-
Reaction Ratings*[S05]		comment	-	4.0	4.0	-

Client Sample ID			GBH11 0.05-0.3	GBH11 1.4-1.6	GBH11 2.1-2.3	GBH11 5.0-5.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38591	S18-Au38592	S18-Au38593	S18-Au38594
Date Sampled			Aug 24, 2018	Aug 24, 2018	Aug 24, 2018	Aug 24, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	-	-
TRH C10-C14	20	mg/kg	< 20	< 20	-	-
TRH C15-C28	50	mg/kg	< 50	65	-	-
TRH C29-C36	50	mg/kg	< 50	< 50	-	-
TRH C10-36 (Total)	50	mg/kg	< 50	65	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	79	103	-	-

Client Sample ID			GBH11 0.05-0.3	GBH11 1.4-1.6	GBH11 2.1-2.3	GBH11 5.0-5.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38591	S18-Au38592	S18-Au38593	S18-Au38594
Date Sampled			Aug 24, 2018	Aug 24, 2018	Aug 24, 2018	Aug 24, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	-	-
TRH C6-C10	20	mg/kg	< 20	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-	-
TRH >C10-C16	50	mg/kg	< 50	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	-	-
TRH >C16-C34	100	mg/kg	< 100	< 100	-	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	-	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	115	84	-	-
p-Terphenyl-d14 (surr.)	1	%	133	83	-	-
Ammonia (as N)	5	mg/kg	-	< 5	-	-
Cyanide (total)	5	mg/kg	-	< 5	-	-
% Moisture	1	%	9.4	8.5	-	-
Heavy Metals						
Arsenic	2	mg/kg	< 2	< 2	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	-
Chromium	5	mg/kg	< 5	8.3	-	-
Copper	5	mg/kg	200	25	-	-
Lead	5	mg/kg	11	< 5	-	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	-	-
Nickel	5	mg/kg	< 5	< 5	-	-
Zinc	5	mg/kg	61	17	-	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	-	9.6	9.2
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	-	7.5	8.6
Reaction Ratings*[S05]		comment	-	-	4.0	4.0

Client Sample ID			GBH30 0.3-0.5	GBH30 1.2-1.4	GBH30 3.8-4.0	GBH30 4.8-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38595	S18-Au38596	S18-Au38597	S18-Au38598
Date Sampled			Aug 24, 2018	Aug 24, 2018	Aug 24, 2018	Aug 24, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	-	-
TRH C10-C14	20	mg/kg	< 20	< 20	-	-
TRH C15-C28	50	mg/kg	< 50	< 50	-	-
TRH C29-C36	50	mg/kg	< 50	< 50	-	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	71	94	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	-	-
TRH C6-C10	20	mg/kg	< 20	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-	-
TRH >C10-C16	50	mg/kg	< 50	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	-	-
TRH >C16-C34	100	mg/kg	< 100	< 100	-	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	-	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	90	88	-	-
p-Terphenyl-d14 (surr.)	1	%	102	110	-	-
% Moisture	1	%	5.5	9.0	-	-

Client Sample ID			GBH30 0.3-0.5	GBH30 1.2-1.4	GBH30 3.8-4.0	GBH30 4.8-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38595	S18-Au38596	S18-Au38597	S18-Au38598
Date Sampled			Aug 24, 2018	Aug 24, 2018	Aug 24, 2018	Aug 24, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	< 2	4.5	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	-
Chromium	5	mg/kg	390	14	-	-
Copper	5	mg/kg	12	54	-	-
Lead	5	mg/kg	< 5	13	-	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	-	-
Nickel	5	mg/kg	24	10	-	-
Zinc	5	mg/kg	58	54	-	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	10	9.6	9.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	10	7.4	7.7
Reaction Ratings*[S05]		comment	-	4.0	4.0	4.0

Client Sample ID			GBH35 2.5-2.7	GBH35 4.5-4.7	GBH39 1.0-1.2	GBH39 2.2-2.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38599	S18-Au38600	S18-Au38601	S18-Au38602
Date Sampled			Aug 24, 2018	Aug 24, 2018	Aug 24, 2018	Aug 24, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	-	< 20
TRH C10-C14	20	mg/kg	< 20	-	-	220
TRH C15-C28	50	mg/kg	< 50	-	-	420
TRH C29-C36	50	mg/kg	< 50	-	-	200
TRH C10-36 (Total)	50	mg/kg	< 50	-	-	840
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	-	< 0.1
Toluene	0.1	mg/kg	< 0.1	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	-	-	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	97	-	-	104
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	-	< 0.5
TRH C6-C10	20	mg/kg	< 20	-	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	-	< 20
TRH >C10-C16	50	mg/kg	< 50	-	-	300
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	-	300
TRH >C16-C34	100	mg/kg	< 100	-	-	560
TRH >C34-C40	100	mg/kg	< 100	-	-	100
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	-	960
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	-	1.2
Acenaphthene	0.5	mg/kg	< 0.5	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	< 0.5
Anthracene	0.5	mg/kg	< 0.5	-	-	< 0.5

Client Sample ID			GBH35 2.5-2.7	GBH35 4.5-4.7	GBH39 1.0-1.2	GBH39 2.2-2.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38599	S18-Au38600	S18-Au38601	S18-Au38602
Date Sampled			Aug 24, 2018	Aug 24, 2018	Aug 24, 2018	Aug 24, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	-	< 0.5
Chrysene	0.5	mg/kg	< 0.5	-	-	1.3
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	-	-	0.5
Fluorene	0.5	mg/kg	< 0.5	-	-	0.7
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	-	-	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	-	-	1.8
Pyrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	-	-	4.3
2-Fluorobiphenyl (surr.)	1	%	88	-	-	79
p-Terphenyl-d14 (surr.)	1	%	106	-	-	104
Ammonia (as N)	5	mg/kg	-	-	-	< 5
Cyanide (total)	5	mg/kg	-	-	-	< 5
% Moisture	1	%	4.0	-	-	9.1
Heavy Metals						
Arsenic	2	mg/kg	2.5	-	-	2.4
Cadmium	0.4	mg/kg	< 0.4	-	-	< 0.4
Chromium	5	mg/kg	< 5	-	-	44
Copper	5	mg/kg	< 5	-	-	78
Lead	5	mg/kg	< 5	-	-	380
Mercury	0.1	mg/kg	< 0.1	-	-	< 0.1
Nickel	5	mg/kg	< 5	-	-	8.4
Zinc	5	mg/kg	5.4	-	-	96
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.2	9.6	9.2	9.2
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.9	8.2	8.9	8.3
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			GBH39 4.5-4.7	GBH12 1.7-1.2	GBH12 2.7-3.0	GBH12 3.7-4.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38603	S18-Au38605	S18-Au38606	S18-Au38607
Date Sampled			Aug 24, 2018	Aug 27, 2018	Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	-	-
TRH C10-C14	20	mg/kg	-	< 20	-	-
TRH C15-C28	50	mg/kg	-	< 50	-	-
TRH C29-C36	50	mg/kg	-	< 50	-	-
TRH C10-36 (Total)	50	mg/kg	-	< 50	-	-

Client Sample ID			GBH39 4.5-4.7	GBH12 1.7-1.2	GBH12 2.7-3.0	GBH12 3.7-4.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38603	S18-Au38605	S18-Au38606	S18-Au38607
Date Sampled			Aug 24, 2018	Aug 27, 2018	Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	-
Toluene	0.1	mg/kg	-	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	-
o-Xylene	0.1	mg/kg	-	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	-	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	-	84	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	-	-
TRH C6-C10	20	mg/kg	-	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	-	-
TRH >C10-C16	50	mg/kg	-	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	-	-
TRH >C16-C34	100	mg/kg	-	< 100	-	-
TRH >C34-C40	100	mg/kg	-	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	-	-
Acenaphthene	0.5	mg/kg	-	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	-
Anthracene	0.5	mg/kg	-	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Chrysene	0.5	mg/kg	-	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	-
Fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Fluorene	0.5	mg/kg	-	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	-
Naphthalene	0.5	mg/kg	-	< 0.5	-	-
Phenanthrene	0.5	mg/kg	-	< 0.5	-	-
Pyrene	0.5	mg/kg	-	< 0.5	-	-
Total PAH*	0.5	mg/kg	-	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	-	100	-	-
p-Terphenyl-d14 (surr.)	1	%	-	126	-	-
% Moisture	1	%	-	8.3	-	-
Heavy Metals						
Arsenic	2	mg/kg	-	3.9	-	-
Cadmium	0.4	mg/kg	-	< 0.4	-	-
Chromium	5	mg/kg	-	9.3	-	-
Copper	5	mg/kg	-	11	-	-
Lead	5	mg/kg	-	16	-	-
Mercury	0.1	mg/kg	-	< 0.1	-	-
Nickel	5	mg/kg	-	< 5	-	-
Zinc	5	mg/kg	-	75	-	-

Client Sample ID			GBH39 4.5-4.7	GBH12 1.7-1.2	GBH12 2.7-3.0	GBH12 3.7-4.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38603	S18-Au38605	S18-Au38606	S18-Au38607
Date Sampled			Aug 24, 2018	Aug 27, 2018	Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	8.7	8.9	9.4	9.1
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.3	6.9	8.1	7.2
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			GBH12 4.0-5.0	GBH15 1.7-1.9	GBH15 2.7-3.0	GBH15 3.7-4.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38608	S18-Au38609	S18-Au38610	S18-Au38611
Date Sampled			Aug 27, 2018	Aug 27, 2018	Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	-
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	-	89	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			GBH12 4.0-5.0	GBH15 1.7-1.9	GBH15 2.7-3.0	GBH15 3.7-4.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38608	S18-Au38609	S18-Au38610	S18-Au38611
Date Sampled			Aug 27, 2018	Aug 27, 2018	Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH*	0.5	mg/kg	-	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	-	89	-
p-Terphenyl-d14 (surr.)	1	%	-	-	113	-
% Moisture	1	%	-	-	2.0	-
Heavy Metals						
Arsenic	2	mg/kg	-	-	5.6	-
Cadmium	0.4	mg/kg	-	-	< 0.4	-
Chromium	5	mg/kg	-	-	< 5	-
Copper	5	mg/kg	-	-	< 5	-
Lead	5	mg/kg	-	-	7.3	-
Mercury	0.1	mg/kg	-	-	< 0.1	-
Nickel	5	mg/kg	-	-	< 5	-
Zinc	5	mg/kg	-	-	50	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.3	9.0	9.2	9.3
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.4	8.1	7.9	7.2
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			GBH15 4.2-4.5	GBH17 1.5-1.7	GBH17 2.7-3.0	GBH17 3.7-4.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38612	S18-Au38613	S18-Au38614	S18-Au38615
Date Sampled			Aug 27, 2018	Aug 27, 2018	Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	-	< 20
TRH C10-C14	20	mg/kg	-	< 20	-	< 20
TRH C15-C28	50	mg/kg	-	< 50	-	< 50
TRH C29-C36	50	mg/kg	-	< 50	-	< 50
TRH C10-36 (Total)	50	mg/kg	-	< 50	-	< 50
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	-	< 0.1
Xylenes - Total	0.3	mg/kg	-	< 0.3	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	92	-	89
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	-	< 0.5
TRH C6-C10	20	mg/kg	-	< 20	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	-	< 20
TRH >C10-C16	50	mg/kg	-	< 50	-	< 50

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	GBH15 4.2-4.5 Soil S18-Au38612 Aug 27, 2018	GBH17 1.5-1.7 Soil S18-Au38613 Aug 27, 2018	GBH17 2.7-3.0 Soil S18-Au38614 Aug 27, 2018	GBH17 3.7-4.0 Soil S18-Au38615 Aug 27, 2018
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	-	< 50
TRH >C16-C34	100	mg/kg	-	< 100	-	< 100
TRH >C34-C40	100	mg/kg	-	< 100	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	-	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	-	1.2
Acenaphthene	0.5	mg/kg	-	< 0.5	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	-	< 0.5
Chrysene	0.5	mg/kg	-	< 0.5	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	< 0.5
Fluoranthene	0.5	mg/kg	-	< 0.5	-	< 0.5
Fluorene	0.5	mg/kg	-	< 0.5	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	< 0.5
Naphthalene	0.5	mg/kg	-	< 0.5	-	< 0.5
Phenanthrene	0.5	mg/kg	-	0.6	-	< 0.5
Pyrene	0.5	mg/kg	-	< 0.5	-	< 0.5
Total PAH*	0.5	mg/kg	-	0.6	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	95	-	104
p-Terphenyl-d14 (surr.)	1	%	-	108	-	129
Ammonia (as N)	5	mg/kg	-	-	-	< 5
Cyanide (total)	5	mg/kg	-	-	-	< 5
% Moisture	1	%	-	5.6	-	4.9
Heavy Metals						
Arsenic	2	mg/kg	-	4.4	-	5.9
Cadmium	0.4	mg/kg	-	< 0.4	-	< 0.4
Chromium	5	mg/kg	-	6.3	-	< 5
Copper	5	mg/kg	-	5.7	-	< 5
Lead	5	mg/kg	-	7.3	-	11
Mercury	0.1	mg/kg	-	< 0.1	-	< 0.1
Nickel	5	mg/kg	-	< 5	-	< 5
Zinc	5	mg/kg	-	57	-	68
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.5	-	9.5	9.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.3	-	10	9.3
Reaction Ratings*[S05]		comment	4.0	-	4.0	4.0

Client Sample ID			GBH17 4.7-5.0	GBH18 0.5-0.7	GBH18 1.5-1.7	GBH18 2.7-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38616	S18-Au38617	S18-Au38618	S18-Au38619
Date Sampled			Aug 27, 2018	Aug 28, 2018	Aug 28, 2018	Aug 28, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	-	-
TRH C10-C14	20	mg/kg	-	< 20	-	-
TRH C15-C28	50	mg/kg	-	86	-	-
TRH C29-C36	50	mg/kg	-	< 50	-	-
TRH C10-36 (Total)	50	mg/kg	-	86	-	-
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	-
Toluene	0.1	mg/kg	-	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	-
o-Xylene	0.1	mg/kg	-	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	-	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	-	85	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	-	-
TRH C6-C10	20	mg/kg	-	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	-	-
TRH >C10-C16	50	mg/kg	-	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	-	-
TRH >C16-C34	100	mg/kg	-	100	-	-
TRH >C34-C40	100	mg/kg	-	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	-	100	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	-	-
Acenaphthene	0.5	mg/kg	-	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	-
Anthracene	0.5	mg/kg	-	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Chrysene	0.5	mg/kg	-	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	-
Fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Fluorene	0.5	mg/kg	-	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	-
Naphthalene	0.5	mg/kg	-	< 0.5	-	-
Phenanthrene	0.5	mg/kg	-	0.7	-	-
Pyrene	0.5	mg/kg	-	< 0.5	-	-
Total PAH*	0.5	mg/kg	-	0.7	-	-
2-Fluorobiphenyl (surr.)	1	%	-	99	-	-
p-Terphenyl-d14 (surr.)	1	%	-	106	-	-
% Moisture	1	%	-	6.9	-	-

Client Sample ID			GBH17 4.7-5.0	GBH18 0.5-0.7	GBH18 1.5-1.7	GBH18 2.7-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38616	S18-Au38617	S18-Au38618	S18-Au38619
Date Sampled			Aug 27, 2018	Aug 28, 2018	Aug 28, 2018	Aug 28, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	-	3.8	-	-
Cadmium	0.4	mg/kg	-	< 0.4	-	-
Chromium	5	mg/kg	-	9.7	-	-
Copper	5	mg/kg	-	6.1	-	-
Lead	5	mg/kg	-	12	-	-
Mercury	0.1	mg/kg	-	< 0.1	-	-
Nickel	5	mg/kg	-	< 5	-	-
Zinc	5	mg/kg	-	93	-	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.5	-	10	9.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.7	-	10	9.4
Reaction Ratings*[S05]		comment	4.0	-	4.0	4.0

Client Sample ID			GBH18 3.7-4.0	GBH18 4.7-5.0	GBH19 0.5-0.7	GBH19 1.4-1.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38620	S18-Au38621	S18-Au38622	S18-Au38623
Date Sampled			Aug 28, 2018	Aug 28, 2018	Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	-
TRH C10-C14	20	mg/kg	-	< 20	< 20	-
TRH C15-C28	50	mg/kg	-	< 50	50	-
TRH C29-C36	50	mg/kg	-	< 50	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	< 50	50	-
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	88	85	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	-	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	-
TRH >C10-C16	50	mg/kg	-	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	< 50	-
TRH >C16-C34	100	mg/kg	-	< 100	< 100	-
TRH >C34-C40	100	mg/kg	-	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.2	-
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-

Client Sample ID			GBH18 3.7-4.0	GBH18 4.7-5.0	GBH19 0.5-0.7	GBH19 1.4-1.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38620	S18-Au38621	S18-Au38622	S18-Au38623
Date Sampled			Aug 28, 2018	Aug 28, 2018	Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	-	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	94	104	-
p-Terphenyl-d14 (surr.)	1	%	-	118	115	-
% Moisture	1	%	-	12	8.2	-
Heavy Metals						
Arsenic	2	mg/kg	-	6.0	< 2	-
Cadmium	0.4	mg/kg	-	< 0.4	< 0.4	-
Chromium	5	mg/kg	-	< 5	8.3	-
Copper	5	mg/kg	-	< 5	18	-
Lead	5	mg/kg	-	< 5	< 5	-
Mercury	0.1	mg/kg	-	< 0.1	< 0.1	-
Nickel	5	mg/kg	-	< 5	< 5	-
Zinc	5	mg/kg	-	21	21	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.6	9.6	-	9.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.7	7.7	-	9.4
Reaction Ratings*[S05]		comment	4.0	4.0	-	4.0

Client Sample ID			GBH19 2.7-3.0	GBH19 3.7-4.0	GBH19 4.7-5.0	GBH25 1.5-1.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38624	S18-Au38625	S18-Au38626	S18-Au38627
Date Sampled			Aug 27, 2018	Aug 27, 2018	Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.6	9.5	9.5	9.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	8.1	8.2	9.4	8.5
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			GBH25 2.5-2.7	GBH25 3.5-3.7	GBH27 1.7-2.0	GBH27 2.7-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38628	S18-Au38629	S18-Au38630	S18-Au38631
Date Sampled			Aug 27, 2018	Aug 27, 2018	Aug 28, 2018	Aug 28, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	-	-
TRH C10-C14	20	mg/kg	< 20	-	-	-
TRH C15-C28	50	mg/kg	< 50	-	-	-
TRH C29-C36	50	mg/kg	< 50	-	-	-
TRH C10-36 (Total)	50	mg/kg	< 50	-	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	-	-
Toluene	0.1	mg/kg	< 0.1	-	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	-
o-Xylene	0.1	mg/kg	< 0.1	-	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	-
4-Bromofluorobenzene (surr.)	1	%	92	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	-	-
TRH C6-C10	20	mg/kg	< 20	-	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	-	-
TRH >C10-C16	50	mg/kg	< 50	-	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	-	-
TRH >C16-C34	100	mg/kg	< 100	-	-	-
TRH >C34-C40	100	mg/kg	< 100	-	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	-	-
Acenaphthene	0.5	mg/kg	< 0.5	-	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Chrysene	0.5	mg/kg	< 0.5	-	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	-
Fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	-
Naphthalene	0.5	mg/kg	< 0.5	-	-	-
Phenanthrene	0.5	mg/kg	< 0.5	-	-	-
Pyrene	0.5	mg/kg	< 0.5	-	-	-
Total PAH*	0.5	mg/kg	< 0.5	-	-	-
2-Fluorobiphenyl (surr.)	1	%	115	-	-	-
p-Terphenyl-d14 (surr.)	1	%	140	-	-	-
% Moisture	1	%	4.7	-	-	-

Client Sample ID			GBH25 2.5-2.7	GBH25 3.5-3.7	GBH27 1.7-2.0	GBH27 2.7-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38628	S18-Au38629	S18-Au38630	S18-Au38631
Date Sampled			Aug 27, 2018	Aug 27, 2018	Aug 28, 2018	Aug 28, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	5.0	-	-	-
Cadmium	0.4	mg/kg	< 0.4	-	-	-
Chromium	5	mg/kg	< 5	-	-	-
Copper	5	mg/kg	< 5	-	-	-
Lead	5	mg/kg	9.7	-	-	-
Mercury	0.1	mg/kg	< 0.1	-	-	-
Nickel	5	mg/kg	< 5	-	-	-
Zinc	5	mg/kg	76	-	-	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.6	9.5	8.7	9.0
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	10	10	7.8	7.7
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			GBH27 3.7-4.0	GBH27 4.7-5.0	GBH27 5.7-6.0	GBH38 0.5-0.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38632	S18-Au38633	S18-Au38634	S18-Au38635
Date Sampled			Aug 28, 2018	Aug 28, 2018	Aug 28, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	23
TRH C10-C14	20	mg/kg	-	-	< 20	62
TRH C15-C28	50	mg/kg	-	-	< 50	160
TRH C29-C36	50	mg/kg	-	-	< 50	59
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	281
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1	0.9
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	0.3
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	1.9
o-Xylene	0.1	mg/kg	-	-	< 0.1	0.8
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	2.7
4-Bromofluorobenzene (surr.)	1	%	-	-	89	92
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	1.3
TRH C6-C10	20	mg/kg	-	-	< 20	34
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	30
TRH >C10-C16	50	mg/kg	-	-	< 50	89
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	88
TRH >C16-C34	100	mg/kg	-	-	< 100	190
TRH >C34-C40	100	mg/kg	-	-	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	279
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	1.2
Acenaphthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5

Client Sample ID			GBH27 3.7-4.0	GBH27 4.7-5.0	GBH27 5.7-6.0	GBH38 0.5-0.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38632	S18-Au38633	S18-Au38634	S18-Au38635
Date Sampled			Aug 28, 2018	Aug 28, 2018	Aug 28, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluorene	0.5	mg/kg	-	-	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	-	< 0.5	1.5
Phenanthrene	0.5	mg/kg	-	-	< 0.5	1.0
Pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	-	-	< 0.5	2.5
2-Fluorobiphenyl (surr.)	1	%	-	-	85	100
p-Terphenyl-d14 (surr.)	1	%	-	-	105	110
Ammonia (as N)	5	mg/kg	-	-	< 5	-
Cyanide (total)	5	mg/kg	-	-	< 5	-
% Moisture	1	%	-	-	13	4.2
Heavy Metals						
Arsenic	2	mg/kg	-	-	6.0	2.3
Cadmium	0.4	mg/kg	-	-	< 0.4	< 0.4
Chromium	5	mg/kg	-	-	< 5	90
Copper	5	mg/kg	-	-	< 5	13
Lead	5	mg/kg	-	-	< 5	< 5
Mercury	0.1	mg/kg	-	-	< 0.1	< 0.1
Nickel	5	mg/kg	-	-	< 5	< 5
Zinc	5	mg/kg	-	-	< 5	40
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.5	9.5	9.3	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.9	7.7	7.6	-
Reaction Ratings*[S05]		comment	4.0	2.0	2.0	-

Client Sample ID			GBH38 1.7-2.0	GBH38 2.7-3.0	GBH38 3.7-4.0	GBH38 4.7-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38636	S18-Au38637	S18-Au38638	S18-Au38639
Date Sampled			Aug 27, 2018	Aug 27, 2018	Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	-
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	-

Client Sample ID			GBH38 1.7-2.0	GBH38 2.7-3.0	GBH38 3.7-4.0	GBH38 4.7-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38636	S18-Au38637	S18-Au38638	S18-Au38639
Date Sampled			Aug 27, 2018	Aug 27, 2018	Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	-	89	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH*	0.5	mg/kg	-	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	-	95	-
p-Terphenyl-d14 (surr.)	1	%	-	-	130	-
Ammonia (as N)	5	mg/kg	-	-	< 5	-
Cyanide (total)	5	mg/kg	-	-	< 5	-
% Moisture	1	%	-	-	2.3	-
Heavy Metals						
Arsenic	2	mg/kg	-	-	4.9	-
Cadmium	0.4	mg/kg	-	-	< 0.4	-
Chromium	5	mg/kg	-	-	< 5	-
Copper	5	mg/kg	-	-	< 5	-
Lead	5	mg/kg	-	-	5.1	-

Client Sample ID			GBH38 1.7-2.0	GBH38 2.7-3.0	GBH38 3.7-4.0	GBH38 4.7-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Au38636	S18-Au38637	S18-Au38638	S18-Au38639
Date Sampled			Aug 27, 2018	Aug 27, 2018	Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.1	mg/kg	-	-	< 0.1	-
Nickel	5	mg/kg	-	-	< 5	-
Zinc	5	mg/kg	-	-	18	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.4	9.3	9.1	9.3
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	8.0	7.7	7.9	8.1
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			GBH27 6.7-7.0	BH08 16M-16.45M
Sample Matrix			Soil	Soil
Eurofins | mgt Sample No.			S18-Au38960	S18-Au38963
Date Sampled			Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	20	mg/kg	-	< 20
TRH C10-C14	20	mg/kg	-	< 20
TRH C15-C28	50	mg/kg	-	< 50
TRH C29-C36	50	mg/kg	-	< 50
TRH C10-36 (Total)	50	mg/kg	-	< 50
BTEX				
Benzene	0.1	mg/kg	-	< 0.1
Toluene	0.1	mg/kg	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1
Xylenes - Total	0.3	mg/kg	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	76
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene[N02]	0.5	mg/kg	-	< 0.5
TRH C6-C10	20	mg/kg	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20
TRH >C10-C16	50	mg/kg	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50
TRH >C16-C34	100	mg/kg	-	< 100
TRH >C34-C40	100	mg/kg	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	< 100
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2
Acenaphthene	0.5	mg/kg	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5

Client Sample ID			GBH27 6.7-7.0	BH08 16M-16.45M
Sample Matrix			Soil	Soil
Eurofins | mgt Sample No.			S18-Au38960	S18-Au38963
Date Sampled			Aug 27, 2018	Aug 27, 2018
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5
Chrysene	0.5	mg/kg	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5
Fluoranthene	0.5	mg/kg	-	< 0.5
Fluorene	0.5	mg/kg	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5
Naphthalene	0.5	mg/kg	-	< 0.5
Phenanthrene	0.5	mg/kg	-	< 0.5
Pyrene	0.5	mg/kg	-	< 0.5
Total PAH*	0.5	mg/kg	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	134
p-Terphenyl-d14 (surr.)	1	%	-	136
% Moisture	1	%	-	25
Heavy Metals				
Arsenic	2	mg/kg	-	17
Cadmium	0.4	mg/kg	-	< 0.4
Chromium	5	mg/kg	-	15
Copper	5	mg/kg	-	22
Lead	5	mg/kg	-	12
Mercury	0.1	mg/kg	-	< 0.1
Nickel	5	mg/kg	-	7.5
Zinc	5	mg/kg	-	24
Acid Sulfate Soils Field pH Test				
pH-F (Field pH test)*	0.1	pH Units	9.4	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.9	-
Reaction Ratings*[S05]		comment	2.0	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Sep 06, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Sep 06, 2018	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 06, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 06, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Sep 06, 2018	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Sep 06, 2018	28 Day
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Ammonia (as N)	Melbourne	Sep 05, 2018	7 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Cyanide (total)	Melbourne	Aug 31, 2018	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Acid Sulfate Soils Field pH Test	Brisbane	Sep 06, 2018	7 Days
- Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests			
% Moisture	Sydney	Sep 04, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 614912
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 30, 2018 12:12 PM
Due: Sep 6, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477 - TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Moisture Set	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
External Laboratory																	
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**												
1	GBH10 0.1-0.3	Aug 24, 2018		Soil	S18-Au38587	X	X	X							X	X	
2	GBH10 2.0-2.2	Aug 24, 2018		Soil	S18-Au38588							X					
3	GBH10 4.4-4.6	Aug 24, 2018		Soil	S18-Au38589							X					
4	QC8	Aug 24, 2018		Soil	S18-Au38590	X		X					X			X	
5	GBH11 0.05-0.3	Aug 24, 2018		Soil	S18-Au38591								X			X	
6	GBH11 1.4-1.6	Aug 24, 2018		Soil	S18-Au38592	X	X	X							X	X	
7	GBH11 2.1-2.3	Aug 24, 2018		Soil	S18-Au38593							X					
8	GBH11 5.0-5.1	Aug 24, 2018		Soil	S18-Au38594							X					
9	GBH30 0.3-0.5	Aug 24, 2018		Soil	S18-Au38595		X						X			X	

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
10	GBH30 1.2-1.4	Aug 24, 2018		Soil	S18-Au38596							X	X			X	
11	GBH30 3.8-4.0	Aug 24, 2018		Soil	S18-Au38597							X					
12	GBH30 4.8-5.0	Aug 24, 2018		Soil	S18-Au38598							X					
13	GBH35 2.5-2.7	Aug 24, 2018		Soil	S18-Au38599							X	X			X	
14	GBH35 4.5-4.7	Aug 24, 2018		Soil	S18-Au38600							X					
15	GBH39 1.0-1.2	Aug 24, 2018		Soil	S18-Au38601							X					
16	GBH39 2.2-2.4	Aug 24, 2018		Soil	S18-Au38602	X		X				X			X	X	
17	GBH39 4.5-4.7	Aug 24, 2018		Soil	S18-Au38603							X					
18	GBH12 0.5-0.7	Aug 27, 2018		Soil	S18-Au38604		X										
19	GBH12 1.7-1.2	Aug 27, 2018		Soil	S18-Au38605							X	X			X	
20	GBH12 2.7-3.0	Aug 27, 2018		Soil	S18-Au38606							X					
21	GBH12 3.7-4.0	Aug 27, 2018		Soil	S18-Au38607							X					

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
22	GBH12 4.0-5.0	Aug 27, 2018		Soil	S18-Au38608							X					
23	GBH15 1.7-1.9	Aug 27, 2018		Soil	S18-Au38609							X					
24	GBH15 2.7-3.0	Aug 27, 2018		Soil	S18-Au38610							X	X			X	
25	GBH15 3.7-4.0	Aug 27, 2018		Soil	S18-Au38611							X					
26	GBH15 4.2-4.5	Aug 27, 2018		Soil	S18-Au38612							X					
27	GBH17 1.5-1.7	Aug 27, 2018		Soil	S18-Au38613								X			X	
28	GBH17 2.7-3.0	Aug 27, 2018		Soil	S18-Au38614							X					
29	GBH17 3.7-4.0	Aug 27, 2018		Soil	S18-Au38615	X		X				X		X		X	
30	GBH17 4.7-5.0	Aug 27, 2018		Soil	S18-Au38616							X					
31	GBH18 0.5-0.7	Aug 28, 2018		Soil	S18-Au38617		X						X			X	
32	GBH18 1.5-1.7	Aug 28, 2018		Soil	S18-Au38618							X					
33	GBH18 2.7-3.0	Aug 28, 2018		Soil	S18-Au38619							X					

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
34	GBH18 3.7-4.0	Aug 28, 2018		Soil	S18-Au38620							X					
35	GBH18 4.7-5.0	Aug 28, 2018		Soil	S18-Au38621							X	X			X	
36	GBH19 0.5-0.7	Aug 27, 2018		Soil	S18-Au38622		X						X			X	
37	GBH19 1.4-1.7	Aug 27, 2018		Soil	S18-Au38623							X					
38	GBH19 2.7-3.0	Aug 27, 2018		Soil	S18-Au38624							X					
39	GBH19 3.7-4.0	Aug 27, 2018		Soil	S18-Au38625							X					
40	GBH19 4.7-5.0	Aug 27, 2018		Soil	S18-Au38626							X					
41	GBH25 1.5-1.7	Aug 27, 2018		Soil	S18-Au38627							X					
42	GBH25 2.5-2.7	Aug 27, 2018		Soil	S18-Au38628		X					X	X			X	
43	GBH25 3.5-3.7	Aug 27, 2018		Soil	S18-Au38629							X					
44	GBH27 1.7-2.0	Aug 28, 2018		Soil	S18-Au38630		X					X					
45	GBH27 2.7-3.0	Aug 28, 2018		Soil	S18-Au38631							X					

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
46	GBH27 3.7-4.0	Aug 28, 2018		Soil	S18-Au38632							X					
47	GBH27 4.7-5.0	Aug 28, 2018		Soil	S18-Au38633							X					
48	GBH27 5.7-6.0	Aug 28, 2018		Soil	S18-Au38634	X		X				X			X	X	
49	GBH38 0.5-0.7	Aug 27, 2018		Soil	S18-Au38635		X						X			X	
50	GBH38 1.7-2.0	Aug 27, 2018		Soil	S18-Au38636							X					
51	GBH38 2.7-3.0	Aug 27, 2018		Soil	S18-Au38637							X					
52	GBH38 3.7-4.0	Aug 27, 2018		Soil	S18-Au38638	X		X				X			X	X	
53	GBH38 4.7-5.0	Aug 27, 2018		Soil	S18-Au38639							X					
54	GBH10 0.6-0.8	Aug 24, 2018		Soil	S18-Au38933				X								
55	GBH30 0.1-0.3	Aug 24, 2018		Soil	S18-Au38934				X								
56	GBH35 0.05-0.3	Aug 24, 2018		Soil	S18-Au38935				X								

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Project ID:	2127477 - TASK 3J FOR CONTAMINATION		

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Asbestos - AS4964	Cyanide (total)	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Moisture Set	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
57	GBH35 0.8-1.0	Aug 24, 2018		Soil	S18-Au38936				X								
58	GBH39 0.1-0.3	Aug 24, 2018		Soil	S18-Au38937				X								
59	QC10	Aug 27, 2018		Soil	S18-Au38938				X								
60	GBH15 0.5-0.7	Aug 27, 2018		Soil	S18-Au38939				X								
61	GBH17 0.5-0.7	Aug 27, 2018		Soil	S18-Au38940				X								
62	GBH27 0.5-0.6	Aug 27, 2018		Soil	S18-Au38941				X								
63	GBH27 6.7-7.0	Aug 27, 2018		Soil	S18-Au38960							X					
64	GBH27 7.7-8.0	Aug 27, 2018		Soil	S18-Au38961						X						
65	QC09	Aug 27, 2018		Soil	S18-Au38962						X						
66	BH08 16M-16.45M	Aug 27, 2018		Soil	S18-Au38963										X		X
67	BH08 13M-13.45M	Aug 27, 2018		Soil	S18-Au38964						X						

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Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X				X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X				X		X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										X		X	X	X	X		
Perth Laboratory - NATA Site # 23736																	
68	BH08 17.5-17.95	Aug 27, 2018		Soil	S18-Au38965						X						
69	BH08 10.0-10.45	Aug 27, 2018		Soil	S18-Au38966					X							
70	GBH25 0.5-0.7	Aug 27, 2018		Soil	S18-Au38974				X								
Test Counts						7	9	7	15	15	15	44	20	20	20	20	20

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

eurofins | mgt

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Ammonia (as N)	mg/kg	< 5			5	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	125			70-130	Pass	
TRH C10-C14	%	118			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	90			70-130	Pass	
Toluene	%	118			70-130	Pass	
Ethylbenzene	%	121			70-130	Pass	
m&p-Xylenes	%	128			70-130	Pass	
o-Xylene	%	124			70-130	Pass	
Xylenes - Total	%	124			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	126			70-130	Pass	
TRH C6-C10	%	120			70-130	Pass	
TRH >C10-C16	%	130			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	93			70-130	Pass	
Acenaphthylene	%	89			70-130	Pass	
Anthracene	%	94			70-130	Pass	
Benz(a)anthracene	%	91			70-130	Pass	
Benzo(a)pyrene	%	85			70-130	Pass	
Benzo(b&j)fluoranthene	%	96			70-130	Pass	
Benzo(g.h.i)perylene	%	103			70-130	Pass	
Benzo(k)fluoranthene	%	95			70-130	Pass	
Chrysene	%	94			70-130	Pass	
Dibenz(a.h)anthracene	%	105			70-130	Pass	
Fluoranthene	%	93			70-130	Pass	
Fluorene	%	92			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	106			70-130	Pass	
Naphthalene	%	93			70-130	Pass	
Phenanthrene	%	96			70-130	Pass	
Pyrene	%	94			70-130	Pass	
LCS - % Recovery							
Ammonia (as N)	%	109			70-130	Pass	
Cyanide (total)	%	95			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	105			80-120	Pass	
Cadmium	%	103			80-120	Pass	
Chromium	%	117			80-120	Pass	
Copper	%	118			80-120	Pass	
Lead	%	110			80-120	Pass	
Mercury	%	97			75-125	Pass	
Nickel	%	116			80-120	Pass	
Zinc	%	112			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M18-Oc25063	NCP	%	95			70-130	Pass	
Cyanide (total)	M18-Se01094	NCP	%	85			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S18-Au38596	CP	%	96			70-130	Pass	
Acenaphthylene	S18-Au38596	CP	%	89			70-130	Pass	
Anthracene	S18-Au38596	CP	%	95			70-130	Pass	
Benz(a)anthracene	S18-Au38596	CP	%	82			70-130	Pass	
Benzo(a)pyrene	S18-Au38596	CP	%	92			70-130	Pass	
Benzo(b&j)fluoranthene	S18-Au38596	CP	%	78			70-130	Pass	
Benzo(g.h.i)perylene	S18-Au38596	CP	%	91			70-130	Pass	
Benzo(k)fluoranthene	S18-Au38596	CP	%	90			70-130	Pass	
Chrysene	S18-Au38596	CP	%	101			70-130	Pass	
Dibenz(a.h)anthracene	S18-Au38596	CP	%	79			70-130	Pass	
Fluoranthene	S18-Au38596	CP	%	90			70-130	Pass	
Fluorene	S18-Au38596	CP	%	100			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S18-Au38596	CP	%	80			70-130	Pass	
Naphthalene	S18-Au38596	CP	%	94			70-130	Pass	
Phenanthrene	S18-Au38596	CP	%	94			70-130	Pass	
Pyrene	S18-Au38596	CP	%	92			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Au38628	CP	%	101			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Au38628	CP	%	82			70-130	Pass	
Toluene	S18-Au38628	CP	%	89			70-130	Pass	
Ethylbenzene	S18-Au38628	CP	%	99			70-130	Pass	
m&p-Xylenes	S18-Au38628	CP	%	95			70-130	Pass	
o-Xylene	S18-Au38628	CP	%	97			70-130	Pass	
Xylenes - Total	S18-Au38628	CP	%	96			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-Au38628	CP	%	107			70-130	Pass	
TRH C6-C10	S18-Au38628	CP	%	101			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S18-Au38628	CP	%	119			70-130	Pass	
Acenaphthylene	S18-Au38628	CP	%	104			70-130	Pass	
Anthracene	S18-Au38628	CP	%	104			70-130	Pass	
Benz(a)anthracene	S18-Au38628	CP	%	95			70-130	Pass	
Benzo(a)pyrene	S18-Au38628	CP	%	104			70-130	Pass	
Benzo(b&j)fluoranthene	S18-Au38628	CP	%	87			70-130	Pass	
Benzo(g.h.i)perylene	S18-Au38628	CP	%	92			70-130	Pass	
Benzo(k)fluoranthene	S18-Au38628	CP	%	104			70-130	Pass	
Chrysene	S18-Au38628	CP	%	114			70-130	Pass	
Dibenz(a.h)anthracene	S18-Au38628	CP	%	80			70-130	Pass	
Fluoranthene	S18-Au38628	CP	%	98			70-130	Pass	
Fluorene	S18-Au38628	CP	%	114			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S18-Au38628	CP	%	78			70-130	Pass	
Naphthalene	S18-Au38628	CP	%	110			70-130	Pass	
Phenanthrene	S18-Au38628	CP	%	104			70-130	Pass	
Pyrene	S18-Au38628	CP	%	102			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S18-Se07321	NCP	%	84			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S18-Se07321	NCP	%	87			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Cadmium	S18-Se07301	NCP	%	73			70-130	Pass	
Copper	S18-Se07301	NCP	%	94			70-130	Pass	
Lead	S18-Se07301	NCP	%	106			70-130	Pass	
Mercury	S18-Se07301	NCP	%	74			70-130	Pass	
Nickel	S18-Se07301	NCP	%	73			70-130	Pass	
Zinc	S18-Se07301	NCP	%	96			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M18-Oc25063	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Cyanide (total)	S18-Au38751	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38588	CP	pH Units	9.1	9.2	pass	30%	Pass	
Reaction Ratings*	S18-Au38588	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S18-Au38595	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38602	CP	pH Units	9.2	9.0	pass	30%	Pass	
Reaction Ratings*	S18-Au38602	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Au38613	CP	mg/kg	4.4	4.2	5.0	30%	Pass	
Cadmium	S18-Au38613	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Au38613	CP	mg/kg	6.3	5.3	19	30%	Pass	
Copper	S18-Au38613	CP	mg/kg	5.7	5.2	10	30%	Pass	
Lead	S18-Au38613	CP	mg/kg	7.3	7.4	<1	30%	Pass	
Mercury	S18-Au38613	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Au38613	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Au38613	CP	mg/kg	57	56	2.0	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38614	CP	pH Units	9.5	9.5	pass	30%	Pass	
Reaction Ratings*	S18-Au38614	CP	comment	4.0	4.0	pass	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-Au38622	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-Au38622	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-Au38622	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-Au38622	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-Au38622	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-Au38622	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-Au38622	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-Au38622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-Au38622	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38626	CP	pH Units	9.5	9.5	pass	30%	Pass	
Reaction Ratings*	S18-Au38626	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-Au38635	CP	%	4.2	4.2	<1	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38637	CP	pH Units	9.3	9.4	pass	30%	Pass	
Reaction Ratings*	S18-Au38637	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Au38960	CP	pH Units	9.4	9.5	pass	30%	Pass	
Reaction Ratings*	S18-Au38960	CP	comment	2.0	2.0	pass	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S18-Se07288	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S18-Se07288	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S18-Se07288	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S18-Se07288	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Au38963	CP	mg/kg	17	18	4.0	30%	Pass	
Cadmium	S18-Au38963	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Au38963	CP	mg/kg	15	16	7.0	30%	Pass	
Copper	S18-Au38963	CP	mg/kg	22	23	5.0	30%	Pass	
Lead	S18-Au38963	CP	mg/kg	12	12	6.0	30%	Pass	
Mercury	S18-Au38963	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Au38963	CP	mg/kg	7.5	7.9	5.0	30%	Pass	
Zinc	S18-Au38963	CP	mg/kg	24	26	8.0	30%	Pass	

Comments

This report has been revised (V2) to include additional QC results for Ammonia.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
S05	Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

Authorised By

Nibha Vaidya	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Chris Bennett	Senior Analyst-Metal (VIC)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)
Myles Clark	Senior Analyst-SPOCAS (QLD)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Iain Lindley**

Report **615353-S**
Project name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 21247477- TASK 3J FOR CONTAMINATION
Received Date Aug 31, 2018

Client Sample ID			**GBH27 8.7-9.0**	**GBH27 9.7-10**	**GBH06 0.5-0.7**	**GBH06 1.7-2.0**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se00892**	**S18-Se00893**	**S18-Se00894**	**S18-Se00895**
Date Sampled			**Aug 29, 2018**	**Aug 29, 2018**	**Aug 30, 2018**	**Aug 30, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
TRH C10-C14	20	mg/kg	< 20	-	< 20	-
TRH C15-C28	50	mg/kg	< 50	-	< 50	-
TRH C29-C36	50	mg/kg	< 50	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	< 50	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	69	-	72	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	-
TRH >C10-C16	50	mg/kg	< 50	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	-

Client Sample ID			GBH27 8.7-9.0	GBH27 9.7-10	GBH06 0.5-0.7	GBH06 1.7-2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se00892	S18-Se00893	S18-Se00894	S18-Se00895
Date Sampled			Aug 29, 2018	Aug 29, 2018	Aug 30, 2018	Aug 30, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	95	-	79	-
p-Terphenyl-d14 (surr.)	1	%	105	-	79	-
Heavy Metals						
Arsenic	2	mg/kg	3.1	-	5.3	-
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	-
Chromium	5	mg/kg	8.7	-	< 5	-
Copper	5	mg/kg	< 5	-	5.0	-
Lead	5	mg/kg	6.0	-	5.2	-
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	-
Nickel	5	mg/kg	< 5	-	< 5	-
Zinc	5	mg/kg	< 5	-	32	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	8.1	9.5	9.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	6.4	9.6	8.9
Reaction Ratings*[S05]		comment	-	2.0	4.0	4.0
% Moisture	1	%	19	-	1.4	-

Client Sample ID			GBH06 2.7-3.0	GBH06 3.7-4.0	GBH06 4.7-5.0	GBH06 5.7-6.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se00896	S18-Se00897	S18-Se00898	S18-Se00899
Date Sampled			Aug 30, 2018	Aug 30, 2018	Aug 30, 2018	Aug 30, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	-
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	-	67	-

Client Sample ID			GBH06 2.7-3.0	GBH06 3.7-4.0	GBH06 4.7-5.0	GBH06 5.7-6.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se00896	S18-Se00897	S18-Se00898	S18-Se00899
Date Sampled			Aug 30, 2018	Aug 30, 2018	Aug 30, 2018	Aug 30, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH*	0.5	mg/kg	-	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	-	89	-
p-Terphenyl-d14 (surr.)	1	%	-	-	92	-
Heavy Metals						
Arsenic	2	mg/kg	-	-	7.3	-
Cadmium	0.4	mg/kg	-	-	< 0.4	-
Chromium	5	mg/kg	-	-	< 5	-
Copper	5	mg/kg	-	-	< 5	-
Lead	5	mg/kg	-	-	< 5	-
Mercury	0.1	mg/kg	-	-	< 0.1	-
Nickel	5	mg/kg	-	-	< 5	-
Zinc	5	mg/kg	-	-	19	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.6	9.4	9.6	9.1
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	9.1	8.7	8.1	7.7
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0
% Moisture	1	%	-	-	11	-

Client Sample ID			GBH06 6.7-7.0	GBH06 8.9-9.0	GBH06 9.7-10.0	GBH06 7.7-8.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se00900	S18-Se00901	S18-Se00902	S18-Se00903
Date Sampled			Aug 30, 2018	Aug 30, 2018	Aug 30, 2018	Aug 30, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	-	-
TRH C10-C14	20	mg/kg	-	< 20	-	-
TRH C15-C28	50	mg/kg	-	< 50	-	-
TRH C29-C36	50	mg/kg	-	< 50	-	-
TRH C10-36 (Total)	50	mg/kg	-	< 50	-	-
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	-
Toluene	0.1	mg/kg	-	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	-
o-Xylene	0.1	mg/kg	-	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	-	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	-	68	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	-	-
TRH C6-C10	20	mg/kg	-	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	-	-
TRH >C10-C16	50	mg/kg	-	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	-	-
TRH >C16-C34	100	mg/kg	-	< 100	-	-
TRH >C34-C40	100	mg/kg	-	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	-	-
Acenaphthene	0.5	mg/kg	-	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	-
Anthracene	0.5	mg/kg	-	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Chrysene	0.5	mg/kg	-	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	-
Fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Fluorene	0.5	mg/kg	-	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	-
Naphthalene	0.5	mg/kg	-	< 0.5	-	-
Phenanthrene	0.5	mg/kg	-	< 0.5	-	-
Pyrene	0.5	mg/kg	-	< 0.5	-	-
Total PAH*	0.5	mg/kg	-	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	-	106	-	-
p-Terphenyl-d14 (surr.)	1	%	-	106	-	-

Client Sample ID			GBH06 6.7-7.0	GBH06 8.9-9.0	GBH06 9.7-10.0	GBH06 7.7-8.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se00900	S18-Se00901	S18-Se00902	S18-Se00903
Date Sampled			Aug 30, 2018	Aug 30, 2018	Aug 30, 2018	Aug 30, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	-	6.9	-	-
Cadmium	0.4	mg/kg	-	< 0.4	-	-
Chromium	5	mg/kg	-	< 5	-	-
Copper	5	mg/kg	-	< 5	-	-
Lead	5	mg/kg	-	< 5	-	-
Mercury	0.1	mg/kg	-	< 0.1	-	-
Nickel	5	mg/kg	-	< 5	-	-
Zinc	5	mg/kg	-	< 5	-	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	8.9	9.5	8.4	9.5
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	8.0	8.1	7.2	7.9
Reaction Ratings*[S05]		comment	4.0	2.0	2.0	4.0
% Moisture	1	%	-	16	-	-

Client Sample ID			GBH05 0.5-0.7	GBH05 1.7-2.7	GBH05 2.7-3.0	BH12 7.65-7.95
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se00904	S18-Se00905	S18-Se00906	S18-Se00908
Date Sampled			Aug 30, 2018	Aug 30, 2018	Aug 30, 2018	Aug 29, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	-	< 20
TRH C10-C14	20	mg/kg	-	-	-	< 20
TRH C15-C28	50	mg/kg	-	-	-	< 50
TRH C29-C36	50	mg/kg	-	-	-	< 50
TRH C10-36 (Total)	50	mg/kg	-	-	-	< 50
BTEX						
Benzene	0.1	mg/kg	-	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	-	< 0.2
o-Xylene	0.1	mg/kg	-	-	-	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	-	77
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	-	< 0.5
TRH C6-C10	20	mg/kg	-	-	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	-	< 20
TRH >C10-C16	50	mg/kg	-	-	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	-	< 100
TRH >C34-C40	100	mg/kg	-	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	-	< 100

Client Sample ID			GBH05 0.5-0.7	GBH05 1.7-2.7	GBH05 2.7-3.0	BH12 7.65-7.95
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se00904	S18-Se00905	S18-Se00906	S18-Se00908
Date Sampled			Aug 30, 2018	Aug 30, 2018	Aug 30, 2018	Aug 29, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	-	1.2
Acenaphthene	0.5	mg/kg	-	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Chrysene	0.5	mg/kg	-	-	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Fluorene	0.5	mg/kg	-	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	-	< 0.5
Pyrene	0.5	mg/kg	-	-	-	< 0.5
Total PAH*	0.5	mg/kg	-	-	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	-	85
p-Terphenyl-d14 (surr.)	1	%	-	-	-	80
Heavy Metals						
Arsenic	2	mg/kg	-	-	-	7.5
Cadmium	0.4	mg/kg	-	-	-	< 0.4
Chromium	5	mg/kg	-	-	-	< 5
Copper	5	mg/kg	-	-	-	< 5
Lead	5	mg/kg	-	-	-	< 5
Mercury	0.1	mg/kg	-	-	-	< 0.1
Nickel	5	mg/kg	-	-	-	< 5
Zinc	5	mg/kg	-	-	-	< 5
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.3	8.8	9.4	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	8.0	7.5	8.1	-
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	-
% Moisture	1	%	-	-	-	15

Client Sample ID			BH12 0-0.5	BH12 0.5-1.0	BH12 1.0-1.5	BH12 6.0-6.45
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se00909	S18-Se00910	S18-Se00911	S18-Se00912
Date Sampled			Aug 30, 2018	Aug 30, 2018	Aug 30, 2018	Aug 30, 2018
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	10.0	9.7	9.9	9.8
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	8.1	9.6	7.9	9.1
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			BH12 9.0-9.45	BH12 12.25-12.45	BH12 13.5-13.95
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se00913**	**S18-Se00914**	**S18-Se00915**
Date Sampled			**Aug 30, 2018**	**Aug 30, 2018**	**Aug 30, 2018**
Test/Reference	LOR	Unit			
Acid Sulfate Soils Field pH Test					
pH-F (Field pH test)*	0.1	pH Units	8.6	7.7	6.2
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	6.0	2.4	1.7
Reaction Ratings*[S05]		comment	2.0	2.0	4.0

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Sep 07, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
BTEX	Melbourne	Sep 07, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 07, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 07, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Sep 07, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Melbourne	Sep 07, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Acid Sulfate Soils Field pH Test	Brisbane	Sep 06, 2018	7 Days
- Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests			
% Moisture	Melbourne	Sep 04, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261 Site # 20794

Perth
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Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 31, 2018 10:36 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	615353 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Sep 10, 2018 5 Day Iain Lindley
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	21247477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794							X		
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	GBH27 8.7-9.0	Aug 29, 2018		Soil	S18-Se00892			X	X
2	GBH27 9.7-10	Aug 29, 2018		Soil	S18-Se00893		X		
3	GBH06 0.5-0.7	Aug 30, 2018		Soil	S18-Se00894		X	X	X
4	GBH06 1.7-2.0	Aug 30, 2018		Soil	S18-Se00895		X		
5	GBH06 2.7-3.0	Aug 30, 2018		Soil	S18-Se00896		X		
6	GBH06 3.7-4.0	Aug 30, 2018		Soil	S18-Se00897		X		
7	GBH06 4.7-5.0	Aug 30, 2018		Soil	S18-Se00898		X	X	X
8	GBH06 5.7-6.0	Aug 30, 2018		Soil	S18-Se00899		X		
9	GBH06 6.7-7.0	Aug 30, 2018		Soil	S18-Se00900		X		

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Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 615353
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 31, 2018 10:36 PM
Due: Sep 10, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794							X		
Perth Laboratory - NATA Site # 23736									
10	GBH06 8.9-9.0	Aug 30, 2018		Soil	S18-Se00901		X	X	X
11	GBH06 9.7-10.0	Aug 30, 2018		Soil	S18-Se00902		X		
12	GBH06 7.7-8.0	Aug 30, 2018		Soil	S18-Se00903		X		
13	GBH05 0.5-0.7	Aug 30, 2018		Soil	S18-Se00904		X		
14	GBH05 1.7-2.7	Aug 30, 2018		Soil	S18-Se00905		X		
15	GBH05 2.7-3.0	Aug 30, 2018		Soil	S18-Se00906		X		
16	BH08 20.5-20.95	Aug 28, 2018		Soil	S18-Se00907	X			
17	BH12 7.65-7.95	Aug 29, 2018		Soil	S18-Se00908			X	X
18	BH12 0-0.5	Aug 30, 2018		Soil	S18-Se00909		X		
19	BH12 0.5-1.0	Aug 30, 2018		Soil	S18-Se00910		X		

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Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	21247477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794							X		
Perth Laboratory - NATA Site # 23736									
20	BH12 1.0-1.5	Aug 30, 2018		Soil	S18-Se00911		X		
21	BH12 6.0-6.45	Aug 30, 2018		Soil	S18-Se00912		X		
22	BH12 9.0-9.45	Aug 30, 2018		Soil	S18-Se00913		X		
23	BH12 12.25-12.45	Aug 30, 2018		Soil	S18-Se00914		X		
24	BH12 13.5-13.95	Aug 30, 2018		Soil	S18-Se00915		X		
Test Counts						1	21	5	5

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	82			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	%	107			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	77			70-130	Pass	
Toluene	%	85			70-130	Pass	
Ethylbenzene	%	78			70-130	Pass	
m&p-Xylenes	%	77			70-130	Pass	
Xylenes - Total	%	79			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	88			70-130	Pass	
TRH C6-C10	%	82			70-130	Pass	
TRH >C10-C16	%	108			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	101			70-130	Pass	
Acenaphthylene	%	110			70-130	Pass	
Anthracene	%	101			70-130	Pass	
Benz(a)anthracene	%	100			70-130	Pass	
Benzo(a)pyrene	%	105			70-130	Pass	
Benzo(b&j)fluoranthene	%	107			70-130	Pass	
Benzo(g.h.i)perylene	%	91			70-130	Pass	
Benzo(k)fluoranthene	%	121			70-130	Pass	
Chrysene	%	112			70-130	Pass	
Dibenz(a.h)anthracene	%	75			70-130	Pass	
Fluoranthene	%	113			70-130	Pass	
Fluorene	%	107			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	91			70-130	Pass	
Naphthalene	%	111			70-130	Pass	
Phenanthrene	%	88			70-130	Pass	
Pyrene	%	106			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	110			80-120	Pass	
Cadmium	%	115			80-120	Pass	
Chromium	%	115			80-120	Pass	
Copper	%	112			80-120	Pass	
Lead	%	112			80-120	Pass	
Mercury	%	100			75-125	Pass	
Nickel	%	118			80-120	Pass	
Zinc	%	118			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M18-Se02829	NCP	%	102			70-130	Pass	
TRH C10-C14	M18-Se04008	NCP	%	111			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M18-Se02829	NCP	%	73			70-130	Pass	
Toluene	M18-Se02829	NCP	%	90			70-130	Pass	
Ethylbenzene	M18-Se02829	NCP	%	81			70-130	Pass	
m&p-Xylenes	M18-Se02829	NCP	%	78			70-130	Pass	
o-Xylene	M18-Se02829	NCP	%	82			70-130	Pass	
Xylenes - Total	M18-Se02829	NCP	%	79			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M18-Se02829	NCP	%	88			70-130	Pass	
TRH C6-C10	M18-Se02829	NCP	%	102			70-130	Pass	
TRH >C10-C16	M18-Se04008	NCP	%	110			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S18-Se04692	NCP	%	91			70-130	Pass	
Acenaphthylene	S18-Se04692	NCP	%	99			70-130	Pass	
Anthracene	S18-Se04692	NCP	%	96			70-130	Pass	
Benz(a)anthracene	S18-Se04692	NCP	%	98			70-130	Pass	
Benzo(a)pyrene	S18-Se04692	NCP	%	81			70-130	Pass	
Benzo(b&j)fluoranthene	S18-Se04692	NCP	%	99			70-130	Pass	
Benzo(g.h.i)perylene	S18-Se04692	NCP	%	86			70-130	Pass	
Benzo(k)fluoranthene	S18-Se04692	NCP	%	88			70-130	Pass	
Chrysene	S18-Se04692	NCP	%	91			70-130	Pass	
Dibenz(a.h)anthracene	S18-Se04692	NCP	%	82			70-130	Pass	
Fluoranthene	S18-Se04692	NCP	%	86			70-130	Pass	
Fluorene	S18-Se04692	NCP	%	89			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S18-Se04692	NCP	%	82			70-130	Pass	
Naphthalene	S18-Se04692	NCP	%	81			70-130	Pass	
Phenanthrene	S18-Se04692	NCP	%	88			70-130	Pass	
Pyrene	S18-Se04692	NCP	%	93			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	Z18-Se01411	NCP	%	104			75-125	Pass	
Cadmium	Z18-Se01411	NCP	%	115			75-125	Pass	
Chromium	Z18-Se01411	NCP	%	111			75-125	Pass	
Copper	Z18-Se01411	NCP	%	119			75-125	Pass	
Lead	Z18-Se01411	NCP	%	114			75-125	Pass	
Mercury	Z18-Se01411	NCP	%	94			70-130	Pass	
Nickel	Z18-Se01411	NCP	%	115			75-125	Pass	
Zinc	Z18-Se01411	NCP	%	115			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M18-Se02791	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M18-Se04007	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M18-Se04007	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M18-Se04007	NCP	mg/kg	60	84	33	30%	Fail	Q15
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M18-Se02791	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M18-Se02791	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M18-Se02791	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M18-Se02791	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M18-Se02791	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M18-Se02791	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M18-Se02791	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M18-Se02791	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	M18-Se04007	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M18-Se04007	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M18-Se04007	NCP	mg/kg	< 100	< 100	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M18-Se00090	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	Z18-Se01410	NCP	mg/kg	3.6	3.9	9.0	30%	Pass	
Cadmium	Z18-Se01410	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	Z18-Se01410	NCP	mg/kg	28	29	5.0	30%	Pass	
Copper	Z18-Se01410	NCP	mg/kg	18	22	22	30%	Pass	
Lead	Z18-Se01410	NCP	mg/kg	8.7	9.1	5.0	30%	Pass	
Mercury	Z18-Se01410	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	Z18-Se01410	NCP	mg/kg	18	19	3.0	30%	Pass	
Zinc	Z18-Se01410	NCP	mg/kg	28	33	19	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-Au41284	NCP	%	4.5	4.4	2.0	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Se00897	CP	pH Units	9.4	9.5	pass	30%	Pass	
Reaction Ratings*	S18-Se00897	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Se00910	CP	pH Units	9.7	9.7	pass	30%	Pass	
Reaction Ratings*	S18-Se00910	CP	comment	4.0	4.0	pass	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
S05	Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Iain Lindley
Project name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT
Project ID:	21247477 TASK 3J FOR CONTAMINATION PORT KEMBLA
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Aug 31, 2018 10:36 PM
Eurofins | mgt reference:	**615353**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☒ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Following additional samples received and placed on hold: GHB06 7.7-8.0(Jar+ASSpH bag+Asbestos bag) GBH05 0.5-0.7(Jar+ASSpH bag+Asbestos bag) GBH05 1.7-2.7(Jar+ASSpH bag+Asbestos bag) GBH05 2.7-3.0 (Jar+ASSpH bag+Asbestos bag) BH08 20.5-20.95(Jar) BH12 7.65-7.95(Jar) BH12 0-0.5(ASSpH bag) BH12 0.5-1.0(ASSpH bag) BH12 1.0-1.5(ASSpH bag) BH12 6-6.45(ASSpH bag) BH12 9-9.45(ASSpH bag) BH12 12.26-12.45(ASSpH bag) BH12 13.5-13.95(ASSpH bag)

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Iain Lindley - iain.lindley@ghd.com.

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	**Contact Name:** Iain Lindley 0459 353 385	**Purchase Order :**	**COC Number :**
Office Address : Level 11, 200 Crown Street	**Project Manager :** Colee Quayle 0403 242 431	**PROJECT Number :** 2127477 - Task 3J for Contamination	**Eurofins | mgt quote ID :**
Wollongong, NSW 2500	**Email for results :** iain.lindley@ghd.com	**PROJECT Name :** Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH								Hold
					Analytes																				
1	GBH27	8.7-9.0	29/08/2018	S	x																				
2	GBH27	9.7-10	29/08/2018	S							x														
3	GBH06	0.5-0.7	30/06/2018	S	x						x														
4	GBH06	1.7-2.0	30/06/2018	S							x														
5	GBH06	2.7-3.0	30/06/2018	S							x														
6	GBH06	3.7-4.0	30/06/2018	S							x														
7	GBH06	4.7-5.0	30/06/2018	S	x						x														
8	GBH06	5.7-6.0	30/06/2018	S							x														
9	GBH06	6.7-7.0	30/06/2018	S							x														
10	GBH06	8.7-9.0	30/06/2018	S	x						x														
11	GBH06	9.7-10.0	30/06/2018	S							x														
12																									
13																									
14																									
15																									
16																									

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Containers:								Sample comments:
	Jar	Zip lock	ASS	Amber 1L	Plastic				
1	X	X	X						
2	X	X	X						
3	X	X	X						
4	X	X	X						
5	X	X	X						
6	X	X	X						
7	X	X	X						
8	X	X	X						
9	X	X	X						
10	X	X	X						
11	X	X	X						
12									
13									
14									
15									
16									

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	**Received By:**	**Received By:** Elvis D	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	6.9°C
Date & Time 31/8/2018	**Date & Time:**	**Date & Time:** 31/8/18 10:36pm	5 DAY ☑ 10 DAY ☐ Other:	**Courier Consignment # :**	**Report number:** 615353
Signature: C. Quayle	**Signature:**	**Signature:**			

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	**Contact Name:** Iain Lindley 0459 353 385	**Purchase Order :**	**COC Number :**
Office Address : Level 11, 200 Crown Street	**Project Manager :** Colee Quayle 0403 242 431	**PROJECT Number :** 2127477 - Task 3J for Contamination	**Eurofins | mgt quote ID :**
Wollongong, NSW 2500	**Email for results :** iain.lindley@ghd.com	**PROJECT Name :** Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	BH08	10-10.45	27/08/2018	S	x													
2	BH08	13-13.45	27/08/2018	S														x
3	BH08	16.0-16.45	27/08/2018	S	x													
4	BH08	17.5-19.95	27/08/2018	S														x
5	BH08	20.5-20.95	29/08/2018	S														x
6	BH12	0.0-0.5	29/08/2018	S							x							
7	BH12	0.5-1.0	29/08/2018	S							x							
8	BH12	1.0-1.5	29/08/2018	S							x							
9	BH12	6.0-6.45	29/08/2018	S							x							
10	BH12	7.65-7.95	29/08/2018	S	x													
11	BH12	9.0-9.45	29/08/2018	S							x							
12	BH12	12.25-12.45	29/08/2018	S							x							
13	BH12	13.5-13.95	29/08/2018	S							x							
14	GBH06	7.7-8.0	30/08/2018	S							x							
15	GBH05	0.5-0.7	30/08/2018	S							x							
16	GBH05	1.7-2.0	30/08/2018	S							x							

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:								Sample comments:
Jar	Zip lock	ASS	Amber 1L	Plastic				
X								
X								
X								
X								
X								
		X						
		X						
		X						
		X						
X								
		x						
		x						
		x						
x	x	x						
x	x	x						
x	x	x						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	**Received By:**	**Received By:** Elvis D	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	
Date & Time 31/8/2018	**Date & Time:**	**Date & Time:** 3/9/18 0:09pm	5 DAY ☑ 10 DAY ☐ Other:	☐ Hand Delivered ☐ Postal	**Report number:**
Signature: C. Quayle	**Signature:**	**Signature:**		**Courier Consignment # :**	

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH								Hold
1	GBH05	2.7-3.0	30/08/2018	S	x						x														
2	GBH27	6.7-7.0	28/08/2018	S							x														
3	GBH27	7.7-7.8	28/08/2018	S							x														
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
16																									

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

	Jar	Zip lock	ASS	Amber 1L	Plastic				**Sample comments:**
1	x	x	x						
2	x	x	x						
3	x	x	x						
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 31/8/2018	Date & Time:	Date & Time:	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number:
Signature: C. Quayle	Signature:	Signature:			

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NATA # 1261 Site # 20794

Perth
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Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 615353
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 31, 2018 10:36 PM
Due: Sep 10, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794							X		
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	GBH27 8.7-9.0	Aug 29, 2018		Soil	S18-Se00892			X	X
2	GBH27 9.7-10	Aug 29, 2018		Soil	S18-Se00893		X		
3	GBH06 0.5-0.7	Aug 30, 2018		Soil	S18-Se00894		X	X	X
4	GBH06 1.7-2.0	Aug 30, 2018		Soil	S18-Se00895		X		
5	GBH06 2.7-3.0	Aug 30, 2018		Soil	S18-Se00896		X		
6	GBH06 3.7-4.0	Aug 30, 2018		Soil	S18-Se00897		X		
7	GBH06 4.7-5.0	Aug 30, 2018		Soil	S18-Se00898		X	X	X
8	GBH06 5.7-6.0	Aug 30, 2018		Soil	S18-Se00899		X		
9	GBH06 6.7-7.0	Aug 30, 2018		Soil	S18-Se00900		X		

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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

Perth
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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 615353
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 31, 2018 10:36 PM
Due: Sep 10, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794							X		
Perth Laboratory - NATA Site # 23736									
10	GBH06 8.9-9.0	Aug 30, 2018		Soil	S18-Se00901		X	X	X
11	GBH06 9.7-10.0	Aug 30, 2018		Soil	S18-Se00902		X		
12	GBH06 7.7-8.0	Aug 30, 2018		Soil	S18-Se00903		X		
13	GBH05 0.5-0.7	Aug 30, 2018		Soil	S18-Se00904		X		
14	GBH05 1.7-2.7	Aug 30, 2018		Soil	S18-Se00905		X		
15	GBH05 2.7-3.0	Aug 30, 2018		Soil	S18-Se00906		X		
16	BH08 20.5-20.95	Aug 28, 2018		Soil	S18-Se00907	X			
17	BH12 7.65-7.95	Aug 29, 2018		Soil	S18-Se00908			X	X
18	BH12 0-0.5	Aug 30, 2018		Soil	S18-Se00909		X		
19	BH12 0.5-1.0	Aug 30, 2018		Soil	S18-Se00910		X		

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Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 31, 2018 10:36 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:**	615353	**Due:**	Sep 10, 2018
		Phone:	02 4222 2300	**Priority:**	5 Day
		Fax:	02 4222 2301	**Contact Name:**	Iain Lindley
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	21247477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						HOLD	Acid Sulfate Soils Field pH Test	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794							X		
Perth Laboratory - NATA Site # 23736									
20	BH12 1.0-1.5	Aug 30, 2018		Soil	S18-Se00911		X		
21	BH12 6.0-6.45	Aug 30, 2018		Soil	S18-Se00912		X		
22	BH12 9.0-9.45	Aug 30, 2018		Soil	S18-Se00913		X		
23	BH12 12.25-12.45	Aug 30, 2018		Soil	S18-Se00914		X		
24	BH12 13.5-13.95	Aug 30, 2018		Soil	S18-Se00915		X		
Test Counts						1	21	5	5

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Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

Attention: **Colee Quayle**

Report **615478-S**
Project name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 21247477- TASK 3J FOR CONTAMINATION
Received Date Aug 29, 2018

Client Sample ID			**GBH24 3.7-3.9**	**GBH26 0.4-0.6**	**GBH29 2.4-2.5**	**GBH33 0.2-0.4**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se01922**	**S18-Se01923**	**S18-Se01924**	**S18-Se01925**
Date Sampled			**Aug 21, 2018**	**Aug 21, 2018**	**Aug 21, 2018**	**Aug 20, 2018**
Test/Reference	LOR	Unit				
Tributyl Tin (as Sn)			see attached	see attached	see attached	see attached

Client Sample ID			**GBH34 2.8-3.0**	**GBH37 1.9-2.1**	**QC2**	**BH11 19.6-20**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se01926**	**S18-Se01927**	**S18-Se01928**	**S18-Se01929**
Date Sampled			**Aug 21, 2018**	**Aug 21, 2018**	**Aug 20, 2018**	**Aug 15, 2018**
Test/Reference	LOR	Unit				
Tributyl Tin (as Sn)			see attached	see attached	see attached	see attached

Client Sample ID			**GBH02 0.4-0.6**	**GBH13 2.7-3.0**	**GBH22 3.2-3.5**	**GBH03 2.3-2.5**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se01930**	**S18-Se01931**	**S18-Se01932**	**S18-Se01933**
Date Sampled			**Aug 23, 2018**	**Aug 22, 2018**	**Aug 22, 2018**	**Aug 23, 2018**
Test/Reference	LOR	Unit				
Tributyl Tin (as Sn)			see attached	see attached	see attached	see attached

Client Sample ID			**BH05 15.5-15.95**	**GBH32 1.0-1.2**	**BH09 16**
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se01934**	**S18-Se01935**	**S18-Se01936**
Date Sampled			**Aug 23, 2018**	**Aug 23, 2018**	**Aug 23, 2018**
Test/Reference	LOR	Unit			
Tributyl Tin (as Sn)			see attached	see attached	see attached

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time

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NATA # 1261 Site # 20794

Perth
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Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 29, 2018 11:42 AM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	615478 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Sep 12, 2018 10 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	21247477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Tributyl Tin (as Sn)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						X
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	GBH24 3.7-3.9	Aug 21, 2018		Soil	S18-Se01922	X
2	GBH26 0.4-0.6	Aug 21, 2018		Soil	S18-Se01923	X
3	GBH29 2.4-2.5	Aug 21, 2018		Soil	S18-Se01924	X
4	GBH33 0.2-0.4	Aug 20, 2018		Soil	S18-Se01925	X
5	GBH34 2.8-3.0	Aug 21, 2018		Soil	S18-Se01926	X
6	GBH37 1.9-2.1	Aug 21, 2018		Soil	S18-Se01927	X
7	QC2	Aug 20, 2018		Soil	S18-Se01928	X
8	BH11 19.6-20	Aug 15, 2018		Soil	S18-Se01929	X
9	GBH02 0.4-0.6	Aug 23, 2018		Soil	S18-Se01930	X

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Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 29, 2018 11:42 AM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	615478 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Sep 12, 2018 10 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	21247477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Tributyl Tin (as Sn)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
10	GBH13 2.7-3.0	Aug 22, 2018		Soil	S18-Se01931	X
11	GBH22 3.2-3.5	Aug 22, 2018		Soil	S18-Se01932	X
12	GBH03 2.3-2.5	Aug 23, 2018		Soil	S18-Se01933	X
13	BH05 15.5-15.95	Aug 23, 2018		Soil	S18-Se01934	X
14	GBH32 1.0-1.2	Aug 23, 2018		Soil	S18-Se01935	X
15	BH09 16	Aug 23, 2018		Soil	S18-Se01936	X
Test Counts						15

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Comments

Organotins analysis analysed by: Eurofins GfA Lab Service GmbH, DAkkS accreditation D-PL-14629-01-00, report references:
AR-18-GF-034419-01
AR-18-GF-034420-01
AR-18-GF-034421-01
AR-18-GF-034422-01
AR-18-GF-034423-01
AR-18-GF-034424-01
AR-18-GF-034425-01
AR-18-GF-034426-01
AR-18-GF-034427-01
AR-18-GF-034428-01
AR-18-GF-034429-01
AR-18-GF-034430-01
AR-18-GF-034431-01
AR-18-GF-034432-01
AR-18-GF-034728-01

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	Yes

Authorised By

Nibha Vaidya Analytical Services Manager



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested
* Indicates NATA accreditation does not cover the performance of this service
Measurement uncertainty of test data is available on request or please click here.

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Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034419-01

Sample Code 710-2018-18445002

Reference	Soil Client ID: GBH26 0.4-0.6
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01923
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	98.3	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	1.9	µg/kg dw
Monobutyltin (MBT) - Sn	1.3	µg/kg dw
Dibutyltin (DBT)	2.4	µg/kg dw
Dibutyltin (DBT) - Sn	1.2	µg/kg dw
Tributyltin (TBT)	< 0.48	µg/kg dw
Tributyltin (TBT) - Sn	< 0.20	µg/kg dw
Tetrabutyltin (TTBT)	< 0.48	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.16	µg/kg dw

The results of examination refer exclusively to the checked samples.
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HRB 115907 AG Hamburg
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Analytical report AR-18-GF-034419-01

Sample Code 710-2018-18445002

Monooctyltin (MOT)	< 0.48	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.25	µg/kg dw
Dioctyltin (DOT)	< 0.48	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.17	µg/kg dw
Triphenyltin (TPhT)	< 0.48	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.16	µg/kg dw
Tricyclohexyltin (TCyT)	< 0.96	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.31	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034420-01

Sample Code 710-2018-18445003

Reference	Soil Client ID: GBH29 2.4-2.5
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01924
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	97.4	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	0.64	µg/kg dw
Monobutyltin (MBT) - Sn	0.43	µg/kg dw
Dibutyltin (DBT)	< 0.46	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.24	µg/kg dw
Tributyltin (TBT)	< 0.46	µg/kg dw
Tributyltin (TBT) - Sn	< 0.19	µg/kg dw
Tetrabutyltin (TTBT)	< 0.46	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.16	µg/kg dw

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Analytical report AR-18-GF-034420-01

Sample Code 710-2018-18445003

Monooctyltin (MOT)	< 0.46	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.24	µg/kg dw
Dioctyltin (DOT)	< 0.46	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.16	µg/kg dw
Triphenyltin (TPhT)	< 0.46	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.16	µg/kg dw
Tricyclohexyltin (TCyT)	< 0.92	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.30	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

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Analytical Service Manager (Fernando Schmidt)

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IBAN: DE37 2505 0000 0199 8786 95

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AUSTRALIEN

Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034421-01

Sample Code 710-2018-18445004

Reference	Soil Client ID: GBH33 0.2-0.4
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01925
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	94.7	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	1.9	µg/kg dw
Monobutyltin (MBT) - Sn	1.3	µg/kg dw
Dibutyltin (DBT)	< 0.51	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.26	µg/kg dw
Tributyltin (TBT)	< 0.51	µg/kg dw
Tributyltin (TBT) - Sn	< 0.21	µg/kg dw
Tetrabutyltin (TTBT)	< 0.51	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.18	µg/kg dw

The results of examination refer exclusively to the checked samples.
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Analytical report AR-18-GF-034421-01

Sample Code 710-2018-18445004

Monooctyltin (MOT)	< 0.51	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.26	µg/kg dw
Dioctyltin (DOT)	< 0.51	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.18	µg/kg dw
Triphenyltin (TPhT)	< 0.51	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.17	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.0	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.33	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034422-01

Sample Code 710-2018-18445005

Reference	Soil Client ID: GBH34 2.8-3.0
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01926
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	97.5	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	1.3	µg/kg dw
Monobutyltin (MBT) - Sn	0.90	µg/kg dw
Dibutyltin (DBT)	< 0.47	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.24	µg/kg dw
Tributyltin (TBT)	< 0.47	µg/kg dw
Tributyltin (TBT) - Sn	< 0.19	µg/kg dw
Tetrabutyltin (TTBT)	< 0.47	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.16	µg/kg dw

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Analytical report AR-18-GF-034422-01

Sample Code 710-2018-18445005

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Monooctyltin (MOT)	< 0.47	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.24	µg/kg dw
Dioctyltin (DOT)	< 0.47	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.16	µg/kg dw
Triphenyltin (TPhT)	< 0.47	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.16	µg/kg dw
Tricyclohexyltin (TCyT)	< 0.95	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.31	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034423-01

Sample Code 710-2018-18445006

Reference	Soil Client ID: GBH37 1.9-2.1
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01927
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	94.2	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	1.1	µg/kg dw
Monobutyltin (MBT) - Sn	0.72	µg/kg dw
Dibutyltin (DBT)	< 0.51	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.26	µg/kg dw
Tributyltin (TBT)	< 0.51	µg/kg dw
Tributyltin (TBT) - Sn	< 0.21	µg/kg dw
Tetrabutyltin (TTBT)	< 0.51	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.18	µg/kg dw

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Analytical report AR-18-GF-034423-01

Sample Code 710-2018-18445006

Monooctyltin (MOT)	< 0.51	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.26	µg/kg dw
Dioctyltin (DOT)	< 0.51	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.18	µg/kg dw
Triphenyltin (TPhT)	< 0.51	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.17	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.0	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.33	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034424-01

Sample Code 710-2018-18445007

Reference	Soil QC2
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01928
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	95.3	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	0.57	µg/kg dw
Monobutyltin (MBT) - Sn	0.38	µg/kg dw
Dibutyltin (DBT)	< 0.48	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.24	µg/kg dw
Tributyltin (TBT)	< 0.48	µg/kg dw
Tributyltin (TBT) - Sn	< 0.20	µg/kg dw
Tetrabutyltin (TTBT)	< 0.48	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.16	µg/kg dw

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Analytical report AR-18-GF-034424-01

Sample Code 710-2018-18445007

Monooctyltin (MOT)	< 0.48	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.25	µg/kg dw
Dioctyltin (DOT)	< 0.48	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.17	µg/kg dw
Triphenyltin (TPhT)	< 0.48	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.16	µg/kg dw
Tricyclohexyltin (TCyT)	< 0.96	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.31	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034425-01

Sample Code 710-2018-18445008

Reference	Soil Client ID: BH11 19.6-20
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01929
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	78.7	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	1.9	µg/kg dw
Monobutyltin (MBT) - Sn	1.3	µg/kg dw
Dibutyltin (DBT)	< 0.58	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.30	µg/kg dw
Tributyltin (TBT)	< 0.58	µg/kg dw
Tributyltin (TBT) - Sn	< 0.24	µg/kg dw
Tetrabutyltin (TTBT)	< 0.58	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.20	µg/kg dw

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Analytical report AR-18-GF-034425-01

Sample Code 710-2018-18445008

Monooctyltin (MOT)	< 0.58	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.30	µg/kg dw
Dioctyltin (DOT)	< 0.58	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.20	µg/kg dw
Triphenyltin (TPhT)	< 0.58	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.20	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.2	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.37	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034426-01

Sample Code 710-2018-18445009

Reference	Soil Client ID: GBH02 0.4-0.6
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01930
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	95.6	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	2.0	µg/kg dw
Monobutyltin (MBT) - Sn	1.4	µg/kg dw
Dibutyltin (DBT)	< 0.52	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.27	µg/kg dw
Tributyltin (TBT)	< 0.52	µg/kg dw
Tributyltin (TBT) - Sn	< 0.21	µg/kg dw
Tetrabutyltin (TTBT)	< 0.52	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.18	µg/kg dw

The results of examination refer exclusively to the checked samples.
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Analytical report AR-18-GF-034426-01

Sample Code 710-2018-18445009

Monooctyltin (MOT)	< 0.52	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.27	µg/kg dw
Dioctyltin (DOT)	< 0.52	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.18	µg/kg dw
Triphenyltin (TPhT)	< 0.52	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.18	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.0	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.34	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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Headquarters: Eurofins GfA Lab Service GmbH – Neuländer Kamp 1a D-21079 Hamburg
HRB 115907 AG Hamburg
General Managers: Dr. Scarlett Biselli
VAT No.: DE 275912372
Nord/LB ● Bank code: 250 500 00 ● Account No.: 199878695 ● SWIFT-BIC: NOLADE2HXXX
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AUSTRALIEN

Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034427-01

Sample Code 710-2018-18445010

Reference	Soil Client ID: GBH13 2.7-3.0
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01931
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	97.6	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	0.50	µg/kg dw
Monobutyltin (MBT) - Sn	0.34	µg/kg dw
Dibutyltin (DBT)	< 0.48	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.25	µg/kg dw
Tributyltin (TBT)	< 0.48	µg/kg dw
Tributyltin (TBT) - Sn	< 0.20	µg/kg dw
Tetrabutyltin (TTBT)	< 0.48	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.16	µg/kg dw

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Analytical report AR-18-GF-034427-01

Sample Code 710-2018-18445010

Monooctyltin (MOT)	< 0.48	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.25	µg/kg dw
Dioctyltin (DOT)	< 0.48	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.17	µg/kg dw
Triphenyltin (TPhT)	< 0.48	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.16	µg/kg dw
Tricyclohexyltin (TCyT)	< 0.96	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.31	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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AUSTRALIEN

Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034428-01

Sample Code 710-2018-18445011

Reference	Soil Client ID: GBH22 3.2-3.5
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01932
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	94.9	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	0.74	µg/kg dw
Monobutyltin (MBT) - Sn	0.50	µg/kg dw
Dibutyltin (DBT)	< 0.54	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.28	µg/kg dw
Tributyltin (TBT)	< 0.54	µg/kg dw
Tributyltin (TBT) - Sn	< 0.22	µg/kg dw
Tetrabutyltin (TTBT)	< 0.54	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.19	µg/kg dw

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Analytical report AR-18-GF-034428-01

Sample Code 710-2018-18445011

Monooctyltin (MOT)	< 0.54	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.28	µg/kg dw
Dioctyltin (DOT)	< 0.54	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.19	µg/kg dw
Triphenyltin (TPhT)	< 0.54	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.18	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.1	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.35	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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AUSTRALIEN

Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034429-01

Sample Code 710-2018-18445012

Reference	Soil Client ID: GBH03 2.3-2.5
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01933
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	96.1	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	0.56	µg/kg dw
Monobutyltin (MBT) - Sn	0.38	µg/kg dw
Dibutyltin (DBT)	< 0.49	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.25	µg/kg dw
Tributyltin (TBT)	< 0.49	µg/kg dw
Tributyltin (TBT) - Sn	< 0.20	µg/kg dw
Tetrabutyltin (TTBT)	< 0.49	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.17	µg/kg dw

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Analytical report AR-18-GF-034429-01

Sample Code 710-2018-18445012

Monooctyltin (MOT)	< 0.49	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.25	µg/kg dw
Dioctyltin (DOT)	< 0.49	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.17	µg/kg dw
Triphenyltin (TPhT)	< 0.49	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.16	µg/kg dw
Tricyclohexyltin (TCyT)	< 0.97	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.31	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034430-01

Sample Code 710-2018-18445013

Reference	Soil Client ID: BH05 15.5-15.95
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01934
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	86.5	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	< 0.57	µg/kg dw
Monobutyltin (MBT) - Sn	< 0.38	µg/kg dw
Dibutyltin (DBT)	< 0.57	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.29	µg/kg dw
Tributyltin (TBT)	< 0.57	µg/kg dw
Tributyltin (TBT) - Sn	< 0.23	µg/kg dw
Tetrabutyltin (TTBT)	< 0.57	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.19	µg/kg dw

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Analytical report AR-18-GF-034430-01

Sample Code 710-2018-18445013

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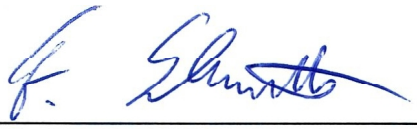
Monooctyltin (MOT)	< 0.57	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.29	µg/kg dw
Dioctyltin (DOT)	< 0.57	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.20	µg/kg dw
Triphenyltin (TPhT)	< 0.57	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.19	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.1	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.37	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)



Analytical Service Manager (Fernando Schmidt)

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Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034431-01

Sample Code 710-2018-18445014

Reference	Soil Client ID: GBH32 1.0-1.2
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01935
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	93.8	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	3.6	µg/kg dw
Monobutyltin (MBT) - Sn	2.4	µg/kg dw
Dibutyltin (DBT)	< 0.51	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.26	µg/kg dw
Tributyltin (TBT)	< 0.51	µg/kg dw
Tributyltin (TBT) - Sn	< 0.21	µg/kg dw
Tetrabutyltin (TTBT)	< 0.51	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.17	µg/kg dw

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Analytical report AR-18-GF-034431-01

Sample Code 710-2018-18445014

Monooctyltin (MOT)	< 0.51	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.26	µg/kg dw
Dioctyltin (DOT)	< 0.51	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.18	µg/kg dw
Triphenyltin (TPhT)	< 0.51	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.17	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.0	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.33	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 13.09.2018

Analytical report AR-18-GF-034432-01

Sample Code 710-2018-18445015

Reference	Soil Client ID: BH09 16
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01936
Number of containers	1
Reception temperature	room temperature
End analysis	13.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	75.7	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	1.3	µg/kg dw
Monobutyltin (MBT) - Sn	0.91	µg/kg dw
Dibutyltin (DBT)	< 0.58	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.30	µg/kg dw
Tributyltin (TBT)	< 0.58	µg/kg dw
Tributyltin (TBT) - Sn	< 0.24	µg/kg dw
Tetrabutyltin (TTBT)	< 0.58	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.20	µg/kg dw

The results of examination refer exclusively to the checked samples.
Duplicates - even in parts - must be authorized by the test laboratory in written form.
Eurofins GfA Lab Service GmbH · Neuländer Kamp 1 a · D-21079 Hamburg
Headquarters: Eurofins GfA Lab Service GmbH – Neuländer Kamp 1a D-21079 Hamburg
HRB 115907 AG Hamburg
General Managers: Dr. Scarlett Biselli
VAT No.: DE 275912372
Nord/LB ● Bank code: 250 500 00 ● Account No.: 199878695 ● SWIFT-BIC: NOLADE2HXXX
IBAN: DE37 2505 0000 0199 8786 95

Our General Terms & Conditions, available upon request and online at
http://www.eurofins.de/lebensmittel/kontakt/avb.aspx, shall apply.

Durch die Deutsche Akkreditierungsstelle
GmbH (DAkkS) akkreditiertes Prüflaboratorium
DIN EN ISO/IEC 17025:2005
Die Akkreditierung gilt nur für die in der Urkunde
aufgeführten Prüfverfahren

Analytical report AR-18-GF-034432-01

Sample Code 710-2018-18445015

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Monooctyltin (MOT)	< 0.58	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.30	µg/kg dw
Dioctyltin (DOT)	< 0.58	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.20	µg/kg dw
Triphenyltin (TPhT)	< 0.58	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.20	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.2	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.38	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

The results of examination refer exclusively to the checked samples.
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www.dioxine.de; www.dioxins.de

Eurofins GfA Lab Service GmbH · Neuländer Kamp 1 a · D-21079 Hamburg

Eurofins Environment Testing Australia Pty Ltd
attn. Results
2-5 Kingston Town Close
Vic 3166 Oakleigh
AUSTRALIEN

Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 14.09.2018

Analytical report AR-18-GF-034728-01

Sample Code 710-2018-18445001

Reference	Soil Client ID: GBH24 3.7-3.9
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client Purchase order nr.	18-104-615478
Purchase order date	04.09.2018
Client sample code	18-Se01922
Number of containers	1
Reception temperature	room temperature
End analysis	14.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	85.9	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	1.3	µg/kg dw
Monobutyltin (MBT) - Sn	0.86	µg/kg dw
Dibutyltin (DBT)	< 0.58	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.30	µg/kg dw
Tributyltin (TBT)	< 0.58	µg/kg dw
Tributyltin (TBT) - Sn	< 0.24	µg/kg dw
Tetrabutyltin (TTBT)	< 0.58	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.20	µg/kg dw

The results of examination refer exclusively to the checked samples.
Duplicates - even in parts - must be authorized by the test laboratory in written form.
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aufgeführten Prüfverfahren

Analytical report AR-18-GF-034728-01

Sample Code 710-2018-18445001

Monooctyltin (MOT)	< 0.58	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.30	µg/kg dw
Dioctyltin (DOT)	< 0.58	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.20	µg/kg dw
Triphenyltin (TPhT)	< 0.58	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.20	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.2	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.37	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Colee Quayle
Project name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT
Project ID:	21247477 PORT KEMBLA TASK 3J FOR CONTAMINATION
COC number:	Not provided
Turn around time:	10 Day
Date/Time received:	Aug 29, 2018 11:42 AM
Eurofins | mgt reference:	**615478**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☒ Split sample sent to requested external lab.
- ☑ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Colee Quayle - colee.quayle@ghd.com.

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH24	0.0-0.3	21/08/2018	S	x													
2	GBH24	2.0-2.2	21/08/2018	S							x							
3	GBH24	3.7-3.9	21/08/2018	S	x						x	x	x	x	x			
4	GBH24	4.6-4.7	21/08/2018	S														x
5	GBH24	4.7-4.9	21/08/2018	S							x							
6	GBH26	0.05-0.4	21/08/2018	S	x			x										
7	GBH26	0.4-0.6	21/08/2018	S	x							x	x	x	x			
8	GBH26	1.8-2.0	21/08/2018	S							x							
9	GBH26	2.8-3.0	21/08/2018	S							x							
10	GBH26	3.8-4.0	21/08/2018	S							x							
11	GBH26	4.75-4.9	21/08/2018	S	x						x							
12	GBH28	0.05-0.2	21/08/2018	S														x
13	GBH28	1.4-1.6	21/08/2018	S	x			x			x							
14	GBH28	2.3-2.5	21/08/2018	S							x							
15	GBH28	3.8-4.0	21/08/2018	S	x						x							
16	GBH29	0.03-0.2	21/08/2018	S	x			x										

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Containers:								Sample comments:
	Jar	ASS	Asbestos	Vial					
1	X		X						
2	X	X	X						
3	X	X	X						
4	X		X						
5	X	X	X						
6	X		X						
7	X	X	X						
8	X	X	X						
9	X	X	X						
10	X	X	X						
11	X	X	X						
12	X		X						
13	X	X	X						
14	X	X	X						
15	X	X	X						
16	X		X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By: VLONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	2.26°C
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8 11.42am	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614494
Signature: I. Lindley	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	ASS	Asbestos	Vial	Sample comments:
1	GBH29	1.9-2.1	21/08/2018	S														x	X		X		
2	GBH29	2.4-2.5	21/08/2018	S	x							x	x	x	x				X				
3	GBH29	2.4-2.6	21/08/2018	S							x									X	X		
4	GBH29	4.0-4.2	21/08/2018	S							x								X	X	X		
5	GBH29		21/08/2018	S							x									X			
6	GBH33	0.05-0.2	20/08/2018	S	x			x											X		X		
7	GBH33	0.2-0.4	20/08/2018	S	x						x	x	x	x	x				X	X	X		
8	GBH33	1.4-1.6	20/08/2018	S							x								X	X	X		2 jars
9	GBH33	3.8-4.0	20/08/2018	S							x								X	X	X		
10	GBH33	4.8-5.0	20/08/2018	S							x								X	X	X		
11	GBH34	0.05-0.3	20/08/2018	S														x		X	X		
12	GBH34	0.1-0.4	20/08/2018	S	x														X		X		
13	GBH34	0.6-0.8	20/08/2018	S							x								X	X	X		
14	GBH34	1.0-1.2	20/08/2018	S							x								X	X	X		
15	GBH34	1.9-2.1	20/08/2018	S							x									X			
16	GBH34	2.8-3.0	21/08/2018	S	x						x	x	x	x	x				X	X	X		

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By: VLd, NG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	2.2°C
Date & Time 23/8/2018	Date & Time:	Date & Time: 24/8 1:42pm	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614911
Signature: I. Lindley	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	ASS	Asbestos	Amber 1L	Plastic	Sample comments:
1	GBH34	4.8-5.0	20/08/2018	S							x								X	X	X			
2	GBH36	0.0-0.15	21/08/2018	S														x			X			
3	GBH37	0.05-0.3	21/08/2018	S														x	X					
4	GBH37	0.6-0.8	21/08/2018	S				x			x								X	X	X			
5	GBH37	1.9-2.1	21/08/2018	S	x							x	x	x	x				X		X			
6	GBH37	2.4-2.6	21/08/2018	S							x								X	X	X			
7	GBH37	3.8-4.0	21/08/2018	S							x								X	X	X			
8	GBH37	4.8-5.0	21/08/2018	S	x						x								X	X	X			
9	PACM 1	-	21/08/2018	M				x												X	X			
10	PACM 2	-	21/08/2018	M				x												X	X			
11	QC1		20/08/2018	S	x														X					
12	QC2		20/08/2018	S	x							x	x	x	x				X					
13	QC2a		20/08/2018	S	x							x	x	x	x				X					Forward to ALS
14	QC3		20/08/2018	S														x	X					
15	QC3a		20/08/2018	S														x	X					Forward to ALS
16	QC4		21/08/2018	S	x														X					

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	2.2 °C
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8/11:47	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614911
Signature: I. Lindley	Signature:	Signature:			

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Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	QC5	-	21/08/2018	S														x
2	QC5a	-	21/08/2018	S														x
3	QC6	-	22/08/2018	S														x
4	Soil Trip Blank	-	21/08/2018	S					x	x								
5	Soil Trip Spike	-	21/08/2018	S					x									
6	BH11	16.5-16.9	15/08/2018	S							x							
7	BH11	18.1-18.5	15/08/2018	S							x							
8	BH11	19.6-20.0	15/08/2018	S	x						x	x	x	x	x			
9	BH11	21.1-21.5	15/08/2018	S							x							
10	GBH29	1.7-1.9	21/08/2018	S														x
11	GBH33	2.4-2.6	20/08/2018	S							x							
12	GBH02	0.1-0.4	23/08/2018	S	x			x			x							
13	GBH02	0.4-0.6	23/08/2018	S	x						x	x	x	x	x			
14	GBH02	1.2-1.4	23/08/2018	S							x							
15	GBH02	4.2-4.45	23/08/2018	S							x							
16	GBH02	4.8-5.0	23/08/2018	S							x							

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Containers:								Sample comments:
	Jar	ASS	Asbestos	Vial					
1	X								
2	X								Forward to ALS
3	X								
4				X					
5				X					
6	X	X	X						
7	X	X	X						
8	X	X	X						
9	X	X	X						
10			X						
11			X						
12	X	X	X						
13	X	X	X						
14	X	X	X						
15	X	X	X						
16	X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	2.26°C
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8 11:47	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614914
Signature: I. Lindley	Signature:	Signature:			

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Email: enviro.syd@mgtlabmark.com.au

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☐ **Melbourne**
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Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH08	0.1-0.3	23/08/2018	S	x			x										
2	GBH08	1.2-1.4	23/08/2018	S							x							
3	GBH08	2.2-2.4	23/08/2018	S							x							
4	GBH08	4.3-4.5	23/08/2018	S							x							
5	GBH08	4.8-5.0	23/08/2018	S							x							
6	GBH13	0.1-0.2	22/08/2018	S														x
7	GBH13	1.0-1.1	22/08/2018	S	x			x										
8	GBH13	1.2-1.3	22/08/2018	S							x							
9	GBH13	2.7-3.0	22/08/2018	S	x						x	x	x	x	x			
10	GBH13	3.7-4.0	22/08/2018	S							x							
11	GBH13	4.7-5.0	22/08/2018	S							x							
12	GBH13	5.7-6.0	22/08/2018	S							x							
13	GBH22	0.4-0.5	22/08/2018	S	x			x										
14	GBH22	1.5-1.8	22/08/2018	S														x
15	GBH22	3.2-3.5	22/08/2018	S	x						x	x	x	x	x			
16	GBH22	4.2-4.5	22/08/2018	S							x							

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

	Jar	ASS	Asbestos	Vial					Sample comments:
1	X		X						
2	X	X	X						
3	X	X	X						
4	X	X	X						
5	X	X	X						
6	X		X						
7	X		X						
8	X	X	X						
9	X	X	X						
10	X	X	X						
11	X	X	X						
12	X	X	X						
13	X		X						
14	X								
15	X	X	X						
16	X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By: VLo/NG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	2·26°C
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8/18 4pm	5 DAY ☑ 10 DAY ☐ Other:	☐ Hand Delivered	Report number: 614911
Signature: I. Lindley	Signature:	Signature:		☐ Postal	
				Courier Consignment # :	

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH22	5.2-5.5	22/08/2018	S							x							
2	GBH21	0.5-0.7	22/08/2018	S	x			x			x							
3	GBH21	1.5-1.8	22/08/2018	S	x						x							
4	GBH21	3.7-4.0	22/08/2018	S							x							
5	GBH21	4.7-5.0	22/08/2018	S							x							
6	GBH03	0.1-0.4	23/08/2018	S	x			x										
7	GBH03	0.4-0.6	23/08/2018	S														x
8	GBH03	1.0-1.2	23/08/2018	S							x							
9	GBH03	2.3-2.5	23/08/2018	S	x						x	x	x	x	x			
10	GBH03	4.0-4.2	23/08/2018	S							x							
11	BH05	15.5-15.95	23/08/2018	S	x							x	x	x	x			
12	BH05	17.0-17.45	23/08/2018	S														x
13	BH05	12.1-12.85	23/08/2018	S							x							
14	BH05	20.0-20.45	23/08/2018	S	x						x							
15	QC7	-	-	S	x													
16	QC7a	-	-	S	x													

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

	Jar	ASS	Asbestos	Vial					Sample comments:
1	X	X	X						
2	X	X	X						
3	X	X	X						
4	X	X	X						
5	X	X	X						
6	X	X							
7	X	X							
8	X	X	X						
9	X	X	X						
10	X	X	X						
11	X								
12	X								
13		X							
14	X	X							
15	X								
16	X								Forward to ALS

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	2.2°C
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8 11.42pm	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614911
Signature: I. Lindley	Signature:	Signature:			

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2 Kingston Town Close, Oakleigh, VIC 3166
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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS — Page 7 of 7

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	ASS	Asbestos	Vial	Sample comments:
1	GBH32	0.1-0.4	23/08/2018	S														x	X		X		
2	GBH32	0.4-0.5	23/08/2018	S														x	X		X		
3	GBH32	1.0-1.2	23/08/2018	S	x			x			x	x	x	x	x				X	x	X		
4	GBH32	4.1-4.2	23/08/2018	S	x						x								X	X	X		
5	GBH09	0.1-0.3	23/08/2018	S				x											X	X	X		
6	GBH09	0.75-1.0	23/08/2018	S	x														X	X	X		
7	GBH09	2.2-2.4	23/08/2018	S							x								X	X	X		
8	GBH09	4.2-4.4	23/08/2018	S	x						x								X	X	X		
9	BH09	13	23/08/2018	S							x									X			
10	BH09	15.15-15.25	23/08/2018	S							x									X			
11	BH09	16	23/08/2018	S	x							x	x	x	x				X				
12																							
13																							
14																							
15																							
16																							

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By: CHONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	2.2°C
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8/11.42am	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614911
Signature: I. Lindley	Signature:	Signature:			

Enviro Sample NSW

From: Colee Quayle <Colee.Quayle@ghd.com>
Sent: Monday, 3 September 2018 3:52 PM
To: Enviro Sample NSW
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 614911 : Site CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA (21247477- TASK 3J FOR CONTAMINATION)

Follow Up Flag: Follow up
Flag Status: Completed

Hi Elvis

Yes, where ever I have selected dioxin for analysis, please cancel. Thanks. Really sorry about the muck around.

Regards

Colee Quayle | A GHD Associate
B. Apps. Sci. (Geology/Environmental Science)
Senior Environmental Scientist
Team Leader Contamination – Canberra Illawarra South Coast

GHD
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T: +61 2 4222 2331 | M: +61 403 242 431 | E: colee.quayle@ghd.com
Level 11, 200 Crown St Wollongong NSW 2500 Australia | www.ghd.com

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From: EnviroSampleNSW@eurofins.com <EnviroSampleNSW@eurofins.com>
Sent: Monday, 3 September 2018 3:43 PM
To: Colee Quayle <Colee.Quayle@ghd.com>
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 614911 : Site CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA (21247477- TASK 3J FOR CONTAMINATION)

Hi Colee,

Would you like us to cancel dioxin analysis for all samples from reports 614911 & 614912 where applicable?

Kind Regards,
Elvis Dsouza.
Enviro Sample NSW
Sample Receipt NSW

Eurofins | mgt
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone : +61 2 9900 8492

Email : EnviroSampleNSW@Eurofins.com
Website: www.eurofins.com.au/environmental-testing

From: Colee Quayle [mailto:Colee.Quayle@ghd.com]
Sent: Friday, 31 August 2018 10:31 PM
To: Enviro Sample NSW
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 614911 : Site CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA (21247477- TASK 3J FOR CONTAMINATION)

Hi

My apologies, please cancel the Dioxin analysis.

Regards

Colee Quayle | A GHD Associate
B. Apps. Sci. (Geology/Environmental Science)
Senior Environmental Scientist
Team Leader Contamination – Canberra Illawarra South Coast

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From: EnviroSampleNSW@eurofins.com <EnviroSampleNSW@eurofins.com>
Sent: Friday, 31 August 2018 7:55 PM
To: Iain Lindley <Iain.Lindley@ghd.com>
Cc: Colee Quayle <Colee.Quayle@ghd.com>
Subject: Eurofins | mgt Sample Receipt Advice - Report 614911 : Site CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA (21247477- TASK 3J FOR CONTAMINATION)

Dear Valued Client,
Triplicate samples sent to ALS for analysis
ASSpH bag not received for GBH37 4.8-5.0, GBH32 1.0-1.2; ASSpH analysis cancelled
Asbestos bag for GBH29 1.9-2.1 not received
Additional asbestos bag for sample GBH33 2.4-2.6 placed on hold.
Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins | mgt Analytical Services Manager as soon as possible to make certain that they get changed.

Regards

Ursula Long

Sample Receipt

Eurofins | mgt
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone: +61 299 008 400
Email: EnviroSampleNSW@eurofins.com
Website:environment.eurofins.com.au
EnviroNote 1078 - Targeting the Unknowns ?
EnviroNote 1077 - Soil Vapour Sampling – NATA Accreditation

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web : www.eurofins.com.au

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NATA # 1261
Site # 1254 & 14271

Sydney
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Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 615478
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Aug 29, 2018 11:42 AM
Due: Sep 12, 2018
Priority: 10 Day
Contact Name: Colee Quayle

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Tributyl Tin (as Sn)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						X
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	GBH24 3.7-3.9	Aug 21, 2018		Soil	S18-Se01922	X
2	GBH26 0.4-0.6	Aug 21, 2018		Soil	S18-Se01923	X
3	GBH29 2.4-2.5	Aug 21, 2018		Soil	S18-Se01924	X
4	GBH33 0.2-0.4	Aug 20, 2018		Soil	S18-Se01925	X
5	GBH34 2.8-3.0	Aug 21, 2018		Soil	S18-Se01926	X
6	GBH37 1.9-2.1	Aug 21, 2018		Soil	S18-Se01927	X
7	QC2	Aug 20, 2018		Soil	S18-Se01928	X
8	BH11 19.6-20	Aug 15, 2018		Soil	S18-Se01929	X
9	GBH02 0.4-0.6	Aug 23, 2018		Soil	S18-Se01930	X

ABN– 50 005 085 521
e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

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2-5 Kingston Town Close
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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 29, 2018 11:42 AM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	615478 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Sep 12, 2018 10 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	21247477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Tributyl Tin (as Sn)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
10	GBH13 2.7-3.0	Aug 22, 2018		Soil	S18-Se01931	X
11	GBH22 3.2-3.5	Aug 22, 2018		Soil	S18-Se01932	X
12	GBH03 2.3-2.5	Aug 23, 2018		Soil	S18-Se01933	X
13	BH05 15.5-15.95	Aug 23, 2018		Soil	S18-Se01934	X
14	GBH32 1.0-1.2	Aug 23, 2018		Soil	S18-Se01935	X
15	BH09 16	Aug 23, 2018		Soil	S18-Se01936	X
Test Counts						15

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Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

Attention: **Colee Quayle**

Report **615485-S**
Project name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 2127477 - TASK 3J FOR CONTAMINATION
Received Date Aug 30, 2018

Client Sample ID			**GBH10 0.1-0.3**	**QC8**	**GBH11 1.4-1.6**	**GBH39 2.2-2.4**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se01950**	**S18-Se01951**	**S18-Se01952**	**S18-Se01953**
Date Sampled			**Aug 24, 2018**	**Aug 24, 2018**	**Aug 24, 2018**	**Aug 24, 2018**
Test/Reference	LOR	Unit				
Tributyl Tin (as Sn)			see attached	see attached	see attached	see attached

Client Sample ID			**GBH17 3.7-4.0**	**GBH27 5.7-6.0**	**GBH38 3.7-4.0**
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se01954**	**S18-Se01955**	**S18-Se01956**
Date Sampled			**Aug 27, 2018**	**Aug 28, 2018**	**Aug 27, 2018**
Test/Reference	LOR	Unit			
Tributyl Tin (as Sn)			see attached	see attached	see attached

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time

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web : www.eurofins.com.au

Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 30, 2018 12:12 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	615485 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Sep 13, 2018 10 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	2127477 - TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Tributyl Tin (as Sn)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						X
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	GBH10 0.1-0.3	Aug 24, 2018		Soil	S18-Se01950	X
2	QC8	Aug 24, 2018		Soil	S18-Se01951	X
3	GBH11 1.4-1.6	Aug 24, 2018		Soil	S18-Se01952	X
4	GBH39 2.2-2.4	Aug 24, 2018		Soil	S18-Se01953	X
5	GBH17 3.7-4.0	Aug 27, 2018		Soil	S18-Se01954	X
6	GBH27 5.7-6.0	Aug 28, 2018		Soil	S18-Se01955	X
7	GBH38 3.7-4.0	Aug 27, 2018		Soil	S18-Se01956	X
Test Counts						7

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Comments

Organotins analysis analysed by: Eurofins GfA Lab Service GmbH, DAkkS accreditation D-PL-14629-01-00, report references:
AR-18-GF-034305-01
AR-18-GF-034306-01
AR-18-GF-034307-01
AR-18-GF-034308-01
AR-18-GF-034309-01
AR-18-GF-034310-01
AR-18-GF-034311-01

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Nibha Vaidya Analytical Services Manager



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Colee Quayle
Project name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID:	2127477 - TASK 3J FOR CONTAMINATION
COC number:	Not provided
Turn around time:	10 Day
Date/Time received:	Aug 30, 2018 12:12 PM
Eurofins | mgt reference:	**615485**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☑ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Colee Quayle - colee.quayle@ghd.com.

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Vic 3166 Oakleigh
AUSTRALIEN

Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 12.09.2018

Analytical report AR-18-GF-034305-01

Sample Code 710-2018-18443001

Reference	Soil
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client sample code	18-Se01950
Number of containers	1
Reception temperature	room temperature
End analysis	12.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	94.2	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	3.3	µg/kg dw
Monobutyltin (MBT) - Sn	2.2	µg/kg dw
Dibutyltin (DBT)	< 0.56	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.29	µg/kg dw
Tributyltin (TBT)	< 0.56	µg/kg dw
Tributyltin (TBT) - Sn	< 0.23	µg/kg dw
Tetrabutyltin (TTBT)	< 0.56	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.19	µg/kg dw
Monooctyltin (MOT)	< 0.56	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.29	µg/kg dw

The results of examination refer exclusively to the checked samples.
Duplicates - even in parts - must be authorized by the test laboratory in written form.
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Headquarters: Eurofins GfA Lab Service GmbH – Neuländer Kamp 1a D-21079 Hamburg
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General Managers: Dr. Scarlett Biselli
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Nord/LB ● Bank code: 250 500 00 ● Account No.: 199878695 ● SWIFT-BIC: NOLADE2HXXX
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Analytical report AR-18-GF-034305-01

Sample Code 710-2018-18443001

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Dioctyltin (DOT)	< 0.56	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.19	µg/kg dw
Triphenyltin (TPhT)	< 0.56	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.19	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.1	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.36	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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Vic 3166 Oakleigh
AUSTRALIEN

Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 12.09.2018

Analytical report AR-18-GF-034306-01

Sample Code 710-2018-18443002

Reference	Soil
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client sample code	18-Se01951
Number of containers	1
Reception temperature	room temperature
End analysis	12.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	93.9	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	17	µg/kg dw
Monobutyltin (MBT) - Sn	12	µg/kg dw
Dibutyltin (DBT)	< 0.53	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.27	µg/kg dw
Tributyltin (TBT)	< 0.53	µg/kg dw
Tributyltin (TBT) - Sn	< 0.22	µg/kg dw
Tetrabutyltin (TTBT)	< 0.53	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.18	µg/kg dw
Monooctyltin (MOT)	< 0.53	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.27	µg/kg dw

The results of examination refer exclusively to the checked samples.
Duplicates - even in parts - must be authorized by the test laboratory in written form.
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Analytical report AR-18-GF-034306-01

Sample Code 710-2018-18443002

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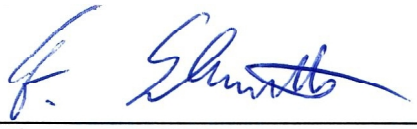
Dioctyltin (DOT)	< 0.53	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.18	µg/kg dw
Triphenyltin (TPhT)	< 0.53	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.18	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.1	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.34	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)



Analytical Service Manager (Fernando Schmidt)

The results of examination refer exclusively to the checked samples.
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Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 12.09.2018

Analytical report AR-18-GF-034307-01

Sample Code 710-2018-18443003

Reference	Soil
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client sample code	18-Se01952
Number of containers	1
Reception temperature	room temperature
End analysis	12.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	91.1	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	1.0	µg/kg dw
Monobutyltin (MBT) - Sn	0.68	µg/kg dw
Dibutyltin (DBT)	< 0.50	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.26	µg/kg dw
Tributyltin (TBT)	< 0.50	µg/kg dw
Tributyltin (TBT) - Sn	< 0.21	µg/kg dw
Tetrabutyltin (TTBT)	< 0.50	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.17	µg/kg dw
Monooctyltin (MOT)	< 0.50	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.26	µg/kg dw

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Analytical report AR-18-GF-034307-01

Sample Code 710-2018-18443003

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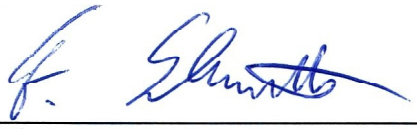
Dioctyltin (DOT)	< 0.50	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.17	µg/kg dw
Triphenyltin (TPhT)	< 0.50	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.17	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.0	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.32	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)



Analytical Service Manager (Fernando Schmidt)

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IBAN: DE37 2505 0000 0199 8786 95

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Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 12.09.2018

Analytical report AR-18-GF-034308-01

Sample Code 710-2018-18443004

Reference	Soil
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client sample code	18-Se01953
Number of containers	1
Reception temperature	room temperature
End analysis	12.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	91.0	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	1.9	µg/kg dw
Monobutyltin (MBT) - Sn	1.3	µg/kg dw
Dibutyltin (DBT)	< 0.52	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.26	µg/kg dw
Tributyltin (TBT)	< 0.52	µg/kg dw
Tributyltin (TBT) - Sn	< 0.21	µg/kg dw
Tetrabutyltin (TTBT)	< 0.52	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.18	µg/kg dw
Monooctyltin (MOT)	< 0.52	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.26	µg/kg dw

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Duplicates - even in parts - must be authorized by the test laboratory in written form.
Eurofins GfA Lab Service GmbH · Neuländer Kamp 1 a · D-21079 Hamburg
Headquarters: Eurofins GfA Lab Service GmbH – Neuländer Kamp 1a D-21079 Hamburg
HRB 115907 AG Hamburg
General Managers: Dr. Scarlett Biselli
VAT No.: DE 275912372
Nord/LB ● Bank code: 250 500 00 ● Account No.: 199878695 ● SWIFT-BIC: NOLADE2HXXX
IBAN: DE37 2505 0000 0199 8786 95

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DIN EN ISO/IEC 17025:2005
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Analytical report AR-18-GF-034308-01

Sample Code 710-2018-18443004

Dioctyltin (DOT)	< 0.52	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.18	µg/kg dw
Triphenyltin (TPhT)	< 0.52	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.18	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.0	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.33	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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Vic 3166 Oakleigh
AUSTRALIEN

Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 12.09.2018

Analytical report AR-18-GF-034309-01

Sample Code 710-2018-18443005

Reference	Soil
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client sample code	18-Se01954
Number of containers	1
Reception temperature	room temperature
End analysis	12.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	96.1	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	< 0.50	µg/kg dw
Monobutyltin (MBT) - Sn	< 0.33	µg/kg dw
Dibutyltin (DBT)	< 0.50	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.25	µg/kg dw
Tributyltin (TBT)	< 0.50	µg/kg dw
Tributyltin (TBT) - Sn	< 0.20	µg/kg dw
Tetrabutyltin (TTBT)	< 0.50	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.17	µg/kg dw
Monooctyltin (MOT)	< 0.50	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.25	µg/kg dw

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Analytical report AR-18-GF-034309-01

Sample Code 710-2018-18443005

Dioctyltin (DOT)	< 0.50	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.17	µg/kg dw
Triphenyltin (TPhT)	< 0.50	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.17	µg/kg dw
Tricyclohexyltin (TCyT)	< 0.99	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.32	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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AUSTRALIEN

Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 12.09.2018

Analytical report AR-18-GF-034310-01

Sample Code 710-2018-18443006

Reference	Soil
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client sample code	18-Se01955
Number of containers	1
Reception temperature	room temperature
End analysis	12.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	86.5	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	1.2	µg/kg dw
Monobutyltin (MBT) - Sn	0.82	µg/kg dw
Dibutyltin (DBT)	< 0.58	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.29	µg/kg dw
Tributyltin (TBT)	< 0.58	µg/kg dw
Tributyltin (TBT) - Sn	< 0.24	µg/kg dw
Tetrabutyltin (TTBT)	< 0.58	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.20	µg/kg dw
Monooctyltin (MOT)	< 0.58	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.30	µg/kg dw

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Analytical report AR-18-GF-034310-01

Sample Code 710-2018-18443006

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Dioctyltin (DOT)	< 0.58	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.20	µg/kg dw
Triphenyltin (TPhT)	< 0.58	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.20	µg/kg dw
Tricyclohexyltin (TCyT)	< 1.2	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.37	µg/kg dw

(°) = The test was performed at the laboratory site: Am Neuländer Gewerbepark 4
(#) = Eurofins GfA Lab Service GmbH (Hamburg) is accredited for this test.

< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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AUSTRALIEN

Person in charge Mr. F. Schmidt
ASM Mr. F. Schmidt

Report date 12.09.2018

Analytical report AR-18-GF-034311-01

Sample Code 710-2018-18443007

Reference	Soil
Sample sender	Mr. Onur Mehmet
Reception date time	10.09.2018
Transport by	DHL
Client sample code	18-Se01956
Number of containers	1
Reception temperature	room temperature
End analysis	12.09.2018

Test results

GFDRY Dry Residue (°) (#)
Method Internal, , Gravimetry

dry residue	97.6	%

GFU61 organotin compounds (8 OTC): environmental material, soil, solids, sludge, liquids (°) (#)
Method Internal, GLS OC 600, GC-MS

Monobutyltin (MBT)	5.3	µg/kg dw
Monobutyltin (MBT) - Sn	3.6	µg/kg dw
Dibutyltin (DBT)	< 0.47	µg/kg dw
Dibutyltin (DBT) - Sn	< 0.24	µg/kg dw
Tributyltin (TBT)	< 0.47	µg/kg dw
Tributyltin (TBT) - Sn	< 0.19	µg/kg dw
Tetrabutyltin (TTBT)	< 0.47	µg/kg dw
Tetrabutyltin (TTBT) - Sn	< 0.16	µg/kg dw
Monooctyltin (MOT)	< 0.47	µg/kg dw
Monooctyltin (MOT) - Sn	< 0.24	µg/kg dw

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Analytical report AR-18-GF-034311-01

Sample Code 710-2018-18443007

Dioctyltin (DOT)	< 0.47	µg/kg dw
Dioctyltin (DOT) - Sn	< 0.16	µg/kg dw
Triphenyltin (TPhT)	< 0.47	µg/kg dw
Triphenyltin (TPhT) - Sn	< 0.16	µg/kg dw
Tricyclohexyltin (TCyT)	< 0.95	µg/kg dw
Tricyclohexyltin (TCyT) - Sn	< 0.31	µg/kg dw

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< - Concentration below the indicated limit of quantification (LOQ)

Analytical Service Manager (Fernando Schmidt)

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	**Contact Name:** Iain Lindley 0459 353 385	**Purchase Order :**	**COC Number :**
Office Address : Level 11, 200 Crown Street	**Project Manager :** Colee Quayle 0403 242 431	**PROJECT Number :** 2127477 - Task 3J for Contamination	**Eurofins | mgt quote ID :**
Wollongong, NSW 2500	**Email for results :** iain.lindley@ghd.com	**PROJECT Name :** Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH10	0.1-0.3	24/08/2018	S	x			x				x	x	x	x			
2	GBH10	0.6-0.8	24/08/2018	S							x							
3	GBH10	2.0-2.2	24/08/2018	S							x							
4	GBH10	4.4-4.6	24/08/2018	S							x							
5	QC8	-	24/08/2018	S	x							x	x	x	x			
6	QC8A	-	24/08/2018	S	x							x	x	x	x			
7	GBH11	0.05-0.3	24/08/2018	S	x													
8	GBH11	1.4-1.6	24/08/2018	S	x			x				x	x	x	x			
9	GBH11	2.1-2.3	24/08/2018	S							x							
10	GBH11	5.0-5.1	24/08/2018	S							x							
11	GBH30	0.1-0.3	24/08/2018	S														
12	GBH30	0.3-0.5	24/08/2018	S	x			x										
13	GBH30	1.2-1.4	24/08/2018	S	x						x							
14	GBH30	3.8-4.0	24/08/2018	S							x							
15	GBH30	4.8-5.0	24/08/2018	S							x							
16	GBH35	0.05-0.3	24/08/2018	S														

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

	Jar	Zip lock	ASS	Amber 1L	Plastic				Sample comments:
1	X	X							
2	X	X							
3	X	X	X						
4	X	X	X						
5	X	X							
6	X	X							Forward to ALS
7	X	X							
8	X	X							
9	X	X	X						
10	X	X	X						
11	X	X							
12	X	X							
13	X	X	X						
14	X	X	X						
15	X	X	X						
16	X	X							

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	**Received By:**	**Received By:** VLONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 29/8/2018	**Date & Time:**	**Date & Time:** 30/8 12.12pm	5 DAY ☑ 10 DAY ☐ Other:	**Courier Consignment # :**	**Report number:** 614912
Signature: C. Quayle	**Signature:**	**Signature:**			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	**Contact Name:** Iain Lindley 0459 353 385	**Purchase Order :**	**COC Number :**
Office Address : Level 11, 200 Crown Street	**Project Manager :** Colee Quayle 0403 242 431	**PROJECT Number :** 2127477 - Task 3J for Contamination	**Eurofins | mgt quote ID :**
Wollongong, NSW 2500	**Email for results :** iain.lindley@ghd.com	**PROJECT Name :** Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH35	0.8-1.0	24/08/2018	S														
2	GBH35	2.5-2.7	24/08/2018	S	x						x							
3	GBH35	4.5-4.7	24/08/2018	S							x							
4	GBH39	0.1-0.3	24/08/2018	S														
5	GBH39	1.0-1.2	24/08/2018	S							x							
6	GBH39	2.2-2.4	24/08/2018	S	x						x	x	x	x	x			
7	GBH39	4.5-4.7	24/08/2018	S							x							
8	GBH12	0.5-0.7	27/08/2018	S				x										
9	GBH12	1.7-2.0	27/08/2018	S	x						x							
10	GBH12	2.7-3.0	27/08/2018	S							x							
11	GBH12	3.7-4.0	27/08/2018	S							x							
12	GBH12	4.0-5.0	27/08/2018	S							x							
13	QC10	-	27/08/2018	S														x
14	QC10A	-	27/08/2018	S														x
15	GBH15	0.5-0.7	27/08/2018	S														
16	GBH15	1.7-1.9	27/08/2018	S							x							

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Containers:								Sample comments:
	Jar	Zip lock	ASS	Amber 1L	Plastic				
1	X	X							
2	X	X	X						
3	X	X	X						
4	X	X							
5	X	X	X						
6	X	X	X						
7	X	X	X						
8	X	X							
9	X	X	X						
10	X	X	X						
11	X	X	X						
12	X	X	X						
13	X	X							
14	X	X							Forward to ALS
15	X	X							
16	X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	**Received By:**	**Received By:**	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 29/8/2018	**Date & Time:**	**Date & Time:** 30/8 12-Ka	5 DAY ☑ 10 DAY ☐ Other:	**Courier Consignment # :**	**Report number:** 614912
Signature: C. Quayle	**Signature:**	**Signature:**			

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☑ **Sydney**
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgtlabmark.com.au

☐ **Brisbane**
Unit 1-21 Smallwood Place, Murrarie
Phone: +617 3902 4600
Email: enviro.bris@mgtlabmark.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD Pty Ltd	Contact Name:	Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address :	Level 11, 200 Crown Street	Project Manager :	Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
	Wollongong, NSW 2500	Email for results :	iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH								Hold
1	GBH15	2.7-3.0	27/08/2018	S	x						x														
2	GBH15	3.7-4.0	27/08/2018	S							x														
3	GBH15	4.2-4.5	27/08/2018	S							x														
4	GBH17	0.5-0.7	27/08/2018	S																					x
5	GBH17	1.5-1.7	27/08/2018	S	x						x														
6	GBH17	2.7-3.0	27/08/2018	S							x														
7	GBH17	3.7-4.0	27/08/2018	S	x						x	x	x	x	x										
8	GBH17	4.7-5.0	27/08/2018	S							x														
9	GBH18	0.5-0.7	28/08/2018	S	x			x																	
10	GBH18	1.5-1.7	28/08/2018	S							x														
11	GBH18	2.7-3.0	28/08/2018	S							x														
12	GBH18	3.7-4.0	28/08/2018	S							x														
13	GBH18	4.7-5.0	28/08/2018	S	x						x														
14	GBH19	0.5-0.7	27/08/2018	S	x			x																	
15	GBH19	1.4-1.7	27/08/2018	S							x														
16	GBH19	2.7-3.0	27/08/2018	S							x														

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

	Jar	Zip lock	ASS	Amber 1L	Plastic				Sample comments:
1	X	X	X						
2	X	X	X						
3	X	X	X						
4	X	X							
5	X	X	X						
6	X	X	X						
7	X	X	X						
8	X	X	X						
9	X	X							
10	X	X	X						
11	X	X	X						
12	X	X	X						
13	X	X	X						
14	X	X							
15	X	X	X						
16	X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	Received By:	Received By: LONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 29/8/2018	Date & Time:	Date & Time: 30/8 12-Ran	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614912
Signature: C. Quayle	Signature:	Signature:			

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Email: enviro.bris@mgtlabmark.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH19	3.7-4.0	27/08/2018	S							x							
2	GBH19	4.7-5.0	27/08/2018	S							x							
3	GBH25	0.5-0.7	27/08/2018	S														
4	GBH25	1.5-1.7	27/08/2018	S							x							
5	GBH25	2.5-2.7	27/08/2018	S	x			x			x							
6	GBH25	3.5-3.7	27/08/2018	S							x							
7	GBH27	0.5-0.6	28/08/2018	S														
8	GBH27	1.7-2.0	28/08/2018	S				x			x							
9	GBH27	2.7-3.0	28/08/2018	S							x							
10	GBH27	3.7-4.0	28/08/2018	S							x							
11	GBH27	4.7-5.0	28/08/2018	S							x							
12	GBH27	5.7-6.0	28/08/2018	S	x						x	x	x	x	x			
13	GBH38	0.5-0.7	27/08/2018	S	x			x										
14	GBH38	1.7-2.0	27/08/2018	S							x							
15	GBH38	2.7-3.0	27/08/2018	S							x							
16	GBH38	3.7-4.0	27/08/2018	S	x						x	x	x	x	x			

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:								Sample comments:
Jar	Zip lock	ASS	Amber 1L	Plastic				
X	X	X						
X	X	X						
X	X							
X	X	X						
X	X	X						
X	X	X						
X	X							
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X							
X	X	X						
X	X	X						
X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	Received By:	Received By: VLONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 29/8/2018	Date & Time:	Date & Time: 30/8 12:12am	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 614912
Signature: C. Quayle	Signature:	Signature:			

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☑ **Sydney**
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2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	**Contact Name:** Iain Lindley 0459 353 385	**Purchase Order :**	**COC Number :**
Office Address : Level 11, 200 Crown Street	**Project Manager :** Colee Quayle 0403 242 431	**PROJECT Number :** 2127477 - Task 3J for Contamination	**Eurofins | mgt quote ID :**
Wollongong, NSW 2500	**Email for results :** iain.lindley@ghd.com	**PROJECT Name :** Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH38	4.7-5.0	27/08/2018	S							x							
2				S														
3				S														
4				S														
5				S														
6				S														
7				S														
8				S														
9				S														
10				S														
11				S														
12				S														
13				S														
14				S														
15				S														
16				S														

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

Jar	Zip lock	ASS	Amber 1L	Plastic			
X	X	X					

Sample comments:

GHD Staff	Courier	Laboratory Staff
Relinquished By: Colee Quayle	**Received By:**	**Received By:** VLoNG
Date & Time 29/8/2018	**Date & Time:**	**Date & Time:** 30/8/12-Vam
Signature: C. Quayle	**Signature:**	**Signature:**

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☑ 10 DAY ☐ Other:

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival:

Report number: 614912

Enviro Sample NSW

From: Colee Quayle <Colee.Quayle@ghd.com>
Sent: Monday, 3 September 2018 3:52 PM
To: Enviro Sample NSW
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 614911 : Site CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA (21247477- TASK 3J FOR CONTAMINATION)

Follow Up Flag: Follow up
Flag Status: Completed

Hi Elvis

Yes, where ever I have selected dioxin for analysis, please cancel. Thanks. Really sorry about the muck around.

Regards

Colee Quayle | A GHD Associate
B. Apps. Sci. (Geology/Environmental Science)
Senior Environmental Scientist
Team Leader Contamination – Canberra Illawarra South Coast

GHD
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Level 11, 200 Crown St Wollongong NSW 2500 Australia | www.ghd.com

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Please consider our environment before printing this email

From: EnviroSampleNSW@eurofins.com <EnviroSampleNSW@eurofins.com>
Sent: Monday, 3 September 2018 3:43 PM
To: Colee Quayle <Colee.Quayle@ghd.com>
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 614911 : Site CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA (21247477- TASK 3J FOR CONTAMINATION)

Hi Colee,

Would you like us to cancel dioxin analysis for all samples from reports 614911 & 614912 where applicable?

Kind Regards,
Elvis Dsouza.
Enviro Sample NSW
Sample Receipt NSW

Eurofins | mgt
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone : +61 2 9900 8492

Email : EnviroSampleNSW@Eurofins.com
Website: www.eurofins.com.au/environmental-testing

From: Colee Quayle [mailto:Colee.Quayle@ghd.com]
Sent: Friday, 31 August 2018 10:31 PM
To: Enviro Sample NSW
Subject: RE: Eurofins | mgt Sample Receipt Advice - Report 614911 : Site CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA (21247477- TASK 3J FOR CONTAMINATION)

Hi

My apologies, please cancel the Dioxin analysis.

Regards

Colee Quayle | A GHD Associate
B. Apps. Sci. (Geology/Environmental Science)
Senior Environmental Scientist
Team Leader Contamination – Canberra Illawarra South Coast

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Level 11, 200 Crown St Wollongong NSW 2500 Australia | www.ghd.com

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WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION

Please consider our environment before printing this email

From: EnviroSampleNSW@eurofins.com <EnviroSampleNSW@eurofins.com>
Sent: Friday, 31 August 2018 7:55 PM
To: Iain Lindley <Iain.Lindley@ghd.com>
Cc: Colee Quayle <Colee.Quayle@ghd.com>
Subject: Eurofins | mgt Sample Receipt Advice - Report 614911 : Site CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA (21247477- TASK 3J FOR CONTAMINATION)

Dear Valued Client,
Triplicate samples sent to ALS for analysis
ASSpH bag not received for GBH37 4.8-5.0, GBH32 1.0-1.2; ASSpH analysis cancelled
Asbestos bag for GBH29 1.9-2.1 not received
Additional asbestos bag for sample GBH33 2.4-2.6 placed on hold.
Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins | mgt Analytical Services Manager as soon as possible to make certain that they get changed.

Regards

Ursula Long

Sample Receipt

Eurofins | mgt
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone: +61 299 008 400
Email: EnviroSampleNSW@eurofins.com
Website:environment.eurofins.com.au
EnviroNote 1078 - Targeting the Unknowns ?
EnviroNote 1077 - Soil Vapour Sampling – NATA Accreditation

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web : www.eurofins.com.au

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Oakleigh VIC 3166
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
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16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Aug 30, 2018 12:12 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	615485 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Sep 13, 2018 10 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	2127477 - TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Tributyl Tin (as Sn)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						X
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	GBH10 0.1-0.3	Aug 24, 2018		Soil	S18-Se01950	X
2	QC8	Aug 24, 2018		Soil	S18-Se01951	X
3	GBH11 1.4-1.6	Aug 24, 2018		Soil	S18-Se01952	X
4	GBH39 2.2-2.4	Aug 24, 2018		Soil	S18-Se01953	X
5	GBH17 3.7-4.0	Aug 27, 2018		Soil	S18-Se01954	X
6	GBH27 5.7-6.0	Aug 28, 2018		Soil	S18-Se01955	X
7	GBH38 3.7-4.0	Aug 27, 2018		Soil	S18-Se01956	X
Test Counts						7

Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Iain Lindley**

Report **616384-S-V2**
Project name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 2127477 - TASK 3J FOR CONTAMINATION
Received Date Sep 06, 2018

Client Sample ID			**GBH05 3.7-4.0**	**GBH05 4.7-5.0**	**GBH05 6.7-7.0**	**GBH05 7.7-8.0**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se08777**	**S18-Se08778**	**S18-Se08779**	**S18-Se08780**
Date Sampled			**Aug 31, 2018**	**Aug 31, 2018**	**Aug 31, 2018**	**Aug 31, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	-
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	-	79	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			GBH05 3.7-4.0	GBH05 4.7-5.0	GBH05 6.7-7.0	GBH05 7.7-8.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se08777	S18-Se08778	S18-Se08779	S18-Se08780
Date Sampled			Aug 31, 2018	Aug 31, 2018	Aug 31, 2018	Aug 31, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH*	0.5	mg/kg	-	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	-	66	-
p-Terphenyl-d14 (surr.)	1	%	-	-	59	-
Heavy Metals						
Arsenic	2	mg/kg	-	-	4.1	-
Cadmium	0.4	mg/kg	-	-	< 0.4	-
Chromium	5	mg/kg	-	-	< 5	-
Copper	5	mg/kg	-	-	< 5	-
Lead	5	mg/kg	-	-	< 5	-
Mercury	0.1	mg/kg	-	-	< 0.1	-
Nickel	5	mg/kg	-	-	< 5	-
Zinc	5	mg/kg	-	-	13	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.3	9.5	9.4	9.5
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	8.1	8.2	7.9	7.9
Reaction Ratings*[S05]		comment	4.0	4.0	1.0	1.0
% Moisture	1	%	-	-	16	-

Client Sample ID			GBH05 8.7-9.0	QC11	QC12	TRIP SPIKE
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se08781	S18-Se08782	S18-Se08783	S18-Se08792
Date Sampled			Aug 31, 2018	Aug 31, 2018	Aug 31, 2018	Sep 04, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	-
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	-
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	-
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	-
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	-

Client Sample ID			GBH05 8.7-9.0	QC11	QC12	TRIP SPIKE
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se08781	S18-Se08782	S18-Se08783	S18-Se08792
Date Sampled			Aug 31, 2018	Aug 31, 2018	Aug 31, 2018	Sep 04, 2018
Test/Reference	LOR	Unit				
BTEX						
Comments						R20
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	97
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	98
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	92
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	96
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	97
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	97
4-Bromofluorobenzene (surr.)	1	%	88	118	85	73
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	89	84	106	-
p-Terphenyl-d14 (surr.)	1	%	82	83	92	-
Heavy Metals						
Arsenic	2	mg/kg	9.7	6.1	11	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	6.7	< 5	6.5	-
Copper	5	mg/kg	< 5	< 5	< 5	-
Lead	5	mg/kg	< 5	6.0	< 5	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Nickel	5	mg/kg	< 5	< 5	< 5	-
Zinc	5	mg/kg	< 5	22	< 5	-
% Moisture	1	%	21	18	21	-

Client Sample ID			TRIP BLANK	GBH13 5.7-6.0	GBH22 5.2-5.5
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se08793**	**S18-Se08795**	**S18-Se08796**
Date Sampled			**Sep 04, 2018**	**Sep 04, 2018**	**Aug 22, 2018**
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	-
TRH C6-C10	20	mg/kg	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	< 20	-	-
BTEX					
Benzene	0.1	mg/kg	< 0.1	-	-
Toluene	0.1	mg/kg	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-
o-Xylene	0.1	mg/kg	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	74	-	-
Heavy Metals					
Arsenic	2	mg/kg	-	7.2	9.0
Cadmium	0.4	mg/kg	-	< 0.4	< 0.4
Chromium	5	mg/kg	-	< 5	< 5
Copper	5	mg/kg	-	< 5	< 5
Lead	5	mg/kg	-	< 5	< 5
Mercury	0.1	mg/kg	-	< 0.1	< 0.1
Nickel	5	mg/kg	-	< 5	< 5
Zinc	5	mg/kg	-	< 5	22
% Moisture	1	%	-	17	15

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 10, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons	Sydney	Sep 12, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Sep 12, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Sep 12, 2018	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Eurofins | mgt Suite B7			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 10, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Melbourne	Sep 10, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Melbourne	Sep 10, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Acid Sulfate Soils Field pH Test	Brisbane	Sep 12, 2018	7 Days
- Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests			
% Moisture	Melbourne	Sep 07, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 616384
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Sep 6, 2018 11:29 PM
Due: Sep 14, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477 - TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						CANCELLED	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Metals M8	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X				X		X	X	X
Sydney Laboratory - NATA Site # 18217						X			X			X		X	X
Brisbane Laboratory - NATA Site # 20794								X		X					
Perth Laboratory - NATA Site # 23736															
External Laboratory															
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**										
1	GBH05 3.7-4.0	Aug 31, 2018		Soil	S18-Se08777					X					
2	GBH05 4.7-5.0	Aug 31, 2018		Soil	S18-Se08778					X					
3	GBH05 6.7-7.0	Aug 31, 2018		Soil	S18-Se08779					X			X	X	
4	GBH05 7.7-8.0	Aug 31, 2018		Soil	S18-Se08780					X					
5	GBH05 8.7-9.0	Aug 31, 2018		Soil	S18-Se08781								X	X	
6	QC11	Aug 31, 2018		Soil	S18-Se08782								X	X	
7	QC12	Aug 31, 2018		Soil	S18-Se08783								X	X	
8	BH15 2.6-2.7	Sep 03, 2018		Soil	S18-Se08784		X								
9	BH15 10.5-10.95	Sep 03, 2018		Soil	S18-Se08785				X						

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Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
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NSW 2500

Order No.:
Report #: 616384
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Sep 6, 2018 11:29 PM
Due: Sep 14, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477 - TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						CANCELLED	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Metals M8	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X				X		X	X	X
Sydney Laboratory - NATA Site # 18217						X			X			X		X	X
Brisbane Laboratory - NATA Site # 20794								X		X					
Perth Laboratory - NATA Site # 23736															
10	BH15 19.5-19.95	Sep 04, 2018		Soil	S18-Se08786			X							
11	BH15 15-15.45	Sep 04, 2018		Soil	S18-Se08787			X							
12	BH15 6.0-6.35	Sep 04, 2018		Soil	S18-Se08788			X							
13	BH15 3.9	Sep 04, 2018		Soil	S18-Se08789			X							
14	BH14 9.5	Sep 03, 2018		Soil	S18-Se08790			X							
15	BH14 24.3-24.45	Sep 04, 2018		Soil	S18-Se08791			X							
16	TRIP SPIKE	Sep 04, 2018		Soil	S18-Se08792							X			
17	TRIP BLANK	Sep 04, 2018		Soil	S18-Se08793										X
18	GBH13 5.7-6.0	Sep 04, 2018		Soil	S18-Se08795						X		X		
19	GBH22 5.2-5.5	Aug 22, 2018		Soil	S18-Se08796						X		X		
20	GBH06 7.7-8.0	Aug 30, 2018		Soil	S18-Se08797	X									

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Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Sep 6, 2018 11:29 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	616384 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Sep 14, 2018 5 Day Iain Lindley
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	2127477 - TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail	CANCELLED	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Metals M8	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271		X				X		X	X	X
Sydney Laboratory - NATA Site # 18217	X			X			X		X	X
Brisbane Laboratory - NATA Site # 20794			X		X					
Perth Laboratory - NATA Site # 23736										
Test Counts	1	8	8	8	4	2	1	6	4	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	100			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C6-C10	%	75			70-130	Pass	
TRH >C10-C16	%	130			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	80			70-130	Pass	
TRH C10-C14	%	112			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	98			70-130	Pass	
Toluene	%	97			70-130	Pass	
Ethylbenzene	%	95			70-130	Pass	
m&p-Xylenes	%	99			70-130	Pass	
Xylenes - Total	%	99			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	95			70-130	Pass	
Acenaphthylene	%	107			70-130	Pass	
Anthracene	%	120			70-130	Pass	
Benz(a)anthracene	%	90			70-130	Pass	
Benzo(a)pyrene	%	86			70-130	Pass	
Benzo(b&j)fluoranthene	%	80			70-130	Pass	
Benzo(g.h.i)perylene	%	87			70-130	Pass	
Benzo(k)fluoranthene	%	101			70-130	Pass	
Chrysene	%	102			70-130	Pass	
Dibenz(a.h)anthracene	%	82			70-130	Pass	
Fluoranthene	%	109			70-130	Pass	
Fluorene	%	107			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	81			70-130	Pass	
Naphthalene	%	110			70-130	Pass	
Phenanthrene	%	99			70-130	Pass	
Pyrene	%	118			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	99			80-120	Pass	
Cadmium	%	101			80-120	Pass	
Chromium	%	105			80-120	Pass	
Copper	%	99			80-120	Pass	
Lead	%	106			80-120	Pass	
Mercury	%	96			75-125	Pass	
Nickel	%	106			80-120	Pass	
Zinc	%	105			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-Se08779	CP	%	95			70-130	Pass	
TRH C6-C10	S18-Se08779	CP	%	72			70-130	Pass	
TRH >C10-C16	M18-Se09843	NCP	%	115			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Se08779	CP	%	73			70-130	Pass	
TRH C10-C14	M18-Se09843	NCP	%	110			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Se08779	CP	%	77			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Toluene	S18-Se08779	CP	%	80			70-130	Pass	
Ethylbenzene	S18-Se08779	CP	%	85			70-130	Pass	
m&p-Xylenes	S18-Se08779	CP	%	91			70-130	Pass	
o-Xylene	S18-Se08779	CP	%	96			70-130	Pass	
Xylenes - Total	S18-Se08779	CP	%	93			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M18-Se09936	NCP	%	92			70-130	Pass	
Acenaphthylene	M18-Se09936	NCP	%	102			70-130	Pass	
Anthracene	M18-Se09936	NCP	%	117			70-130	Pass	
Benz(a)anthracene	M18-Se09936	NCP	%	85			70-130	Pass	
Benzo(a)pyrene	M18-Se09936	NCP	%	82			70-130	Pass	
Benzo(b&j)fluoranthene	M18-Se09936	NCP	%	75			70-130	Pass	
Benzo(g.h.i)perylene	M18-Se09936	NCP	%	84			70-130	Pass	
Benzo(k)fluoranthene	M18-Se09936	NCP	%	104			70-130	Pass	
Chrysene	M18-Se09936	NCP	%	100			70-130	Pass	
Dibenz(a.h)anthracene	M18-Se09936	NCP	%	81			70-130	Pass	
Fluoranthene	M18-Se09936	NCP	%	100			70-130	Pass	
Fluorene	M18-Se09936	NCP	%	105			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-Se09936	NCP	%	81			70-130	Pass	
Naphthalene	M18-Se09936	NCP	%	111			70-130	Pass	
Phenanthrene	M18-Se09936	NCP	%	91			70-130	Pass	
Pyrene	M18-Se09936	NCP	%	112			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-Se08782	CP	%	100			75-125	Pass	
Cadmium	S18-Se08782	CP	%	99			75-125	Pass	
Chromium	S18-Se08782	CP	%	96			75-125	Pass	
Copper	S18-Se08782	CP	%	103			75-125	Pass	
Lead	S18-Se08782	CP	%	94			75-125	Pass	
Mercury	S18-Se08782	CP	%	93			70-130	Pass	
Nickel	S18-Se08782	CP	%	91			75-125	Pass	
Zinc	S18-Se08782	CP	%	94			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Se08777	CP	pH Units	9.3	9.4	pass	30%	Pass	
Reaction Ratings*	S18-Se08777	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Phenanthrene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M18-Se10251	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Se08781	CP	mg/kg	9.7	10	7.0	30%	Pass	
Cadmium	S18-Se08781	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Se08781	CP	mg/kg	6.7	6.4	4.0	30%	Pass	
Copper	S18-Se08781	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S18-Se08781	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S18-Se08781	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Se08781	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Se08781	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S18-Se08782	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S18-Se08782	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S18-Se08782	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S18-Se08782	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S18-Se08782	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S18-Se08782	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Se08782	CP	mg/kg	6.1	6.9	11	30%	Pass	
Cadmium	S18-Se08782	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Se08782	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S18-Se08782	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S18-Se08782	CP	mg/kg	6.0	6.2	3.0	30%	Pass	
Mercury	S18-Se08782	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Se08782	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Se08782	CP	mg/kg	22	22	1.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S18-Se08783	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S18-Se08783	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S18-Se08783	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S18-Se08783	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S18-Se08783	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S18-Se08783	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-Se08783	CP	%	21	22	2.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-Se12674	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-Se12674	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-Se12674	NCP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-Se12674	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-Se12674	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-Se12674	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-Se12674	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-Se12674	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-Se12674	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Comments

This report has been revised (V2) to amend sample ID S18-Se08796.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
R20	This sample is a Trip Spike and therefore all results are reported as a percentage
S05	Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

Authorised By

Nibha Vaidya	Analytical Services Manager
Chris Bennett	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Myles Clark	Senior Analyst-SPOCAS (QLD)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Iain Lindley
Project name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT
Project ID:	21217 PORT KEMBLA TASK 3J FOR CONTAMINATION
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Sep 6, 2018 11:29 PM
Eurofins | mgt reference:	**616384**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☑ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

QC11A sent to ALS for analysis. GBH06 7.7-8.0 not received; analysis cancelled.

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Iain Lindley - iain.lindley@ghd.com.

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD Pty Ltd	Contact Name:	Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address :	Level 11, 200 Crown Street	Project Manager :	Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
	Wollongong, NSW 2500	Email for results :	iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	M8: Metals	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH13	5.7-6.0	22/08/2018	S									x					
2	GBH22	5.2-5.5	22/08/2018	S									x					
3	GBH05	3.7-4.0	31/08/2018	S							x							
4	GBH05	4.7-5.0	31/08/2018	S							x							
5	GBH05	6.7-7.0	31/08/2018	S	x						x							
6	GBH05	7.7-8.0	31/08/2018	S							x							
7	GBH05	8.7-9.0	31/08/2018	S	x													
8	QC11	-	31/08/2018	S	x													
9	QC11A	-	31/08/2018	S	x													
10	QC12	-	31/08/2018	S	x													
11	BH15	2.6-2.7	3/09/2018	S														x
12	BH15	10.5-10.95	3/09/2018	S														x
13	BH15	19.5-19.95	4/09/2018	S														x
14	BH15	15-15.45	4/09/2018	S														x
15	BH15	6.0-6.35	3/09/2018	S														x
16	BH15	3.9	3/09/2018	S														x

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Containers:								Sample comments:
	Jar	Zip lock	ASS	Amber 1L	Plastic				
1	X	X	X						
2	X	X	X						
3	X	X	X						
4	X	X	X						
5	X	X	X						
6	X	X	X						
7	X	X	X						
8	X	X	X						
9	X		X						Please send to ALS
10	X	X	X						
11	X								
12		x							
13			x						
14			x						
15			x						
16			x						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	3.43°C
Date & Time 6/9/2018	Date & Time:	Date & Time: 11:29am 6/9	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 616384
Signature: C. Quayle	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Metals (8)	Cyanide	Ammonia	VOCs	pH	Hold
1	BH14	9.5	3/09/2018	S														X
2	BH14	24.3-24.45	4/09/2018	S														X
3	Trip Spike	-	-	S					X									
4	Trip Blank	-	-	S						X								
5	GBH06	7.7-8.0	30/08/2018	S	X													
6				S														
7				S														
8				S														
9				S														
10				S														
11				S														
12				S														
13				S														
14				S														
15				S														
16				S														

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

Jar	Zip lock	ASS	Vials	Plastic				Sample comments:
		X						
		X						
			X					
			X					

GHD Staff	Courier	Laboratory Staff
Relinquished By: Colee Quayle	Received By:	Received By: ULONG
Date & Time 6/9/2018	Date & Time:	Date & Time: 6/9/1:29pm
Signature: C. Quayle	Signature:	Signature:

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☑ 10 DAY ☐ Other:

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 3.48°C

Report number: 616384

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e.mail : EnviroSales@eurofins.com
web : www.eurofins.com.au

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NATA # 1261
Site # 1254 & 14271

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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 616384
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Sep 6, 2018 11:29 PM
Due: Sep 14, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477 - TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						CANCELLED	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Metals M8	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X				X		X	X	X
Sydney Laboratory - NATA Site # 18217						X			X			X		X	X
Brisbane Laboratory - NATA Site # 20794								X		X					
Perth Laboratory - NATA Site # 23736															
External Laboratory															
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**										
1	GBH05 3.7-4.0	Aug 31, 2018		Soil	S18-Se08777					X					
2	GBH05 4.7-5.0	Aug 31, 2018		Soil	S18-Se08778					X					
3	GBH05 6.7-7.0	Aug 31, 2018		Soil	S18-Se08779					X			X	X	
4	GBH05 7.7-8.0	Aug 31, 2018		Soil	S18-Se08780					X					
5	GBH05 8.7-9.0	Aug 31, 2018		Soil	S18-Se08781								X	X	
6	QC11	Aug 31, 2018		Soil	S18-Se08782								X	X	
7	QC12	Aug 31, 2018		Soil	S18-Se08783								X	X	
8	BH15 2.6-2.7	Sep 03, 2018		Soil	S18-Se08784		X								
9	BH15 10.5-10.95	Sep 03, 2018		Soil	S18-Se08785				X						

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Brisbane
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NATA # 1261 Site # 20794

Perth
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NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 616384
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Sep 6, 2018 11:29 PM
Due: Sep 14, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477 - TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						CANCELLED	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Metals M8	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271							X				X		X	X	X
Sydney Laboratory - NATA Site # 18217						X			X			X		X	X
Brisbane Laboratory - NATA Site # 20794								X		X					
Perth Laboratory - NATA Site # 23736															
10	BH15 19.5-19.95	Sep 04, 2018		Soil	S18-Se08786			X							
11	BH15 15-15.45	Sep 04, 2018		Soil	S18-Se08787			X							
12	BH15 6.0-6.35	Sep 04, 2018		Soil	S18-Se08788			X							
13	BH15 3.9	Sep 04, 2018		Soil	S18-Se08789			X							
14	BH14 9.5	Sep 03, 2018		Soil	S18-Se08790			X							
15	BH14 24.3-24.45	Sep 04, 2018		Soil	S18-Se08791			X							
16	TRIP SPIKE	Sep 04, 2018		Soil	S18-Se08792							X			
17	TRIP BLANK	Sep 04, 2018		Soil	S18-Se08793										X
18	GBH13 5.7-6.0	Sep 04, 2018		Soil	S18-Se08795						X		X		
19	GBH22 5.2-5.5	Aug 22, 2018		Soil	S18-Se08796						X		X		
20	GBH06 7.7-8.0	Aug 30, 2018		Soil	S18-Se08797	X									

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NATA # 1261
Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Sep 6, 2018 11:29 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:**	616384	**Due:**	Sep 14, 2018
		Phone:	02 4222 2300	**Priority:**	5 Day
		Fax:	02 4222 2301	**Contact Name:**	Iain Lindley
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	2127477 - TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail	CANCELLED	HOLD	HOLD	HOLD	Acid Sulfate Soils Field pH Test	Metals M8	BTEX	Moisture Set	Eurofins | mgt Suite B7	BTEXN and Volatile TRH
Melbourne Laboratory - NATA Site # 1254 & 14271		X				X		X	X	X
Sydney Laboratory - NATA Site # 18217	X			X			X		X	X
Brisbane Laboratory - NATA Site # 20794			X		X					
Perth Laboratory - NATA Site # 23736										
Test Counts	1	8	8	8	4	2	1	6	4	1

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Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Iain Lindley**

Report **618151-S-V3**
Project name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 2127477- TASK 3J FOR CONTAMINATION
Received Date Sep 18, 2018

Client Sample ID			**GBH01 1.7-2.0**	**GBH01 2.7-3.0**	**GBH01 3.7-4.0**	**GBH01 4.7-5.0**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se22863**	**S18-Se22864**	**S18-Se22865**	**S18-Se22866**
Date Sampled			**Sep 07, 2018**	**Sep 07, 2018**	**Sep 07, 2018**	**Sep 07, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	-	< 20
TRH C10-C14	20	mg/kg	< 20	-	-	< 20
TRH C15-C28	50	mg/kg	< 50	-	-	< 50
TRH C29-C36	50	mg/kg	< 50	-	-	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	-	-	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	-	< 0.1
Toluene	0.1	mg/kg	< 0.1	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	-	-	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	129	-	-	105
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	-	< 0.5
TRH C6-C10	20	mg/kg	< 20	-	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	-	< 20
TRH >C10-C16	50	mg/kg	< 50	-	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	-	< 50
TRH >C16-C34	100	mg/kg	< 100	-	-	< 100
TRH >C34-C40	100	mg/kg	< 100	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	-	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	-	1.2
Acenaphthene	0.5	mg/kg	< 0.5	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	< 0.5
Anthracene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	-	< 0.5
Chrysene	0.5	mg/kg	< 0.5	-	-	< 0.5

Client Sample ID			GBH01 1.7-2.0	GBH01 2.7-3.0	GBH01 3.7-4.0	GBH01 4.7-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22863	S18-Se22864	S18-Se22865	S18-Se22866
Date Sampled			Sep 07, 2018	Sep 07, 2018	Sep 07, 2018	Sep 07, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	-	-	< 0.5
Fluorene	0.5	mg/kg	< 0.5	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	-	-	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Pyrene	0.5	mg/kg	< 0.5	-	-	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	-	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	87	-	-	105
p-Terphenyl-d14 (surr.)	1	%	92	-	-	108
% Moisture	1	%	2.5	-	-	2.2
Heavy Metals						
Arsenic	2	mg/kg	2.4	-	-	4.9
Cadmium	0.4	mg/kg	< 0.4	-	-	< 0.4
Chromium	5	mg/kg	< 5	-	-	< 5
Copper	5	mg/kg	< 5	-	-	< 5
Lead	5	mg/kg	< 5	-	-	< 5
Mercury	0.1	mg/kg	< 0.1	-	-	< 0.1
Nickel	5	mg/kg	< 5	-	-	< 5
Zinc	5	mg/kg	8.6	-	-	7.0
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.7	9.8	9.7	9.8
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	8.4	8.2	8.6	8.3
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			GBH01 6.7-7.0	GBH01 7.7-8.0	QC14	GBH04 2.7-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22867	S18-Se22868	S18-Se22869	S18-Se22870
Date Sampled			Sep 07, 2018	Sep 07, 2018	Sep 07, 2018	Sep 06, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	-	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	-	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	-	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	-	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	-	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	86	97	99

Client Sample ID			GBH01 6.7-7.0	GBH01 7.7-8.0	QC14	GBH04 2.7-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22867	S18-Se22868	S18-Se22869	S18-Se22870
Date Sampled			Sep 07, 2018	Sep 07, 2018	Sep 07, 2018	Sep 06, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	-	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	-	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	-	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	-	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	119	105	111
p-Terphenyl-d14 (surr.)	1	%	-	133	120	131
% Moisture	1	%	-	17	3.0	5.0
Heavy Metals						
Arsenic	2	mg/kg	-	4.1	2.4	4.4
Cadmium	0.4	mg/kg	-	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	-	< 5	< 5	< 5
Copper	5	mg/kg	-	< 5	< 5	6.3
Lead	5	mg/kg	-	< 5	< 5	9.7
Mercury	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	-	< 5	< 5	14
Zinc	5	mg/kg	-	< 5	5.2	190
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.4	8.6	9.8	7.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.3	7.1	7.4	8.0
Reaction Ratings*[S05]		comment	1.0	1.0	2.0	4.0

Client Sample ID			GBH04 3.7-4.0	GBH04 4.7-5.0	QC13	GBH07 1.7-2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22871	S18-Se22872	S18-Se22873	S18-Se22874
Date Sampled			Sep 06, 2018	Sep 06, 2018	Sep 06, 2018	Sep 10, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	-
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	-	104	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH*	0.5	mg/kg	-	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	-	108	-
p-Terphenyl-d14 (surr.)	1	%	-	-	125	-
% Moisture	1	%	-	-	6.3	-

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	GBH04 3.7-4.0 Soil S18-Se22871 Sep 06, 2018	GBH04 4.7-5.0 Soil S18-Se22872 Sep 06, 2018	QC13 Soil S18-Se22873 Sep 06, 2018	GBH07 1.7-2.0 Soil S18-Se22874 Sep 10, 2018
Heavy Metals						
Arsenic	2	mg/kg	-	-	5.3	-
Cadmium	0.4	mg/kg	-	-	< 0.4	-
Chromium	5	mg/kg	-	-	< 5	-
Copper	5	mg/kg	-	-	6.9	-
Lead	5	mg/kg	-	-	13	-
Mercury	0.1	mg/kg	-	-	< 0.1	-
Nickel	5	mg/kg	-	-	13	-
Zinc	5	mg/kg	-	-	180	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.3	9.6	7.9	9.2
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	10	8.1	8.2	7.5
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	GBH07 2.7-3.0 Soil S18-Se22875 Sep 10, 2018	GBH07 3.7-4.0 Soil S18-Se22876 Sep 10, 2018	GBH07 4.7-5.0 Soil S18-Se22877 Sep 10, 2018	GBH07 6.7-7.0 Soil S18-Se22878 Sep 10, 2018
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	-	< 20
TRH C10-C14	20	mg/kg	-	-	-	< 20
TRH C15-C28	50	mg/kg	-	-	-	< 50
TRH C29-C36	50	mg/kg	-	-	-	< 50
TRH C10-36 (Total)	50	mg/kg	-	-	-	< 50
BTEX						
Benzene	0.1	mg/kg	-	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	-	< 0.2
o-Xylene	0.1	mg/kg	-	-	-	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	-	93
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	-	< 0.5
TRH C6-C10	20	mg/kg	-	-	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	-	< 20
TRH >C10-C16	50	mg/kg	-	-	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	-	< 100
TRH >C34-C40	100	mg/kg	-	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	-	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	-	1.2
Acenaphthene	0.5	mg/kg	-	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	-	< 0.5

Client Sample ID			GBH07 2.7-3.0	GBH07 3.7-4.0	GBH07 4.7-5.0	GBH07 6.7-7.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se22875**	**S18-Se22876**	**S18-Se22877**	**S18-Se22878**
Date Sampled			**Sep 10, 2018**	**Sep 10, 2018**	**Sep 10, 2018**	**Sep 10, 2018**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benz(a)anthracene	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Chrysene	0.5	mg/kg	-	-	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Fluorene	0.5	mg/kg	-	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	-	< 0.5
Pyrene	0.5	mg/kg	-	-	-	< 0.5
Total PAH*	0.5	mg/kg	-	-	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	-	102
p-Terphenyl-d14 (surr.)	1	%	-	-	-	75
% Moisture	1	%	-	-	-	17
Heavy Metals						
Arsenic	2	mg/kg	-	-	-	5.6
Cadmium	0.4	mg/kg	-	-	-	< 0.4
Chromium	5	mg/kg	-	-	-	< 5
Copper	5	mg/kg	-	-	-	< 5
Lead	5	mg/kg	-	-	-	< 5
Mercury	0.1	mg/kg	-	-	-	< 0.1
Nickel	5	mg/kg	-	-	-	< 5
Zinc	5	mg/kg	-	-	-	< 5
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.4	8.5	9.3	9.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.4	7.1	7.3	7.2
Reaction Ratings*[S05]		comment	4.0	4.0	2.0	2.0

Client Sample ID			GBH07 8.7-9.0	GBH31 1.7-2.0	GBH31 2.7-3.0	GBH31 3.7-4.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se22879**	**S18-Se22880**	**S18-Se22881**	**S18-Se22882**
Date Sampled			**Sep 10, 2018**	**Sep 10, 2018**	**Sep 10, 2018**	**Sep 10, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	-	-
TRH C10-C14	20	mg/kg	< 20	-	-	-
TRH C15-C28	50	mg/kg	< 50	-	-	-
TRH C29-C36	50	mg/kg	< 50	-	-	-
TRH C10-36 (Total)	50	mg/kg	< 50	-	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	-	-
Toluene	0.1	mg/kg	< 0.1	-	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	-

Client Sample ID			GBH07 8.7-9.0	GBH31 1.7-2.0	GBH31 2.7-3.0	GBH31 3.7-4.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22879	S18-Se22880	S18-Se22881	S18-Se22882
Date Sampled			Sep 10, 2018	Sep 10, 2018	Sep 10, 2018	Sep 10, 2018
Test/Reference	LOR	Unit				
BTEX						
o-Xylene	0.1	mg/kg	< 0.1	-	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	-
4-Bromofluorobenzene (surr.)	1	%	90	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	-	-
TRH C6-C10	20	mg/kg	< 20	-	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	-	-
TRH >C10-C16	50	mg/kg	< 50	-	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	-	-
TRH >C16-C34	100	mg/kg	< 100	-	-	-
TRH >C34-C40	100	mg/kg	< 100	-	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	-	-
Acenaphthene	0.5	mg/kg	< 0.5	-	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Chrysene	0.5	mg/kg	< 0.5	-	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	-
Fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	-
Naphthalene	0.5	mg/kg	< 0.5	-	-	-
Phenanthrene	0.5	mg/kg	< 0.5	-	-	-
Pyrene	0.5	mg/kg	< 0.5	-	-	-
Total PAH*	0.5	mg/kg	< 0.5	-	-	-
2-Fluorobiphenyl (surr.)	1	%	101	-	-	-
p-Terphenyl-d14 (surr.)	1	%	68	-	-	-
% Moisture	1	%	27	-	-	-
Heavy Metals						
Arsenic	2	mg/kg	54	-	-	-
Cadmium	0.4	mg/kg	< 0.4	-	-	-
Chromium	5	mg/kg	< 5	-	-	-
Copper	5	mg/kg	< 5	-	-	-
Lead	5	mg/kg	< 5	-	-	-
Mercury	0.1	mg/kg	< 0.1	-	-	-
Nickel	5	mg/kg	< 5	-	-	-
Zinc	5	mg/kg	6.2	-	-	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	8.9	9.5	9.6	10
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	2.8	8.2	7.7	8.3
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	4.0

Client Sample ID			GBH31 4.7-5.0	QC15	GBH14 1.7-2.0	GBH14 2.7-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22883	S18-Se22884	S18-Se22885	S18-Se22886
Date Sampled			Sep 10, 2018	Sep 10, 2018	Sep 10, 2018	Sep 10, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
TRH C10-C14	20	mg/kg	< 20	-	< 20	-
TRH C15-C28	50	mg/kg	< 50	-	< 50	-
TRH C29-C36	50	mg/kg	< 50	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	< 50	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	95	-	95	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	-
TRH >C10-C16	50	mg/kg	< 50	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	111	-	108	-
p-Terphenyl-d14 (surr.)	1	%	79	-	76	-
% Moisture	1	%	5.8	-	3.1	-

Client Sample ID			GBH31 4.7-5.0	QC15	GBH14 1.7-2.0	GBH14 2.7-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22883	S18-Se22884	S18-Se22885	S18-Se22886
Date Sampled			Sep 10, 2018	Sep 10, 2018	Sep 10, 2018	Sep 10, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	4.9	-	3.3	-
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	-
Chromium	5	mg/kg	< 5	-	< 5	-
Copper	5	mg/kg	< 5	-	< 5	-
Lead	5	mg/kg	< 5	-	< 5	-
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	-
Nickel	5	mg/kg	< 5	-	< 5	-
Zinc	5	mg/kg	< 5	-	13	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.5	8.7	-	9.3
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.3	7.2	-	7.5
Reaction Ratings*[S05]		comment	2.0	2.0	-	2.0

Client Sample ID			GBH14 3.7-4.0	GBH14 4.7-5.0	GBH20 1.7-2.0	GBH20 2.7-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22887	S18-Se22888	S18-Se22889	S18-Se22890
Date Sampled			Sep 10, 2018	Sep 10, 2018	Sep 10, 2018	Sep 10, 2018
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.4	9.8	9.3	9.5
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.3	8.8	9.0	10
Reaction Ratings*[S05]		comment	2.0	4.0	4.0	4.0

Client Sample ID			GBH20 3.7-4.0	GBH20 4.7-5.0	GBH20 6.7-7.0	GBH20 8.7-9.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22891	S18-Se22892	S18-Se22893	S18-Se22894
Date Sampled			Sep 10, 2018	Sep 10, 2018	Sep 10, 2018	Sep 10, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	< 20
TRH C10-C14	20	mg/kg	-	-	< 20	< 20
TRH C15-C28	50	mg/kg	-	-	< 50	< 50
TRH C29-C36	50	mg/kg	-	-	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	93	88

Client Sample ID			GBH20 3.7-4.0	GBH20 4.7-5.0	GBH20 6.7-7.0	GBH20 8.7-9.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22891	S18-Se22892	S18-Se22893	S18-Se22894
Date Sampled			Sep 10, 2018	Sep 10, 2018	Sep 10, 2018	Sep 10, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	-	-	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	< 20
TRH >C10-C16	50	mg/kg	-	-	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	< 50
TRH >C16-C34	100	mg/kg	-	-	< 100	< 100
TRH >C34-C40	100	mg/kg	-	-	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	1.2
Acenaphthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluorene	0.5	mg/kg	-	-	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	-	-	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	98	88
p-Terphenyl-d14 (surr.)	1	%	-	-	72	55
Ammonia (as N)	5	mg/kg	-	-	-	< 5
Cyanide (total)	5	mg/kg	-	-	-	< 5
% Moisture	1	%	-	-	14	19
Heavy Metals						
Arsenic	2	mg/kg	-	-	4.4	6.0
Cadmium	0.4	mg/kg	-	-	< 0.4	< 0.4
Chromium	5	mg/kg	-	-	< 5	< 5
Copper	5	mg/kg	-	-	8.7	5.7
Lead	5	mg/kg	-	-	13	16
Mercury	0.1	mg/kg	-	-	< 0.1	< 0.1
Nickel	5	mg/kg	-	-	< 5	< 5
Zinc	5	mg/kg	-	-	83	83
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.7	9.3	9.5	8.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	9.4	9.1	7.4	7.3
Reaction Ratings*[S05]		comment	4.0	4.0	2.0	2.0

Client Sample ID			GBH16 1.7-2.0	GBH16 2.7-3.0	GBH16 3.7-4.0	GBH16 4.7-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22896	S18-Se22897	S18-Se22898	S18-Se22899
Date Sampled			Sep 12, 2018	Sep 12, 2018	Sep 12, 2018	Sep 12, 2018
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	11	9.7	9.7	9.7
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	9.6	7.5	7.9	7.2
Reaction Ratings*[S05]		comment	2.0	2.0	4.0	2.0

Client Sample ID			GBH16 5.7-6.0	GBH16 9.7-10.0	GBH23 0.5-0.7	GBH23 1.7-2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22900	S18-Se22901	S18-Se22902	S18-Se22903
Date Sampled			Sep 12, 2018	Sep 12, 2018	Sep 11, 2018	Sep 11, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	45	-
TRH C15-C28	50	mg/kg	< 50	< 50	140	-
TRH C29-C36	50	mg/kg	< 50	< 50	52	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	237	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	90	87	91	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	-
TRH >C10-C16	50	mg/kg	< 50	< 50	55	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	55	-
TRH >C16-C34	100	mg/kg	< 100	< 100	170	-
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	225	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	0.5	-

Client Sample ID			GBH16 5.7-6.0	GBH16 9.7-10.0	GBH23 0.5-0.7	GBH23 1.7-2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22900	S18-Se22901	S18-Se22902	S18-Se22903
Date Sampled			Sep 12, 2018	Sep 12, 2018	Sep 11, 2018	Sep 11, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	1.2	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	2.2	-
2-Fluorobiphenyl (surr.)	1	%	100	106	98	-
p-Terphenyl-d14 (surr.)	1	%	72	77	106	-
% Moisture	1	%	16	16	8.2	-
Heavy Metals						
Arsenic	2	mg/kg	4.8	2.2	3.9	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	< 5	< 5	13	-
Copper	5	mg/kg	< 5	< 5	25	-
Lead	5	mg/kg	< 5	< 5	25	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Nickel	5	mg/kg	< 5	< 5	< 5	-
Zinc	5	mg/kg	< 5	< 5	230	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.5	9.0	-	9.5
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	7.2	7.2	-	9.4
Reaction Ratings*[S05]		comment	1.0	2.0	-	4.0

Client Sample ID			GBH23 2.7-3.0	GBH23 3.7-4.0	GBH23 6.7-7.0	GBH23 8.7-9.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22904	S18-Se22905	S18-Se22906	S18-Se22907
Date Sampled			Sep 11, 2018	Sep 11, 2018	Sep 11, 2018	Sep 11, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	-	< 20
TRH C10-C14	20	mg/kg	-	-	-	< 20
TRH C15-C28	50	mg/kg	-	-	-	< 50
TRH C29-C36	50	mg/kg	-	-	-	< 50
TRH C10-36 (Total)	50	mg/kg	-	-	-	< 50
BTEX						
Benzene	0.1	mg/kg	-	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	-	< 0.2
o-Xylene	0.1	mg/kg	-	-	-	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	-	85

Client Sample ID			GBH23 2.7-3.0	GBH23 3.7-4.0	GBH23 6.7-7.0	GBH23 8.7-9.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22904	S18-Se22905	S18-Se22906	S18-Se22907
Date Sampled			Sep 11, 2018	Sep 11, 2018	Sep 11, 2018	Sep 11, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	-	< 0.5
TRH C6-C10	20	mg/kg	-	-	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	-	< 20
TRH >C10-C16	50	mg/kg	-	-	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	-	< 100
TRH >C34-C40	100	mg/kg	-	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	-	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	-	1.2
Acenaphthene	0.5	mg/kg	-	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Chrysene	0.5	mg/kg	-	-	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	-	0.6
Fluorene	0.5	mg/kg	-	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	-	1.4
Phenanthrene	0.5	mg/kg	-	-	-	< 0.5
Pyrene	0.5	mg/kg	-	-	-	< 0.5
Total PAH*	0.5	mg/kg	-	-	-	2
2-Fluorobiphenyl (surr.)	1	%	-	-	-	100
p-Terphenyl-d14 (surr.)	1	%	-	-	-	108
% Moisture	1	%	-	-	-	24
Heavy Metals						
Arsenic	2	mg/kg	-	-	-	9.2
Cadmium	0.4	mg/kg	-	-	-	< 0.4
Chromium	5	mg/kg	-	-	-	20
Copper	5	mg/kg	-	-	-	31
Lead	5	mg/kg	-	-	-	69
Mercury	0.1	mg/kg	-	-	-	< 0.1
Nickel	5	mg/kg	-	-	-	14
Zinc	5	mg/kg	-	-	-	520
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	9.0	9.2	9.4	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	10.0	8.9	7.4	-
Reaction Ratings*[S05]		comment	4.0	4.0	2.0	-

Client Sample ID			GBH23 9.7-10.0	QC18	BH17 7.5	BH17 3.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22908	S18-Se22909	S18-Se22910	S18-Se22911
Date Sampled			Sep 11, 2018	Sep 11, 2018	Sep 05, 2018	Sep 05, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	-	-
TRH C10-C14	20	mg/kg	< 20	< 20	-	-
TRH C15-C28	50	mg/kg	< 50	< 50	-	-
TRH C29-C36	50	mg/kg	< 50	< 50	-	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	92	83	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	-	-
TRH C6-C10	20	mg/kg	< 20	< 20	-	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-	-
TRH >C10-C16	50	mg/kg	< 50	< 50	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	-	-
TRH >C16-C34	100	mg/kg	< 100	< 100	-	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	-	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Naphthalene	0.5	mg/kg	< 0.5	0.6	-	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PAH*	0.5	mg/kg	< 0.5	0.6	-	-
2-Fluorobiphenyl (surr.)	1	%	95	95	-	-
p-Terphenyl-d14 (surr.)	1	%	61	60	-	-
Ammonia (as N)	5	mg/kg	< 5	< 5	-	-
Cyanide (total)	5	mg/kg	< 5	< 5	-	-
% Moisture	1	%	17	18	-	7.5

Client Sample ID			GBH23 9.7-10.0	QC18	BH17 7.5	BH17 3.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22908	S18-Se22909	S18-Se22910	S18-Se22911
Date Sampled			Sep 11, 2018	Sep 11, 2018	Sep 05, 2018	Sep 05, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	2.8	6.4	-	3.9
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	< 0.4
Chromium	5	mg/kg	< 5	11	-	52
Copper	5	mg/kg	< 5	18	-	28
Lead	5	mg/kg	< 5	42	-	24
Mercury	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Nickel	5	mg/kg	< 5	10	-	14
Zinc	5	mg/kg	< 5	350	-	220
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	8.6	8.9	8.3	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	8.1	5.6	2.3	-
Reaction Ratings*[S05]		comment	4.0	4.0	4.0	-

Client Sample ID			BH17 1.5	BH17 13.5	BH21 1.3	BH21 6.0-6.45
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22912	S18-Se22913	S18-Se22914	S18-Se22915
Date Sampled			Sep 05, 2018	Sep 06, 2018	Sep 10, 2018	Sep 10, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	-
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	-	93	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			BH17 1.5	BH17 13.5	BH21 1.3	BH21 6.0-6.45
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22912	S18-Se22913	S18-Se22914	S18-Se22915
Date Sampled			Sep 05, 2018	Sep 06, 2018	Sep 10, 2018	Sep 10, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH*	0.5	mg/kg	-	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	-	107	-
p-Terphenyl-d14 (surr.)	1	%	-	-	59	-
% Moisture	1	%	8.3	-	22	-
Heavy Metals						
Arsenic	2	mg/kg	3.2	-	5.3	-
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	-
Chromium	5	mg/kg	14	-	34	-
Copper	5	mg/kg	25	-	24	-
Lead	5	mg/kg	17	-	84	-
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	-
Nickel	5	mg/kg	8.6	-	< 5	-
Zinc	5	mg/kg	85	-	82	-
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	8.2	-	6.5
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	7.2	-	5.6
Reaction Ratings*[S05]		comment	-	2.0	-	2.0

Client Sample ID			BH16 1.0	BH16 3.0-3.5	BH21 9.0-9.12	DS01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22916	S18-Se22917	S18-Se22918	S18-Se22919
Date Sampled			Sep 05, 2018	Sep 06, 2018	Sep 10, 2018	Sep 07, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	-	< 20
TRH C10-C14	20	mg/kg	-	< 20	-	< 20
TRH C15-C28	50	mg/kg	-	< 50	-	120
TRH C29-C36	50	mg/kg	-	< 50	-	96
TRH C10-36 (Total)	50	mg/kg	-	< 50	-	216

Client Sample ID			BH16 1.0	BH16 3.0-3.5	BH21 9.0-9.12	DS01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-Se22916	S18-Se22917	S18-Se22918	S18-Se22919
Date Sampled			Sep 05, 2018	Sep 06, 2018	Sep 10, 2018	Sep 07, 2018
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	-	< 0.1
Xylenes - Total	0.3	mg/kg	-	< 0.3	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	88	-	101
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	-	< 0.5
TRH C6-C10	20	mg/kg	-	< 20	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	-	< 20
TRH >C10-C16	50	mg/kg	-	< 50	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	-	< 50
TRH >C16-C34	100	mg/kg	-	< 100	-	190
TRH >C34-C40	100	mg/kg	-	< 100	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	-	190
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.7	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.3	-	1.2
Acenaphthene	0.5	mg/kg	-	< 0.5	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	0.8	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	0.7	-	< 0.5
Chrysene	0.5	mg/kg	-	0.5	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	-	< 0.5
Fluoranthene	0.5	mg/kg	-	1.4	-	< 0.5
Fluorene	0.5	mg/kg	-	< 0.5	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	< 0.5
Naphthalene	0.5	mg/kg	-	2.7	-	< 0.5
Phenanthrene	0.5	mg/kg	-	0.7	-	< 0.5
Pyrene	0.5	mg/kg	-	1.2	-	< 0.5
Total PAH*	0.5	mg/kg	-	8	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	102	-	99
p-Terphenyl-d14 (surr.)	1	%	-	98	-	99
% Moisture	1	%	11	8.5	-	10
Heavy Metals						
Arsenic	2	mg/kg	< 2	< 2	-	2.5
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	< 0.4
Chromium	5	mg/kg	550	< 5	-	410
Copper	5	mg/kg	26	< 5	-	21
Lead	5	mg/kg	11	< 5	-	14
Mercury	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Nickel	5	mg/kg	11	< 5	-	15
Zinc	5	mg/kg	99	< 5	-	88

Client Sample ID			BH16 1.0	BH16 3.0-3.5	BH21 9.0-9.12	DS01
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se22916**	**S18-Se22917**	**S18-Se22918**	**S18-Se22919**
Date Sampled			**Sep 05, 2018**	**Sep 06, 2018**	**Sep 10, 2018**	**Sep 07, 2018**
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	-	-	6.9	-
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	-	-	5.6	-
Reaction Ratings*[S05]		comment	-	-	2.0	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B2			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Sep 21, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Sep 21, 2018	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 21, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 21, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8	Melbourne	Sep 21, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins | mgt Suite B7			
Polycyclic Aromatic Hydrocarbons	Melbourne	Sep 21, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Ammonia (as N)	Melbourne	Sep 21, 2018	7 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Cyanide (total)	Melbourne	Sep 21, 2018	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Acid Sulfate Soils Field pH Test	Brisbane	Sep 19, 2018	7 Days
- Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests			
% Moisture	Melbourne	Sep 18, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
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Order No.:
Report #: 618151
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Sep 18, 2018 12:58 PM
Due: Sep 25, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
External Laboratory																
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**											
1	GBH01 1.7-2.0	Sep 07, 2018		Soil	S18-Se22863						X		X	X		
2	GBH01 2.7-3.0	Sep 07, 2018		Soil	S18-Se22864						X					
3	GBH01 3.7-4.0	Sep 07, 2018		Soil	S18-Se22865						X					
4	GBH01 4.7-5.0	Sep 07, 2018		Soil	S18-Se22866						X		X	X		
5	GBH01 6.7-7.0	Sep 07, 2018		Soil	S18-Se22867						X					
6	GBH01 7.7-8.0	Sep 07, 2018		Soil	S18-Se22868						X		X	X		
7	QC14	Sep 07, 2018		Soil	S18-Se22869						X		X	X		
8	GBH04 2.7-3.0	Sep 06, 2018		Soil	S18-Se22870						X		X	X		
9	GBH04 3.7-4.0	Sep 06, 2018		Soil	S18-Se22871						X					

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
10	GBH04 4.7-5.0	Sep 06, 2018		Soil	S18-Se22872						X					
11	QC13	Sep 06, 2018		Soil	S18-Se22873						X		X	X		
12	GBH07 1.7-2.0	Sep 10, 2018		Soil	S18-Se22874						X					
13	GBH07 2.7-3.0	Sep 10, 2018		Soil	S18-Se22875						X					
14	GBH07 3.7-4.0	Sep 10, 2018		Soil	S18-Se22876						X					
15	GBH07 4.7-5.0	Sep 10, 2018		Soil	S18-Se22877						X					
16	GBH07 6.7-7.0	Sep 10, 2018		Soil	S18-Se22878						X		X	X		
17	GBH07 8.7-9.0	Sep 10, 2018		Soil	S18-Se22879						X		X	X		
18	GBH31 1.7-2.0	Sep 10, 2018		Soil	S18-Se22880						X					
19	GBH31 2.7-3.0	Sep 10, 2018		Soil	S18-Se22881						X					
20	GBH31 3.7-4.0	Sep 10, 2018		Soil	S18-Se22882						X					
21	GBH31 4.7-5.0	Sep 10, 2018		Soil	S18-Se22883						X		X	X		

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
22	QC15	Sep 10, 2018		Soil	S18-Se22884						X					
23	GBH14 1.7-2.0	Sep 10, 2018		Soil	S18-Se22885								X	X		
24	GBH14 2.7-3.0	Sep 10, 2018		Soil	S18-Se22886						X					
25	GBH14 3.7-4.0	Sep 10, 2018		Soil	S18-Se22887						X					
26	GBH14 4.7-5.0	Sep 10, 2018		Soil	S18-Se22888						X					
27	GBH20 1.7-2.0	Sep 10, 2018		Soil	S18-Se22889						X					
28	GBH20 2.7-3.0	Sep 10, 2018		Soil	S18-Se22890						X					
29	GBH20 3.7-4.0	Sep 10, 2018		Soil	S18-Se22891						X					
30	GBH20 4.7-5.0	Sep 10, 2018		Soil	S18-Se22892						X					
31	GBH20 6.7-7.0	Sep 10, 2018		Soil	S18-Se22893						X		X	X		
32	GBH20 8.7-9.0	Sep 10, 2018		Soil	S18-Se22894	X		X			X		X	X		
33	QC17	Sep 10, 2018		Soil	S18-Se22895		X									

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
34	GBH16 1.7-2.0	Sep 12, 2018		Soil	S18-Se22896						X					
35	GBH16 2.7-3.0	Sep 12, 2018		Soil	S18-Se22897						X					
36	GBH16 3.7-4.0	Sep 12, 2018		Soil	S18-Se22898						X					
37	GBH16 4.7-5.0	Sep 12, 2018		Soil	S18-Se22899						X					
38	GBH16 5.7-6.0	Sep 12, 2018		Soil	S18-Se22900						X		X	X		
39	GBH16 9.7-10.0	Sep 12, 2018		Soil	S18-Se22901						X		X	X		
40	GBH23 0.5-0.7	Sep 11, 2018		Soil	S18-Se22902								X	X		
41	GBH23 1.7-2.0	Sep 11, 2018		Soil	S18-Se22903						X					
42	GBH23 2.7-3.0	Sep 11, 2018		Soil	S18-Se22904						X					
43	GBH23 3.7-4.0	Sep 11, 2018		Soil	S18-Se22905						X					
44	GBH23 6.7-7.0	Sep 11, 2018		Soil	S18-Se22906						X					

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Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
45	GBH23 8.7-9.0	Sep 11, 2018		Soil	S18-Se22907		X						X	X		
46	GBH23 9.7-10.0	Sep 11, 2018		Soil	S18-Se22908	X		X			X		X	X		
47	QC18	Sep 11, 2018		Soil	S18-Se22909	X		X			X		X	X		
48	BH17 7.5	Sep 05, 2018		Soil	S18-Se22910						X					
49	BH17 3.5	Sep 05, 2018		Soil	S18-Se22911							X	X			
50	BH17 1.5	Sep 05, 2018		Soil	S18-Se22912							X	X			
51	BH17 13.5	Sep 06, 2018		Soil	S18-Se22913						X					
52	BH21 1.3	Sep 10, 2018		Soil	S18-Se22914								X	X		
53	BH21 6.0-6.45	Sep 10, 2018		Soil	S18-Se22915						X					
54	BH16 1.0	Sep 05, 2018		Soil	S18-Se22916							X	X			
55	BH16 3.0-3.5	Sep 06, 2018		Soil	S18-Se22917								X	X		

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Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
56	BH21 9.0-9.12	Sep 10, 2018		Soil	S18-Se22918						X					
57	DS01	Sep 07, 2018		Soil	S18-Se22919								X	X		
58	DW01	Sep 07, 2018		Water	S18-Se22920					X		X			X	X
59	GBH01 0.6-0.8	Sep 07, 2018		Soil	S18-Se22995				X							
60	GBH04 1.5-1.7	Sep 06, 2018		Soil	S18-Se22996				X							
61	GBH07 0.5-0.7	Sep 10, 2018		Soil	S18-Se22997				X							
62	GBH31 0.8-0.9	Sep 10, 2018		Soil	S18-Se22998				X							
63	QC16	Sep 10, 2018		Soil	S18-Se22999				X							
64	GBH20 0.5-0.7	Sep 10, 2018		Soil	S18-Se23000				X							
65	GBH16 0.6-0.8	Sep 10, 2018		Soil	S18-Se23001				X							
Test Counts						3	2	3	7	1	47	4	24	21	1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Ammonia (as N)	mg/kg	< 5			5	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	85			70-130	Pass	
TRH C10-C14	%	89			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	87			70-130	Pass	
Toluene	%	100			70-130	Pass	
Ethylbenzene	%	113			70-130	Pass	
m&p-Xylenes	%	113			70-130	Pass	
Xylenes - Total	%	114			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	106			70-130	Pass	
TRH C6-C10	%	83			70-130	Pass	
TRH >C10-C16	%	87			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	90			70-130	Pass	
Acenaphthylene	%	93			70-130	Pass	
Anthracene	%	85			70-130	Pass	
Benz(a)anthracene	%	89			70-130	Pass	
Benzo(a)pyrene	%	83			70-130	Pass	
Benzo(b&j)fluoranthene	%	91			70-130	Pass	
Benzo(g.h.i)perylene	%	97			70-130	Pass	
Benzo(k)fluoranthene	%	95			70-130	Pass	
Chrysene	%	93			70-130	Pass	
Dibenz(a.h)anthracene	%	70			70-130	Pass	
Fluoranthene	%	111			70-130	Pass	
Fluorene	%	89			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	97			70-130	Pass	
Naphthalene	%	89			70-130	Pass	
Phenanthrene	%	81			70-130	Pass	
Pyrene	%	107			70-130	Pass	
LCS - % Recovery							
Ammonia (as N)	%	109			70-130	Pass	
Cyanide (total)	%	118			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	108			80-120	Pass	
Cadmium	%	102			80-120	Pass	
Chromium	%	110			80-120	Pass	
Copper	%	112			80-120	Pass	
Lead	%	120			80-120	Pass	
Mercury	%	102			75-125	Pass	
Nickel	%	109			80-120	Pass	
Zinc	%	107			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Se22866	CP	%	94			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Se22866	CP	%	103			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Toluene	S18-Se22866	CP	%	113			70-130	Pass	
Ethylbenzene	S18-Se22866	CP	%	113			70-130	Pass	
m&p-Xylenes	S18-Se22866	CP	%	121			70-130	Pass	
o-Xylene	S18-Se22866	CP	%	126			70-130	Pass	
Xylenes - Total	S18-Se22866	CP	%	123			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-Se22866	CP	%	126			70-130	Pass	
TRH C6-C10	S18-Se22866	CP	%	94			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S18-Se22866	CP	%	88			70-130	Pass	
Acenaphthylene	S18-Se22866	CP	%	102			70-130	Pass	
Anthracene	S18-Se22866	CP	%	93			70-130	Pass	
Benz(a)anthracene	S18-Se22866	CP	%	91			70-130	Pass	
Benzo(a)pyrene	S18-Se22866	CP	%	88			70-130	Pass	
Benzo(b&j)fluoranthene	S18-Se22866	CP	%	78			70-130	Pass	
Benzo(g.h.i)perylene	S18-Se22866	CP	%	93			70-130	Pass	
Benzo(k)fluoranthene	S18-Se22866	CP	%	106			70-130	Pass	
Chrysene	S18-Se22866	CP	%	101			70-130	Pass	
Dibenz(a.h)anthracene	S18-Se22866	CP	%	99			70-130	Pass	
Fluoranthene	S18-Se22866	CP	%	96			70-130	Pass	
Fluorene	S18-Se22866	CP	%	95			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S18-Se22866	CP	%	82			70-130	Pass	
Naphthalene	S18-Se22866	CP	%	106			70-130	Pass	
Phenanthrene	S18-Se22866	CP	%	95			70-130	Pass	
Pyrene	S18-Se22866	CP	%	105			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-Se22866	CP	%	96			75-125	Pass	
Cadmium	S18-Se22866	CP	%	92			75-125	Pass	
Chromium	S18-Se22866	CP	%	99			75-125	Pass	
Copper	S18-Se22866	CP	%	97			75-125	Pass	
Lead	S18-Se22866	CP	%	102			75-125	Pass	
Mercury	S18-Se22866	CP	%	101			70-130	Pass	
Nickel	S18-Se22866	CP	%	95			75-125	Pass	
Zinc	S18-Se22866	CP	%	92			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Se22894	CP	%	76			70-130	Pass	
TRH C10-C14	S18-Se22894	CP	%	75			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Se22894	CP	%	75			70-130	Pass	
Toluene	S18-Se22894	CP	%	88			70-130	Pass	
Ethylbenzene	S18-Se22894	CP	%	104			70-130	Pass	
m&p-Xylenes	S18-Se22894	CP	%	106			70-130	Pass	
o-Xylene	S18-Se22894	CP	%	109			70-130	Pass	
Xylenes - Total	S18-Se22894	CP	%	107			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-Se22894	CP	%	99			70-130	Pass	
TRH C6-C10	S18-Se22894	CP	%	74			70-130	Pass	
TRH >C10-C16	S18-Se22894	CP	%	82			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M18-Oc24712	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-Se22894	CP	%	108			75-125	Pass	
Cadmium	S18-Se22894	CP	%	103			75-125	Pass	
Chromium	S18-Se22894	CP	%	110			75-125	Pass	
Copper	S18-Se22894	CP	%	110			75-125	Pass	
Lead	S18-Se22894	CP	%	110			75-125	Pass	
Mercury	S18-Se22894	CP	%	104			70-130	Pass	
Nickel	S18-Se22894	CP	%	103			75-125	Pass	
Zinc	S18-Se22894	CP	%	103			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-Se22898	CP	%	101			70-130	Pass	
Cadmium	S18-Se22898	CP	%	106			70-130	Pass	
Chromium	S18-Se22898	CP	%	112			70-130	Pass	
Copper	S18-Se22898	CP	%	104			70-130	Pass	
Lead	S18-Se22898	CP	%	103			70-130	Pass	
Mercury	S18-Se22898	CP	%	113			70-130	Pass	
Nickel	S18-Se22898	CP	%	105			70-130	Pass	
Zinc	S18-Se22898	CP	%	113			70-130	Pass	
Spike - % Recovery									
				Result 1					
Cyanide (total)	S18-Se22908	CP	%	14			70-130	Fail	Q08
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-Se22916	CP	%	103			75-125	Pass	
Cadmium	S18-Se22916	CP	%	99			75-125	Pass	
Copper	S18-Se22916	CP	%	93			75-125	Pass	
Lead	S18-Se22916	CP	%	112			75-125	Pass	
Mercury	S18-Se22916	CP	%	107			70-130	Pass	
Nickel	S18-Se22916	CP	%	115			75-125	Pass	
Zinc	S18-Se22916	CP	%	114			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-Se22863	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S18-Se22863	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S18-Se22863	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S18-Se22863	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-Se22863	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-Se22863	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-Se22863	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-Se22863	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-Se22863	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-Se22863	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-Se22863	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-Se22863	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S18-Se22863	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S18-Se22863	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S18-Se22863	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-Se22863	CP	%	2.5	2.6	2.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Se22863	CP	mg/kg	2.4	2.0	18	30%	Pass	
Cadmium	S18-Se22863	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Se22863	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S18-Se22863	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S18-Se22863	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S18-Se22863	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Se22863	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Se22863	CP	mg/kg	8.6	< 5	75	30%	Fail	Q15
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Se22863	CP	pH Units	9.7	9.7	pass	30%	Pass	
Reaction Ratings*	S18-Se22863	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Se22866	CP	mg/kg	4.9	4.8	1.0	30%	Pass	
Cadmium	S18-Se22866	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Se22866	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S18-Se22866	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S18-Se22866	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S18-Se22866	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Se22866	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Se22866	CP	mg/kg	7.0	7.0	1.0	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Se22873	CP	pH Units	7.9	7.9	pass	30%	Pass	
Reaction Ratings*	S18-Se22873	CP	comment	4.0	4.0	pass	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Se22883	CP	pH Units	9.5	9.5	pass	30%	Pass	
Reaction Ratings*	S18-Se22883	CP	comment	2.0	2.0	pass	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-Se22893	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-Se22893	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-Se22893	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-Se22893	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-Se22893	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-Se22893	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-Se22893	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-Se22893	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S18-Se22893	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-Se22893	CP	%	14	16	13	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Se22893	CP	mg/kg	4.4	4.3	1.0	30%	Pass	
Cadmium	S18-Se22893	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Se22893	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S18-Se22893	CP	mg/kg	8.7	7.7	13	30%	Pass	
Lead	S18-Se22893	CP	mg/kg	13	8.2	44	30%	Fail	Q15
Mercury	S18-Se22893	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Se22893	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Se22893	CP	mg/kg	83	70	18	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	M18-Oc24712	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Cyanide (total)	M18-Se27062	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Se22894	CP	mg/kg	6.0	5.8	3.0	30%	Pass	
Cadmium	S18-Se22894	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Se22894	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S18-Se22894	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Se22894	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S18-Se22894	CP	mg/kg	83	83	1.0	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Se22894	CP	pH Units	8.6	8.6	pass	30%	Pass	
Reaction Ratings*	S18-Se22894	CP	comment	2.0	2.0	pass	30%	Pass	
Duplicate									
Acid Sulfate Soils Field pH Test				Result 1	Result 2	RPD			
pH-F (Field pH test)*	S18-Se22906	CP	pH Units	9.4	9.4	pass	30%	Pass	
Reaction Ratings*	S18-Se22906	CP	comment	2.0	2.0	pass	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-Se22914	CP	%	22	20	6.0	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Se22914	CP	mg/kg	5.3	8.1	43	30%	Fail	Q15
Cadmium	S18-Se22914	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Se22914	CP	mg/kg	34	32	6.0	30%	Pass	
Copper	S18-Se22914	CP	mg/kg	24	36	42	30%	Fail	Q15
Lead	S18-Se22914	CP	mg/kg	84	93	10	30%	Pass	
Mercury	S18-Se22914	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Se22914	CP	mg/kg	< 5	6.4	45	30%	Fail	Q15
Zinc	S18-Se22914	CP	mg/kg	82	96	16	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Se22916	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S18-Se22916	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Se22916	CP	mg/kg	550	550	<1	30%	Pass	
Copper	S18-Se22916	CP	mg/kg	26	25	1.0	30%	Pass	
Lead	S18-Se22916	CP	mg/kg	11	11	1.0	30%	Pass	
Mercury	S18-Se22916	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-Se22916	CP	mg/kg	11	11	1.0	30%	Pass	
Zinc	S18-Se22916	CP	mg/kg	99	98	1.0	30%	Pass	

Comments

This report has been revised (V3) to include additional QC results for Ammonia.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.
S05	Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

Authorised By

Nibha Vaidya	Analytical Services Manager
Chris Bennett	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)
Myles Clark	Senior Analyst-SPOCAS (QLD)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
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NSW 2500

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Iain Lindley**

Report **618151-W-V3**
Project name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 2127477- TASK 3J FOR CONTAMINATION
Received Date Sep 18, 2018

Client Sample ID			**DW01**
Sample Matrix			**Water**
Eurofins | mgt Sample No.			**S18-Se22920**
Date Sampled			**Sep 07, 2018**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	0.05
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	97
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.01	mg/L	< 0.01
TRH C6-C10	0.02	mg/L	0.05
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	0.05
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
Polycyclic Aromatic Hydrocarbons (Trace level)			
Acenaphthene	0.00001	mg/L	< 0.00001
Acenaphthylene	0.00001	mg/L	< 0.00001
Anthracene	0.00001	mg/L	< 0.00001
Benz(a)anthracene	0.00001	mg/L	< 0.00001
Benzo(a)pyrene	0.00001	mg/L	< 0.00001
Benzo(b&j)fluoranthene	0.00001	mg/L	< 0.00001
Benzo(g.h.i)perylene	0.00001	mg/L	< 0.00001
Benzo(k)fluoranthene	0.00001	mg/L	< 0.00001
Chrysene	0.00001	mg/L	< 0.00001
Dibenz(a.h)anthracene	0.00001	mg/L	< 0.00001
Fluoranthene	0.00001	mg/L	< 0.00001
Fluorene	0.00001	mg/L	< 0.00001

Client Sample ID			DW01
Sample Matrix			Water
Eurofins | mgt Sample No.			S18-Se22920
Date Sampled			Sep 07, 2018
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons (Trace level)			
Indeno(1.2.3-cd)pyrene	0.00001	mg/L	< 0.00001
Naphthalene	0.00001	mg/L	< 0.00001
Phenanthrene	0.00001	mg/L	< 0.00001
Pyrene	0.00001	mg/L	< 0.00001
Total PAH*	0.00001	mg/L	< 0.00001
2-Fluorobiphenyl (surr.)	1	%	68
p-Terphenyl-d14 (surr.)	1	%	69
pH (at 25°C)	0.1	pH Units	7.6
Heavy Metals			
Arsenic	0.001	mg/L	0.002
Cadmium	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	0.005
Copper	0.001	mg/L	0.51
Lead	0.001	mg/L	0.001
Mercury	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	0.008
Zinc	0.005	mg/L	0.076

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B2			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Sep 21, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Sep 20, 2018	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 20, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 21, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8	Melbourne	Sep 21, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Polycyclic Aromatic Hydrocarbons (Trace level)	Melbourne	Sep 21, 2018	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
pH (at 25°C)	Melbourne	Sep 20, 2018	0 Hours
- Method: LTM-GEN-7090 pH in water by ISE			

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Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
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Order No.:
Report #: 618151
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Sep 18, 2018 12:58 PM
Due: Sep 25, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
External Laboratory																
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**											
1	GBH01 1.7-2.0	Sep 07, 2018		Soil	S18-Se22863						X		X	X		
2	GBH01 2.7-3.0	Sep 07, 2018		Soil	S18-Se22864						X					
3	GBH01 3.7-4.0	Sep 07, 2018		Soil	S18-Se22865						X					
4	GBH01 4.7-5.0	Sep 07, 2018		Soil	S18-Se22866						X		X	X		
5	GBH01 6.7-7.0	Sep 07, 2018		Soil	S18-Se22867						X					
6	GBH01 7.7-8.0	Sep 07, 2018		Soil	S18-Se22868						X		X	X		
7	QC14	Sep 07, 2018		Soil	S18-Se22869						X		X	X		
8	GBH04 2.7-3.0	Sep 06, 2018		Soil	S18-Se22870						X		X	X		
9	GBH04 3.7-4.0	Sep 06, 2018		Soil	S18-Se22871						X					

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Received:	Sep 18, 2018 12:58 PM
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Priority:	5 Day
Contact Name:	Iain Lindley

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
10	GBH04 4.7-5.0	Sep 06, 2018		Soil	S18-Se22872						X					
11	QC13	Sep 06, 2018		Soil	S18-Se22873						X		X	X		
12	GBH07 1.7-2.0	Sep 10, 2018		Soil	S18-Se22874						X					
13	GBH07 2.7-3.0	Sep 10, 2018		Soil	S18-Se22875						X					
14	GBH07 3.7-4.0	Sep 10, 2018		Soil	S18-Se22876						X					
15	GBH07 4.7-5.0	Sep 10, 2018		Soil	S18-Se22877						X					
16	GBH07 6.7-7.0	Sep 10, 2018		Soil	S18-Se22878						X		X	X		
17	GBH07 8.7-9.0	Sep 10, 2018		Soil	S18-Se22879						X		X	X		
18	GBH31 1.7-2.0	Sep 10, 2018		Soil	S18-Se22880						X					
19	GBH31 2.7-3.0	Sep 10, 2018		Soil	S18-Se22881						X					
20	GBH31 3.7-4.0	Sep 10, 2018		Soil	S18-Se22882						X					
21	GBH31 4.7-5.0	Sep 10, 2018		Soil	S18-Se22883						X		X	X		

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Project ID:	2127477- TASK 3J FOR CONTAMINATION		

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Contact Name:	Iain Lindley

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
22	QC15	Sep 10, 2018		Soil	S18-Se22884						X					
23	GBH14 1.7-2.0	Sep 10, 2018		Soil	S18-Se22885								X	X		
24	GBH14 2.7-3.0	Sep 10, 2018		Soil	S18-Se22886						X					
25	GBH14 3.7-4.0	Sep 10, 2018		Soil	S18-Se22887						X					
26	GBH14 4.7-5.0	Sep 10, 2018		Soil	S18-Se22888						X					
27	GBH20 1.7-2.0	Sep 10, 2018		Soil	S18-Se22889						X					
28	GBH20 2.7-3.0	Sep 10, 2018		Soil	S18-Se22890						X					
29	GBH20 3.7-4.0	Sep 10, 2018		Soil	S18-Se22891						X					
30	GBH20 4.7-5.0	Sep 10, 2018		Soil	S18-Se22892						X					
31	GBH20 6.7-7.0	Sep 10, 2018		Soil	S18-Se22893						X		X	X		
32	GBH20 8.7-9.0	Sep 10, 2018		Soil	S18-Se22894	X		X			X		X	X		
33	QC17	Sep 10, 2018		Soil	S18-Se22895		X									

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Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
34	GBH16 1.7-2.0	Sep 12, 2018		Soil	S18-Se22896						X					
35	GBH16 2.7-3.0	Sep 12, 2018		Soil	S18-Se22897						X					
36	GBH16 3.7-4.0	Sep 12, 2018		Soil	S18-Se22898						X					
37	GBH16 4.7-5.0	Sep 12, 2018		Soil	S18-Se22899						X					
38	GBH16 5.7-6.0	Sep 12, 2018		Soil	S18-Se22900						X		X	X		
39	GBH16 9.7-10.0	Sep 12, 2018		Soil	S18-Se22901						X		X	X		
40	GBH23 0.5-0.7	Sep 11, 2018		Soil	S18-Se22902								X	X		
41	GBH23 1.7-2.0	Sep 11, 2018		Soil	S18-Se22903						X					
42	GBH23 2.7-3.0	Sep 11, 2018		Soil	S18-Se22904						X					
43	GBH23 3.7-4.0	Sep 11, 2018		Soil	S18-Se22905						X					
44	GBH23 6.7-7.0	Sep 11, 2018		Soil	S18-Se22906						X					

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Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
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Order No.:
Report #: 618151
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Sep 18, 2018 12:58 PM
Due: Sep 25, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
45	GBH23 8.7-9.0	Sep 11, 2018		Soil	S18-Se22907		X						X	X		
46	GBH23 9.7-10.0	Sep 11, 2018		Soil	S18-Se22908	X		X			X		X	X		
47	QC18	Sep 11, 2018		Soil	S18-Se22909	X		X			X		X	X		
48	BH17 7.5	Sep 05, 2018		Soil	S18-Se22910						X					
49	BH17 3.5	Sep 05, 2018		Soil	S18-Se22911							X	X			
50	BH17 1.5	Sep 05, 2018		Soil	S18-Se22912							X	X			
51	BH17 13.5	Sep 06, 2018		Soil	S18-Se22913						X					
52	BH21 1.3	Sep 10, 2018		Soil	S18-Se22914								X	X		
53	BH21 6.0-6.45	Sep 10, 2018		Soil	S18-Se22915						X					
54	BH16 1.0	Sep 05, 2018		Soil	S18-Se22916							X	X			
55	BH16 3.0-3.5	Sep 06, 2018		Soil	S18-Se22917								X	X		

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Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
56	BH21 9.0-9.12	Sep 10, 2018		Soil	S18-Se22918						X					
57	DS01	Sep 07, 2018		Soil	S18-Se22919								X	X		
58	DW01	Sep 07, 2018		Water	S18-Se22920					X		X			X	X
59	GBH01 0.6-0.8	Sep 07, 2018		Soil	S18-Se22995				X							
60	GBH04 1.5-1.7	Sep 06, 2018		Soil	S18-Se22996				X							
61	GBH07 0.5-0.7	Sep 10, 2018		Soil	S18-Se22997				X							
62	GBH31 0.8-0.9	Sep 10, 2018		Soil	S18-Se22998				X							
63	QC16	Sep 10, 2018		Soil	S18-Se22999				X							
64	GBH20 0.5-0.7	Sep 10, 2018		Soil	S18-Se23000				X							
65	GBH16 0.6-0.8	Sep 10, 2018		Soil	S18-Se23001				X							
Test Counts						3	2	3	7	1	47	4	24	21	1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons (Trace level)							
Acenaphthene	mg/L	< 0.00001			0.00001	Pass	
Acenaphthylene	mg/L	< 0.00001			0.00001	Pass	
Anthracene	mg/L	< 0.00001			0.00001	Pass	
Benz(a)anthracene	mg/L	< 0.00001			0.00001	Pass	
Benzo(a)pyrene	mg/L	< 0.00001			0.00001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.00001			0.00001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.00001			0.00001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.00001			0.00001	Pass	
Chrysene	mg/L	< 0.00001			0.00001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.00001			0.00001	Pass	
Fluoranthene	mg/L	< 0.00001			0.00001	Pass	
Fluorene	mg/L	< 0.00001			0.00001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.00001			0.00001	Pass	
Naphthalene	mg/L	< 0.00001			0.00001	Pass	
Phenanthrene	mg/L	< 0.00001			0.00001	Pass	
Pyrene	mg/L	< 0.00001			0.00001	Pass	
Total PAH*	mg/L	< 0.00001			0.00001	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C6-C9	%	92			70-130	Pass	
TRH C10-C14	%	118			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	102			70-130	Pass	
Toluene	%	92			70-130	Pass	
Ethylbenzene	%	80			70-130	Pass	
m&p-Xylenes	%	85			70-130	Pass	
Xylenes - Total	%	87			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	91			70-130	Pass	
TRH C6-C10	%	93			70-130	Pass	
TRH >C10-C16	%	111			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons (Trace level)							
Acenaphthene	%	78			70-130	Pass	
Acenaphthylene	%	81			70-130	Pass	
Anthracene	%	77			70-130	Pass	
Benz(a)anthracene	%	125			70-130	Pass	
Benzo(a)pyrene	%	121			70-130	Pass	
Benzo(b&j)fluoranthene	%	111			70-130	Pass	
Benzo(g.h.i)perylene	%	121			70-130	Pass	
Benzo(k)fluoranthene	%	113			70-130	Pass	
Chrysene	%	120			70-130	Pass	
Dibenz(a.h)anthracene	%	107			70-130	Pass	
Fluoranthene	%	118			70-130	Pass	
Fluorene	%	75			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	119			70-130	Pass	
Naphthalene	%	85			70-130	Pass	
Phenanthrene	%	78			70-130	Pass	
Pyrene	%	116			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	106			80-120	Pass	
Cadmium	%	99			80-120	Pass	
Chromium	%	105			80-120	Pass	
Copper	%	107			80-120	Pass	
Lead	%	102			80-120	Pass	
Mercury	%	107			75-125	Pass	
Nickel	%	109			80-120	Pass	
Zinc	%	105			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M18-Se26509	NCP	%	97			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M18-Se26509	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons (Trace level)				Result 1					
Acenaphthene	M18-Se19126	NCP	%	114			70-130	Pass	
Acenaphthylene	M18-Se19126	NCP	%	121			70-130	Pass	
Anthracene	M18-Se19126	NCP	%	128			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benz(a)anthracene	M18-Se19126	NCP	%	105			70-130	Pass	
Benzo(a)pyrene	M18-Se19126	NCP	%	107			70-130	Pass	
Benzo(b&j)fluoranthene	M18-Se19126	NCP	%	109			70-130	Pass	
Benzo(g.h.i)perylene	M18-Se19126	NCP	%	84			70-130	Pass	
Benzo(k)fluoranthene	M18-Se19126	NCP	%	107			70-130	Pass	
Chrysene	M18-Se19126	NCP	%	103			70-130	Pass	
Dibenz(a.h)anthracene	M18-Se19126	NCP	%	94			70-130	Pass	
Fluoranthene	M18-Se19126	NCP	%	98			70-130	Pass	
Fluorene	M18-Se19126	NCP	%	117			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-Se19126	NCP	%	99			70-130	Pass	
Naphthalene	M18-Se19126	NCP	%	103			70-130	Pass	
Phenanthrene	M18-Se19126	NCP	%	116			70-130	Pass	
Pyrene	M18-Se19126	NCP	%	101			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M18-Se27518	NCP	%	102			75-125	Pass	
Cadmium	M18-Se27518	NCP	%	91			75-125	Pass	
Chromium	M18-Se27518	NCP	%	98			75-125	Pass	
Copper	M18-Se27518	NCP	%	103			75-125	Pass	
Lead	M18-Se27518	NCP	%	97			75-125	Pass	
Mercury	M18-Se27518	NCP	%	109			70-130	Pass	
Nickel	M18-Se27518	NCP	%	104			75-125	Pass	
Zinc	M18-Se27518	NCP	%	98			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	B18-Se24647	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M18-Se26508	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	M18-Se26508	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M18-Se26508	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	B18-Se24647	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	B18-Se24647	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	B18-Se24647	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	B18-Se24647	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	B18-Se24647	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	B18-Se24647	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	B18-Se24647	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	B18-Se24647	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	M18-Se26508	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M18-Se26508	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M18-Se26508	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons (Trace level)				Result 1	Result 2	RPD			
Acenaphthene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Acenaphthylene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Anthracene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benz(a)anthracene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(a)pyrene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(b&j)fluoranthene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(g.h.i)perylene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons (Trace level)				Result 1	Result 2	RPD			
Benzo(k)fluoranthene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Chrysene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Dibenz(a.h)anthracene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Fluoranthene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Fluorene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Naphthalene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Phenanthrene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Pyrene	M18-Se19125	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
pH (at 25°C)	M18-Se24669	NCP	pH Units	7.2	7.2	pass	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M18-Se27518	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M18-Se27518	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M18-Se27518	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M18-Se27518	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	M18-Se27518	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	M18-Se27518	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M18-Se27518	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M18-Se27518	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments

This report has been revised (V3) to include additional QC results for Ammonia.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Authorised By

Nibha Vaidya	Analytical Services Manager
Chris Bennett	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

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Site # 1254 & 14271

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NATA # 1261 Site # 20794

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Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Iain Lindley
Project name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT
Project ID:	21217 TASK 3J FOR CONTAMINATION PORT KEMBLA
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Sep 18, 2018 12:58 PM
Eurofins | mgt reference:	**618151**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☑ Sample containers for volatile analysis received with zero headspace.
- ☑ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Triplicate samples sent to ALS for analysis. Asbestos bags for the following samples not received: GBH07 8.7-9.0, GBH16 9.7-10.0, GBH23 8.7-9.0, GBH23 9.7-10.0. ASSpH bags for QC17 & GBH23 8.7-9.0 not received; analysis cancelled.

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Iain Lindley - iain.lindley@ghd.com.

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : colee.quayle@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	Zip lock	ASS	Amber 1L	Plastic	Sample comments:
1	GBH01	0.6-0.8	7/09/2018	S														x	X	X	X			
2	GBH01	1.7-2.0	7/09/2018	S	x						x								X	X	X			
3	GBH01	2.7-3.0	7/09/2018	S							x								X	X	X			
4	GBH01	3.7-4.0	7/09/2018	S							x								X	X	X			
5	GBH01	4.7-5.0	7/09/2018	S	x						x								X	X	X			
6	GBH01	6.7-7.0	7/09/2018	S							x								X	X	X			
7	GBH01	7.7-8.0	7/09/2018	S	x						x								X	X	X			
8	QC14	-	7/09/2018	S	x						x								X		X			
9	QC14a	-	7/09/2018	S	x														X		X			Send to ALS
10	GBH04	1.5-1.7	6/09/2018	S														x	X	X	X			
11	GBH04	2.7-3.0	6/09/2018	S	x						x								X	X	X			
12	GBH04	3.7-4.0	6/09/2018	S							x								X	X	X			
13	GBH04	4.7-5.0	6/09/2018	S							x								X	X	X			
14	QC13	-	6/09/2018	S	x						x								X		X			
15	QC13a	-	6/09/2018	S	x														X		X			Send to ALS
16	GBH07	0.5-0.7	10/09/2018	S														x	X	X	X			

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Jarrad Mawbey	Received By:	Received By: UHONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☑	☐ Courier ☐ Hand Delivered ☐ Postal	6.1 °C
Date & Time 13/9/2018	Date & Time:	Date & Time: 18/9 12:58pm	5 DAY ☐ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 618151 618306
Signature: J. Mawbey	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name: GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order:	COC Number:
Office Address: Level 11, 200 Crown Street	Project Manager: Colee Quayle 0403 242 431	PROJECT Number: 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID:
Wollongong, NSW 2500	Email for results: colee.quayle@ghd.com	PROJECT Name: Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments:

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH07	1.7-2.0	10/09/2018	S							x							
2	GBH07	2.7-3.0	10/09/2018	S							x							
3	GBH07	3.7-4.0	10/09/2018	S							x							
4	GBH07	4.7-5.0	10/09/2018	S							x							
5	GBH07	6.7-7.0	10/09/2018	S	x						x							
6	GBH07	8.7-9.0	10/09/2018	S	x						x							
7	GBH31	0.8-0.9	10/09/2018	S														x
8	GBH31	1.7-2.0	10/09/2018	S							x							
9	GBH31	2.7-3.0	10/09/2018	S							x							
10	GBH31	3.7-4.0	10/09/2018	S							x							
11	GBH31	4.7-5.0	10/09/2018	S	x						x							
12	QC15	-	10/09/2018	S							x							
13	QC15a	-	10/09/2018	S														x
14	GBH14	1.7-2.0	10/09/2018	S	x													
15	GBH14	2.7-3.0	10/09/2018	S							x							
16	GBH14	3.7-4.0	10/09/2018	S							x							

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:	Jar	Zip lock	ASS	Amber 1L	Plastic				Sample comments:
1	X	X	X						
2	X	X	X						
3	X	X	X						
4	X	X	X						
5	X	X	X						
6	X	X	X						
7	X	X	X						
8	X	X	X						
9	X	X	X						
10	X	X	X						
11	X	X	X						
12	X		X						
13	X		X						
14	X	X	X						
15	X	X	X						
16	X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Jarrad Mawbey	Received By:	Received By: MONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☑	☐ Courier ☐ Hand Delivered ☐ Postal	6.1°C
Date & Time 13/9/2018	Date & Time:	Date & Time: 18/9 12-58pm	5 DAY ☐ 10 DAY ☐ Other:	Courier Consignment #:	Report number: 618157
Signature: J. Mawbey	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : colee.quayle@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH								Hold
1	GBH14	4.7-5.0	10/09/2018	S							x														
2	QC16	-	10/09/2018	S																					x
3	GBH20	0.5-0.7	10/09/2018	S																					x
4	GBH20	1.7-2.0	10/09/2018	S							x														
5	GBH20	2.7-3.0	10/09/2018	S							x														
6	GBH20	3.7-4.0	10/09/2018	S							x														
7	GBH20	4.7-5.0	10/09/2018	S							x														
8	GBH20	6.7-7.0	10/09/2018	S	x						x														
9	GBH20	8.7-9.0	10/09/2018	S	x						x	x		x	x										
10	QC17	-	10/09/2018	S							x														
11	GBH16	0.6-0.8	12/09/2018	S																					x
12	GBH16	1.7-2.0	12/09/2018	S							x														
13	GBH16	2.7-3.0	12/09/2018	S							x														
14	GBH16	3.7-4.0	12/09/2018	S							x														
15	GBH16	4.7-5.0	12/09/2018	S							x														
16	GBH16	5.7-6.0	12/09/2018	S	x						x														

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

	Jar	Zip lock	ASS	Amber 1L	Plastic				Sample comments:
1	X	X	X						
2	X		X						
3	X	X	X						
4	X	X	X						
5	X	X	X						
6	X	X	X						
7	X	X	X						
8	X	X	X						
9	X	X	X						
10	X		X						
11	X	X	X						
12	X	X	X						
13	X	X	X						
14	X	X	X						
15	X	X	X						
16	X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Jarrad Mawbey	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☑	☐ Courier ☐ Hand Delivered ☐ Postal	6.1 °C
Date & Time 13/9/2018	Date & Time:	Date & Time: 18/9 12.58pm	5 DAY ☐ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 618151
Signature: J. Mawbey	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : colee.quayle@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Metals (M8)								Hold
1	GBH16	9.7-10.0	12/09/2018	S	x						x															
2	GBH23	0.5-0.7	11/09/2018	S	x																					
3	GBH23	1.7-2.0	11/09/2018	S							x															
4	GBH23	2.7-3.0	11/09/2018	S							x															
5	GBH23	3.7-4.0	11/09/2018	S							x															
6	GBH23	6.7-7.0	11/09/2018	S							x															
7	GBH23	8.7-9.0	11/09/2018	S	x						x															
8	GBH23	9.7-10.0	11/09/2018	S	x						x	x		x	x											
9	QC18	-	11/09/2018	S	x						x	x		x	x											
10	QC18a	-	11/09/2018	S	x																					
11	BH17	7.5	6/09/2018	S							x															
12	BH17	3.5	5/09/2018	S														x								
13	BH17	1.5	5/09/2018	S														x								
14	BH17	13.5	6/09/2018	S							x															
15	BH21	1.3	10/09/2018	S	x																					
16	BH21	6.0-6.45	10/09/2018	S							x															

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Containers:								Sample comments:
	Jar	Zip lock	ASS	Amber 1L	Plastic				
1	X	X	X						
2	X	X	X						
3	X	X	X						
4	X	X	X						
5	X	X	X						
6	X	X	X						
7	X	X	X						
8	X	X	X						
9	X		X						
10	X		X						Send to ALS
11			X						
12	X								
13	X								
14			X						
15	X								
16			X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Jarrad Mawbey	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☑	☐ Courier ☐ Hand Delivered ☐ Postal	6.1°C
Date & Time 13/9/2018	Date & Time:	Date & Time: 18/9 12:58 pm	5 DAY ☐ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 618151
Signature: J. Mawbey	Signature:	Signature:			

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CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : colee.quayle@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Ultratrace PAH LOR 0.01 ug/L

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Metals (M8)	B2: TRH, BTEX, Metals (8)	Ultratrace PAH						Hold
1	BH16	1.0	5/09/2018	S														x								
2	BH16	3.0-3.5	6/09/2018	S	x																					
3	BH21	9.0-9.12	10/09/2018	S							x															
4	DS01	-	7/09/2018	S	x																					
5	DW01	-	7/09/2018	W													x		x	x						
6																										
7																										
8																										
9																										
10																										
11																										
12																										
13																										
14																										
15																										
16																										

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:	Jar	Zip lock	ASS	Amber 1L	Plastic	Vials	Metals
1	X						
2	X						
3			X				
4	X	X	X				
5				X	X	X	X

Sample comments:

GHD Staff	Courier	Laboratory Staff
Relinquished By: Jarrad Mawbey	Received By:	Received By:
Date & Time 13/9/2018	Date & Time:	Date & Time: 18/9 12.58pm
Signature: J. Mawbey	Signature:	Signature:

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☑
5 DAY ☐ 10 DAY ☐ Other:

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 6.1°C

Report number: 618151

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Site # 1254 & 14271

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Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
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Order No.:
Report #: 618151
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Sep 18, 2018 12:58 PM
Due: Sep 25, 2018
Priority: 5 Day
Contact Name: Iain Lindley

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 2127477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
External Laboratory																
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**											
1	GBH01 1.7-2.0	Sep 07, 2018		Soil	S18-Se22863						X		X	X		
2	GBH01 2.7-3.0	Sep 07, 2018		Soil	S18-Se22864						X					
3	GBH01 3.7-4.0	Sep 07, 2018		Soil	S18-Se22865						X					
4	GBH01 4.7-5.0	Sep 07, 2018		Soil	S18-Se22866						X		X	X		
5	GBH01 6.7-7.0	Sep 07, 2018		Soil	S18-Se22867						X					
6	GBH01 7.7-8.0	Sep 07, 2018		Soil	S18-Se22868						X		X	X		
7	QC14	Sep 07, 2018		Soil	S18-Se22869						X		X	X		
8	GBH04 2.7-3.0	Sep 06, 2018		Soil	S18-Se22870						X		X	X		
9	GBH04 3.7-4.0	Sep 06, 2018		Soil	S18-Se22871						X					

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
10	GBH04 4.7-5.0	Sep 06, 2018		Soil	S18-Se22872						X					
11	QC13	Sep 06, 2018		Soil	S18-Se22873						X		X	X		
12	GBH07 1.7-2.0	Sep 10, 2018		Soil	S18-Se22874						X					
13	GBH07 2.7-3.0	Sep 10, 2018		Soil	S18-Se22875						X					
14	GBH07 3.7-4.0	Sep 10, 2018		Soil	S18-Se22876						X					
15	GBH07 4.7-5.0	Sep 10, 2018		Soil	S18-Se22877						X					
16	GBH07 6.7-7.0	Sep 10, 2018		Soil	S18-Se22878						X		X	X		
17	GBH07 8.7-9.0	Sep 10, 2018		Soil	S18-Se22879						X		X	X		
18	GBH31 1.7-2.0	Sep 10, 2018		Soil	S18-Se22880						X					
19	GBH31 2.7-3.0	Sep 10, 2018		Soil	S18-Se22881						X					
20	GBH31 3.7-4.0	Sep 10, 2018		Soil	S18-Se22882						X					
21	GBH31 4.7-5.0	Sep 10, 2018		Soil	S18-Se22883						X		X	X		

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
22	QC15	Sep 10, 2018		Soil	S18-Se22884						X					
23	GBH14 1.7-2.0	Sep 10, 2018		Soil	S18-Se22885								X	X		
24	GBH14 2.7-3.0	Sep 10, 2018		Soil	S18-Se22886						X					
25	GBH14 3.7-4.0	Sep 10, 2018		Soil	S18-Se22887						X					
26	GBH14 4.7-5.0	Sep 10, 2018		Soil	S18-Se22888						X					
27	GBH20 1.7-2.0	Sep 10, 2018		Soil	S18-Se22889						X					
28	GBH20 2.7-3.0	Sep 10, 2018		Soil	S18-Se22890						X					
29	GBH20 3.7-4.0	Sep 10, 2018		Soil	S18-Se22891						X					
30	GBH20 4.7-5.0	Sep 10, 2018		Soil	S18-Se22892						X					
31	GBH20 6.7-7.0	Sep 10, 2018		Soil	S18-Se22893						X		X	X		
32	GBH20 8.7-9.0	Sep 10, 2018		Soil	S18-Se22894	X		X			X		X	X		
33	QC17	Sep 10, 2018		Soil	S18-Se22895		X									

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
34	GBH16 1.7-2.0	Sep 12, 2018		Soil	S18-Se22896						X					
35	GBH16 2.7-3.0	Sep 12, 2018		Soil	S18-Se22897						X					
36	GBH16 3.7-4.0	Sep 12, 2018		Soil	S18-Se22898						X					
37	GBH16 4.7-5.0	Sep 12, 2018		Soil	S18-Se22899						X					
38	GBH16 5.7-6.0	Sep 12, 2018		Soil	S18-Se22900						X		X	X		
39	GBH16 9.7-10.0	Sep 12, 2018		Soil	S18-Se22901						X		X	X		
40	GBH23 0.5-0.7	Sep 11, 2018		Soil	S18-Se22902								X	X		
41	GBH23 1.7-2.0	Sep 11, 2018		Soil	S18-Se22903						X					
42	GBH23 2.7-3.0	Sep 11, 2018		Soil	S18-Se22904						X					
43	GBH23 3.7-4.0	Sep 11, 2018		Soil	S18-Se22905						X					
44	GBH23 6.7-7.0	Sep 11, 2018		Soil	S18-Se22906						X					

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Project ID: 2127477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
45	GBH23 8.7-9.0	Sep 11, 2018		Soil	S18-Se22907		X						X	X		
46	GBH23 9.7-10.0	Sep 11, 2018		Soil	S18-Se22908	X		X			X		X	X		
47	QC18	Sep 11, 2018		Soil	S18-Se22909	X		X			X		X	X		
48	BH17 7.5	Sep 05, 2018		Soil	S18-Se22910						X					
49	BH17 3.5	Sep 05, 2018		Soil	S18-Se22911							X	X			
50	BH17 1.5	Sep 05, 2018		Soil	S18-Se22912							X	X			
51	BH17 13.5	Sep 06, 2018		Soil	S18-Se22913						X					
52	BH21 1.3	Sep 10, 2018		Soil	S18-Se22914								X	X		
53	BH21 6.0-6.45	Sep 10, 2018		Soil	S18-Se22915						X					
54	BH16 1.0	Sep 05, 2018		Soil	S18-Se22916							X	X			
55	BH16 3.0-3.5	Sep 06, 2018		Soil	S18-Se22917								X	X		

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Project ID: 2127477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	CANCELLED	Cyanide (total)	HOLD	pH (at 25°C)	Acid Sulfate Soils Field pH Test	Metals M8	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B2	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X		X		X		X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X								X	
Brisbane Laboratory - NATA Site # 20794									X		X					
Perth Laboratory - NATA Site # 23736																
56	BH21 9.0-9.12	Sep 10, 2018		Soil	S18-Se22918						X					
57	DS01	Sep 07, 2018		Soil	S18-Se22919								X	X		
58	DW01	Sep 07, 2018		Water	S18-Se22920					X		X			X	X
59	GBH01 0.6-0.8	Sep 07, 2018		Soil	S18-Se22995				X							
60	GBH04 1.5-1.7	Sep 06, 2018		Soil	S18-Se22996				X							
61	GBH07 0.5-0.7	Sep 10, 2018		Soil	S18-Se22997				X							
62	GBH31 0.8-0.9	Sep 10, 2018		Soil	S18-Se22998				X							
63	QC16	Sep 10, 2018		Soil	S18-Se22999				X							
64	GBH20 0.5-0.7	Sep 10, 2018		Soil	S18-Se23000				X							
65	GBH16 0.6-0.8	Sep 10, 2018		Soil	S18-Se23001				X							
Test Counts						3	2	3	7	1	47	4	24	21	1	1

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Certificate of Analysis

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NSW 2500

Attention: **Iain Lindley**

Report **618306-S**
Project name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 2127477- TASK 3J FOR CONTAMINATION
Received Date Sep 18, 2018

Client Sample ID			**GBH20 8.7-9.0**	**GBH23 9.7-10.0**	**QC18**
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-Se24179**	**S18-Se24180**	**S18-Se24181**
Date Sampled			**Sep 10, 2018**	**Sep 11, 2018**	**Sep 11, 2018**
Test/Reference	LOR	Unit			
Tributyltin (TBT)			see attached	see attached	see attached

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time

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Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Sep 18, 2018 12:58 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	618306 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Oct 3, 2018 10 Day Iain Lindley
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	2127477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Tributyltin (TBT)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						X
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	GBH20 8.7-9.0	Sep 10, 2018		Soil	S18-Se24179	X
2	GBH23 9.7-10.0	Sep 11, 2018		Soil	S18-Se24180	X
3	QC18	Sep 11, 2018		Soil	S18-Se24181	X
Test Counts						3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Comments

Tributyl tin analysed by: NMI, NATA Accreditation number 198, report reference RN1209260

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Nibha Vaidya Analytical Services Manager



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Australian Government
National Measurement Institute

QUALITY ASSURANCE REPORT

Client: EUROFINS MGT

NMI QA Report No: EURO26/180919 **Sample Matrix:** Solid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ng/g	ng/g	ng/g	ng/g	%	%	%
Organics Section								
Organotin								
Monobutyltin	NR_35	0.5	<0.5	NA	NA	NA	53	NA
Dibutyltin	NR_35	0.5	<0.5	NA	NA	NA	103	NA
Tributyltin	NR_35	0.5	<0.5	NA	NA	NA	111	NA
Organotin Surrogate								
Tripropyltin (%Rec)	NR_35	-	-	NA	NA	NA	69	NA

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
This report shall not be reproduced except in full.

Signed:

Danny Slee
Organics Manager, NMI-North Ryde

Date: **27/09/2018**

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NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Iain Lindley
Project name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT
Project ID:	21217 PORT KEMBLA TASK 3J FOR CONTAMINATION
COC number:	Not provided
Turn around time:	10 Day
Date/Time received:	Sep 18, 2018 12:58 PM
Eurofins | mgt reference:	**618306**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Iain Lindley - iain.lindley@ghd.com.

REPORT OF ANALYSIS

Report No. RN1209260

Client	: EUROFINS MGT 3 KINGSTON TOWN CLOSE OAKLEIGH VIC 3166	**Job No.** **Quote No.** **Order No.** **Date Received**	: EURO26/180919 : QT-02018 : 18-117-618306 : 19-SEP-2018
Attention	: JONATHON ANGELL	**Sampled By**	: CLIENT
Project Name	:		
Your Client Services Manager	: Tim Reddan	**Phone**	: 03 9644 4854

Lab Reg No.	Sample Ref	Sample Description
N18/026711	18-SE24179	SOIL CLIENT ID: GBH20 8.7-9.0 REF: 618306
N18/026712	18-SE24180	SOIL CLIENT ID: GBH23 9.7-10.0 REF: 618306
N18/026713	18-SE24181	SOIL CLIENT ID: QC18 REF: 618306

Lab Reg No.	Units	N18/026711	N18/026712	N18/026713		Method
Date Sampled		10-SEP-2018	11-SEP-2018	11-SEP-2018		
Sample Reference		18-SE24179	18-SE24180	18-SE24181		
Organotins						
Monobutyltin as Sn	ng/g	0.84	0.75	1.1		NR_35
Dibutyltin as Sn	ng/g	<0.5	<0.5	<0.5		NR_35
Tributyltin as Sn	ng/g	<0.5	<0.5	<0.5		NR_35
Surrogate: Tripropyltin	%REC	87	101	90		NR_35
Dates						
Date extracted		26-SEP-2018	26-SEP-2018	26-SEP-2018		
Date analysed		27-SEP-2018	27-SEP-2018	27-SEP-2018		

Danny Slee, Section Manager
Organic - NSW
Accreditation No. 198

28-SEP-2018

Lab Reg No.	Units	N18/026711	N18/026712	N18/026713		Method
Date Sampled		10-SEP-2018	11-SEP-2018	11-SEP-2018		
Sample Reference		18-SE24179	18-SE24180	18-SE24181		
Trace Elements						
Total Solids	%	81.9	82.0	82.2		NT2_49

REPORT OF ANALYSIS

Report No. RN1209260

Lab Reg No.		N18/026711	N18/026712	N18/026713		
Date Sampled		10-SEP-2018	11-SEP-2018	11-SEP-2018		
Sample Reference		18-SE24179	18-SE24180	18-SE24181		
	Units					Method

Pankaj Barai, Analyst
Inorganics - NSW
Accreditation No. 198

28-SEP-2018

All results are expressed on a dry weight basis.

NATA
ACCREDITED FOR
TECHNICAL
COMPETENCE

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) tested.

This Report supersedes reports: *RN1209254* *RN1209258*

Measurement Uncertainty is available upon request.
Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	**Contact Name:** Iain Lindley 0459 353 385	**Purchase Order :**	**COC Number :**
Office Address : Level 11, 200 Crown Street	**Project Manager :** Colee Quayle 0403 242 431	**PROJECT Number :** 2127477 - Task 3J for Contamination	**Eurofins | mgt quote ID :**
Wollongong, NSW 2500	**Email for results :** colee.quayle@ghd.com	**PROJECT Name :** Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH01	0.6-0.8	7/09/2018	S														x
2	GBH01	1.7-2.0	7/09/2018	S	x						x							
3	GBH01	2.7-3.0	7/09/2018	S							x							
4	GBH01	3.7-4.0	7/09/2018	S							x							
5	GBH01	4.7-5.0	7/09/2018	S	x						x							
6	GBH01	6.7-7.0	7/09/2018	S							x							
7	GBH01	7.7-8.0	7/09/2018	S	x						x							
8	QC14	-	7/09/2018	S	x						x							
9	QC14a	-	7/09/2018	S	x													
10	GBH04	1.5-1.7	6/09/2018	S														x
11	GBH04	2.7-3.0	6/09/2018	S	x						x							
12	GBH04	3.7-4.0	6/09/2018	S							x							
13	GBH04	4.7-5.0	6/09/2018	S							x							
14	QC13	-	6/09/2018	S	x						x							
15	QC13a	-	6/09/2018	S	x													
16	GBH07	0.5-0.7	10/09/2018	S														x

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

	Jar	Zip lock	ASS	Amber 1L	Plastic				Sample comments:
1	X	X	X						
2	X	X	X						
3	X	X	X						
4	X	X	X						
5	X	X	X						
6	X	X	X						
7	X	X	X						
8	X		X						
9	X		X						Send to ALS
10	X	X	X						
11	X	X	X						
12	X	X	X						
13	X	X	X						
14	X		X						
15	X		X						
16	X	X	X						Send to ALS

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Jarrad Mawbey	**Received By:**	**Received By:** ULONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☑	☐ Courier ☐ Hand Delivered ☐ Postal	6.1 °C
Date & Time 13/9/2018	**Date & Time:**	**Date & Time:** 18/9 12:58pm	5 DAY ☐ 10 DAY ☐ Other:	**Courier Consignment # :**	**Report number:** 618151 618306
Signature: J. Mawbey	**Signature:**	**Signature:**			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : colee.quayle@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH07	1.7-2.0	10/09/2018	S							x							
2	GBH07	2.7-3.0	10/09/2018	S							x							
3	GBH07	3.7-4.0	10/09/2018	S							x							
4	GBH07	4.7-5.0	10/09/2018	S							x							
5	GBH07	6.7-7.0	10/09/2018	S	x						x							
6	GBH07	8.7-9.0	10/09/2018	S	x						x							
7	GBH31	0.8-0.9	10/09/2018	S														x
8	GBH31	1.7-2.0	10/09/2018	S							x							
9	GBH31	2.7-3.0	10/09/2018	S							x							
10	GBH31	3.7-4.0	10/09/2018	S							x							
11	GBH31	4.7-5.0	10/09/2018	S	x						x							
12	QC15	-	10/09/2018	S							x							
13	QC15a	-	10/09/2018	S														x
14	GBH14	1.7-2.0	10/09/2018	S	x													
15	GBH14	2.7-3.0	10/09/2018	S							x							
16	GBH14	3.7-4.0	10/09/2018	S							x							

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:								Sample comments:
Jar	Zip lock	ASS	Amber 1L	Plastic				
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X		X						
X		X						
X	X	X						
X	X	X						
X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Jarrad Mawbey	Received By:	Received By: WONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☑	☐ Courier ☐ Hand Delivered ☐ Postal	6.1°C
Date & Time 13/9/2018	Date & Time:	Date & Time: 18/9 12-58pm	5 DAY ☐ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 618151
Signature: J. Mawbey	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : colee.quayle@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH14	4.7-5.0	10/09/2018	S							x							
2	QC16	-	10/09/2018	S														x
3	GBH20	0.5-0.7	10/09/2018	S														x
4	GBH20	1.7-2.0	10/09/2018	S							x							
5	GBH20	2.7-3.0	10/09/2018	S							x							
6	GBH20	3.7-4.0	10/09/2018	S							x							
7	GBH20	4.7-5.0	10/09/2018	S							x							
8	GBH20	6.7-7.0	10/09/2018	S	x						x							
9	GBH20	8.7-9.0	10/09/2018	S	x						x	x		x	x			
10	QC17	-	10/09/2018	S							x							
11	GBH16	0.6-0.8	12/09/2018	S														x
12	GBH16	1.7-2.0	12/09/2018	S							x							
13	GBH16	2.7-3.0	12/09/2018	S							x							
14	GBH16	3.7-4.0	12/09/2018	S							x							
15	GBH16	4.7-5.0	12/09/2018	S							x							
16	GBH16	5.7-6.0	12/09/2018	S	x						x							

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Containers:								Sample comments:
	Jar	Zip lock	ASS	Amber 1L	Plastic				
1	X	X	X						
2	X		X						
3	X	X	X						
4	X	X	X						
5	X	X	X						
6	X	X	X						
7	X	X	X						
8	X	X	X						
9	X	X	X						
10	X		X						
11	X	X	X						
12	X	X	X						
13	X	X	X						
14	X	X	X						
15	X	X	X						
16	X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Jarrad Mawbey	Received By:	Received By: VHONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☑	☐ Courier	6.1 °C
Date & Time 13/9/2018	Date & Time:	Date & Time: 18/9 12.58pm	5 DAY ☐ 10 DAY ☐ Other:	☐ Hand Delivered	Report number:
Signature: J. Mawbey	Signature:	Signature:		☐ Postal	618151
				Courier Consignment # :	

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : colee.quayle@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Metals (M8)								Hold
					Analytes																					
1	GBH16	9.7-10.0	12/09/2018	S	x						x															
2	GBH23	0.5-0.7	11/09/2018	S	x																					
3	GBH23	1.7-2.0	11/09/2018	S							x															
4	GBH23	2.7-3.0	11/09/2018	S							x															
5	GBH23	3.7-4.0	11/09/2018	S							x															
6	GBH23	6.7-7.0	11/09/2018	S							x															
7	GBH23	8.7-9.0	11/09/2018	S	x						x															
8	GBH23	9.7-10.0	11/09/2018	S	x						x	x		x	x											
9	QC18	-	11/09/2018	S	x						x	x		x	x											
10	QC18a	-	11/09/2018	S	x																					
11	BH17	7.5	6/09/2018	S							x															
12	BH17	3.5	5/09/2018	S														x								
13	BH17	1.5	5/09/2018	S														x								
14	BH17	13.5	6/09/2018	S							x															
15	BH21	1.3	10/09/2018	S	x																					
16	BH21	6.0-6.45	10/09/2018	S							x															

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Containers:								Sample comments:
	Jar	Zip lock	ASS	Amber 1L	Plastic				
1	X	X	X						
2	X	X	X						
3	X	X	X						
4	X	X	X						
5	X	X	X						
6	X	X	X						
7	X	X	X						
8	X	X	X						
9	X		X						
10	X		X						Send to ALS
11			X						
12	X								
13	X								
14			X						
15	X								
16			X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Jarrad Mawbey	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☑	☐ Courier ☐ Hand Delivered ☐ Postal	6.1°C
Date & Time 13/9/2018	Date & Time:	Date & Time: 18/9 12.58pm	5 DAY ☐ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 618151
Signature: J. Mawbey	Signature:	Signature:			

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : colee.quayle@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Ultratrace PAH LOR 0.01 ug/L

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Metals (M8)	B2: TRH, BTEX, Metals (8)	Ultratrace PAH						Hold
1	BH16	1.0	5/09/2018	S														x								
2	BH16	3.0-3.5	6/09/2018	S	x																					
3	BH21	9.0-9.12	10/09/2018	S							x															
4	DS01	-	7/09/2018	S	x																					
5	DW01	-	7/09/2018	W													x		x	x						
6																										
7																										
8																										
9																										
10																										
11																										
12																										
13																										
14																										
15																										
16																										

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:	Jar	Zip lock	ASS	Amber 1L	Plastic	Vials	Metals	Sample comments:
1	X							
2	X							
3			X					
4	X	X	X					
5				X	X	X	X	
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Jarrad Mawbey	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☑	☐ Courier ☐ Hand Delivered ☐ Postal	6.1°C
Date & Time 13/9/2018	Date & Time:	Date & Time: 18/9 12.58pm	5 DAY ☐ 10 DAY ☐ Other:	Courier Consignment # :	Report number: 618151
Signature: J. Mawbey	Signature:	Signature:			

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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Sep 18, 2018 12:58 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	618306 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Oct 3, 2018 10 Day Iain Lindley
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	2127477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Tributyltin (TBT)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						X
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	GBH20 8.7-9.0	Sep 10, 2018		Soil	S18-Se24179	X
2	GBH23 9.7-10.0	Sep 11, 2018		Soil	S18-Se24180	X
3	QC18	Sep 11, 2018		Soil	S18-Se24181	X
Test Counts						3

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30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Colee Quayle**

Report **619676-W**
Project name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 21247477- TASK 3J FOR CONTAMINATION
Received Date Sep 26, 2018

Client Sample ID			**201**	**204**	**MW2**	**MW3**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S18-Se34668**	**S18-Se34669**	**S18-Se34670**	**S18-Se34671**
Date Sampled			**Sep 25, 2018**	**Sep 25, 2018**	**Sep 25, 2018**	**Sep 25, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	86	52	94	102
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Polycyclic Aromatic Hydrocarbons (Trace level)						
Acenaphthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Acenaphthylene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Anthracene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benz(a)anthracene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(a)pyrene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(b&j)fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(g.h.i)perylene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Benzo(k)fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Chrysene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Dibenz(a.h)anthracene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Fluoranthene	0.00001	mg/L	0.00002	< 0.00001	0.00004	0.00002
Fluorene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001

Client Sample ID			201	204	MW2	MW3
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S18-Se34668	S18-Se34669	S18-Se34670	S18-Se34671
Date Sampled			Sep 25, 2018	Sep 25, 2018	Sep 25, 2018	Sep 25, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons (Trace level)						
Indeno(1.2.3-cd)pyrene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Naphthalene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Phenanthrene	0.00001	mg/L	< 0.00001	< 0.00001	0.00002	0.00001
Pyrene	0.00001	mg/L	0.00001	< 0.00001	0.00003	0.00001
Total PAH*	0.00001	mg/L	3E-05	< 0.00001	9E-05	4E-05
2-Fluorobiphenyl (surr.)	1	%	77	62	104	106
p-Terphenyl-d14 (surr.)	1	%	148	106	93	80
Ammonia (as N)	0.01	mg/L	< 0.01	0.07	1.8	1.5
Cyanide (total)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	0.003	0.005	0.003	0.007
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.002	0.097	0.047	0.10
Lead (filtered)	0.001	mg/L	< 0.001	0.004	0.003	0.006
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.004	0.011	0.029	0.013
Zinc (filtered)	0.005	mg/L	< 0.005	0.19	0.063	0.18

Client Sample ID			MW6	QC1	205
Sample Matrix			Water	Water	Water
Eurofins | mgt Sample No.			S18-Se34672	S18-Se34673	S18-Se34679
Date Sampled			Sep 25, 2018	Sep 25, 2018	Sep 25, 2018
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1
BTEX					
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	104	102	94
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1	< 0.1

Client Sample ID			MW6	QC1	205
Sample Matrix			Water	Water	Water
Eurofins | mgt Sample No.			S18-Se34672	S18-Se34673	S18-Se34679
Date Sampled			Sep 25, 2018	Sep 25, 2018	Sep 25, 2018
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons (Trace level)					
Acenaphthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Acenaphthylene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Anthracene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Benz(a)anthracene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Benzo(a)pyrene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Benzo(b&j)fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Benzo(g.h.i)perylene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Benzo(k)fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Chrysene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Dibenz(a.h)anthracene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Fluoranthene	0.00001	mg/L	< 0.00001	0.00001	< 0.00001
Fluorene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Indeno(1.2.3-cd)pyrene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Naphthalene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Phenanthrene	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001
Pyrene	0.00001	mg/L	< 0.00001	0.00001	< 0.00001
Total PAH*	0.00001	mg/L	< 0.00001	2E-05	< 0.00001
2-Fluorobiphenyl (surr.)	1	%	68	83	77
p-Terphenyl-d14 (surr.)	1	%	116	110	71
Ammonia (as N)	0.01	mg/L	0.12	< 0.01	0.05
Cyanide (total)	0.005	mg/L	< 0.005	< 0.005	< 0.005
Heavy Metals					
Arsenic (filtered)	0.001	mg/L	0.003	0.003	0.005
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.065	0.014	0.021
Lead (filtered)	0.001	mg/L	0.002	< 0.001	0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	0.011	0.006	0.004
Zinc (filtered)	0.005	mg/L	0.16	0.027	0.086

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B6 (filtered metals)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Oct 03, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Oct 01, 2018	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Oct 01, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Oct 03, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8 filtered	Melbourne	Oct 01, 2018	28 Day
- Method:			
Polycyclic Aromatic Hydrocarbons (Trace level)	Melbourne	Oct 03, 2018	7 Days
- Method:			
Ammonia (as N)	Melbourne	Oct 01, 2018	28 Day
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Cyanide (total)	Melbourne	Oct 01, 2018	14 Day
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			

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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Sep 26, 2018 12:45 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	619676 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Oct 4, 2018 5 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	21247477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Cyanide (total)	Eurofins | mgt Suite B6 (filtered metals)	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	201	Sep 25, 2018		Water	S18-Se34668	X	X	X	X
2	204	Sep 25, 2018		Water	S18-Se34669	X	X	X	X
3	MW2	Sep 25, 2018		Water	S18-Se34670	X	X	X	X
4	MW3	Sep 25, 2018		Water	S18-Se34671	X	X	X	X
5	MW6	Sep 25, 2018		Water	S18-Se34672	X	X	X	X
6	QC1	Sep 25, 2018		Water	S18-Se34673	X	X	X	X
7	205	Sep 25, 2018		Water	S18-Se34679	X	X	X	X
Test Counts						7	7	7	7

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons (Trace level)							
Acenaphthene	mg/L	< 0.00001			0.00001	Pass	
Acenaphthylene	mg/L	< 0.00001			0.00001	Pass	
Anthracene	mg/L	< 0.00001			0.00001	Pass	
Benz(a)anthracene	mg/L	< 0.00001			0.00001	Pass	
Benzo(a)pyrene	mg/L	< 0.00001			0.00001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.00001			0.00001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.00001			0.00001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.00001			0.00001	Pass	
Chrysene	mg/L	< 0.00001			0.00001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.00001			0.00001	Pass	
Fluoranthene	mg/L	< 0.00001			0.00001	Pass	
Fluorene	mg/L	< 0.00001			0.00001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.00001			0.00001	Pass	
Naphthalene	mg/L	< 0.00001			0.00001	Pass	
Phenanthrene	mg/L	< 0.00001			0.00001	Pass	
Pyrene	mg/L	< 0.00001			0.00001	Pass	
Total PAH*	mg/L	< 0			0.00001	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Cyanide (total)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	76			70-130	Pass	
TRH C10-C14	%	122			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	87			70-130	Pass	
Toluene	%	83			70-130	Pass	
Ethylbenzene	%	72			70-130	Pass	
m&p-Xylenes	%	75			70-130	Pass	
Xylenes - Total	%	76			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	73			70-130	Pass	
TRH C6-C10	%	78			70-130	Pass	
TRH >C10-C16	%	123			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons (Trace level)							
Acenaphthene	%	94			70-130	Pass	
Acenaphthylene	%	105			70-130	Pass	
Anthracene	%	111			70-130	Pass	
Benz(a)anthracene	%	101			70-130	Pass	
Benzo(a)pyrene	%	101			70-130	Pass	
Benzo(b&j)fluoranthene	%	99			70-130	Pass	
Benzo(g.h.i)perylene	%	105			70-130	Pass	
Benzo(k)fluoranthene	%	108			70-130	Pass	
Chrysene	%	112			70-130	Pass	
Dibenz(a.h)anthracene	%	104			70-130	Pass	
Fluoranthene	%	107			70-130	Pass	
Fluorene	%	110			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	94			70-130	Pass	
Naphthalene	%	105			70-130	Pass	
Phenanthrene	%	107			70-130	Pass	
Pyrene	%	108			70-130	Pass	
LCS - % Recovery							
Ammonia (as N)	%	104			70-130	Pass	
Cyanide (total)	%	106			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	94			80-120	Pass	
Cadmium (filtered)	%	99			80-120	Pass	
Chromium (filtered)	%	100			80-120	Pass	
Copper (filtered)	%	96			80-120	Pass	
Lead (filtered)	%	101			80-120	Pass	
Mercury (filtered)	%	99			70-130	Pass	
Nickel (filtered)	%	96			80-120	Pass	
Zinc (filtered)	%	99			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M18-Se33990	NCP	%	107			70-130	Pass	
TRH C10-C14	M18-Se35595	NCP	%	71			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
BTEX				Result 1					
Benzene	M18-Se33990	NCP	%	102			70-130	Pass	
Toluene	M18-Se33990	NCP	%	105			70-130	Pass	
Ethylbenzene	M18-Se33990	NCP	%	107			70-130	Pass	
m&p-Xylenes	M18-Se33990	NCP	%	110			70-130	Pass	
o-Xylene	M18-Se33990	NCP	%	109			70-130	Pass	
Xylenes - Total	M18-Se33990	NCP	%	110			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M18-Se33990	NCP	%	91			70-130	Pass	
TRH C6-C10	M18-Se33990	NCP	%	108			70-130	Pass	
TRH >C10-C16	M18-Se35595	NCP	%	87			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons (Trace level)				Result 1					
Acenaphthene	P18-Se36749	NCP	%	87			70-130	Pass	
Acenaphthylene	P18-Se36749	NCP	%	92			70-130	Pass	
Anthracene	P18-Se36749	NCP	%	100			70-130	Pass	
Benz(a)anthracene	P18-Se36749	NCP	%	95			70-130	Pass	
Benzo(a)pyrene	P18-Se36749	NCP	%	93			70-130	Pass	
Benzo(b&j)fluoranthene	P18-Se36749	NCP	%	96			70-130	Pass	
Benzo(g.h.i)perylene	P18-Se36749	NCP	%	88			70-130	Pass	
Benzo(k)fluoranthene	P18-Se36749	NCP	%	100			70-130	Pass	
Chrysene	P18-Se36749	NCP	%	106			70-130	Pass	
Dibenz(a.h)anthracene	P18-Se36749	NCP	%	89			70-130	Pass	
Fluoranthene	P18-Se36749	NCP	%	100			70-130	Pass	
Fluorene	P18-Se36749	NCP	%	98			70-130	Pass	
Indeno(1.2.3-cd)pyrene	P18-Se36749	NCP	%	78			70-130	Pass	
Naphthalene	P18-Se36749	NCP	%	91			70-130	Pass	
Phenanthrene	P18-Se36749	NCP	%	96			70-130	Pass	
Pyrene	P18-Se36749	NCP	%	101			70-130	Pass	
Spike - % Recovery									
				Result 1					
Cyanide (total)	M18-Se31644	NCP	%	47			70-130	Fail	Q08
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic (filtered)	P18-Se34777	NCP	%	102			70-130	Pass	
Cadmium (filtered)	P18-Se34777	NCP	%	94			70-130	Pass	
Chromium (filtered)	P18-Se34777	NCP	%	102			70-130	Pass	
Copper (filtered)	P18-Se34777	NCP	%	91			70-130	Pass	
Lead (filtered)	P18-Se34777	NCP	%	94			70-130	Pass	
Mercury (filtered)	P18-Se34777	NCP	%	90			70-130	Pass	
Nickel (filtered)	P18-Se34777	NCP	%	92			70-130	Pass	
Zinc (filtered)	P18-Se34777	NCP	%	94			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	S18-Se34672	CP	%	102			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M18-Oc00183	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M18-Se35594	NCP	mg/L	0.11	0.23	72	30%	Fail	Q15
TRH C15-C28	M18-Se35594	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M18-Se35594	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M18-Oc00183	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M18-Oc00183	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M18-Oc00183	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M18-Oc00183	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M18-Oc00183	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M18-Oc00183	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M18-Oc00183	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M18-Oc00183	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C16-C34	M18-Se35594	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	M18-Se35594	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons (Trace level)				Result 1	Result 2	RPD			
Acenaphthene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	P18-Se36748	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(b&j)fluoranthene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g.h.i)perylene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a.h)anthracene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	P18-Se36748	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Cyanide (total)	M18-Se31644	NCP	mg/L	0.010	0.010	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	P18-Se34777	NCP	mg/L	0.001	0.001	1.0	30%	Pass	
Cadmium (filtered)	P18-Se34777	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	P18-Se34777	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	P18-Se34777	NCP	mg/L	0.002	0.001	5.0	30%	Pass	
Lead (filtered)	P18-Se34777	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	P18-Se34777	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	P18-Se34777	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	P18-Se34777	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	S18-Se34672	CP	mg/L	0.12	0.13	2.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Nibha Vaidya	Analytical Services Manager
Chris Bennett	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Colee Quayle
Project name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT
Project ID:	21247477 TASK 3J FOR CONTAMINATION
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Sep 26, 2018 12:45 PM
Eurofins | mgt reference:	**619676**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☑ Sample containers for volatile analysis received with zero headspace.
- ☒ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Colee Quayle - colee.quayle@ghd.com.

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD Pty Ltd	**Contact Name:**	Jarrad Mawbey 0413 379 023	**Purchase Order :**	**COC Number :**
Office Address :	Level 11, 200 Crown Street	**Project Manager :**	Colee Quayle 0403 242 431	**PROJECT Number :** 2127477 - Task 3J for Contamination	**Eurofins | mgt quote ID :**
	Wollongong, NSW 2500	**Email for results :**	Colee.Quayle@ghd.com	**PROJECT Name :** Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	**Data output format:** ESDAT

Special Directions & C

PAH LOR <0.01mg/L

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B6: TRH, BTEX, Metals (8)	Cyanide	Ammonia	Trace PAH
1	201	-	25/09/2018	W	X	X	X	X
2	204	-	25/09/2018	W	X	X	X	X
3	205	-	25/09/2018	W	X	X	X	X
4	MW2	-	25/09/2018	W	X	X	X	X
5	MW3	-	25/09/2018	W	X	X	X	X
6	MW6	-	25/09/2018	W	X	X	X	X
7	QC1	-	25/09/2018	W	X	X	X	X
8								
9								
10								
11								
12								
13								
14								
15								
16								

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:	Sample comments:
	5 bottles 2 vials
	5 bottles 2 vials
	5 bottles 2 vials
	5 bottles 2 vials
	5 bottles 2 vials
	5 bottles 2 vials
	5 bottles 2 vials

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Jarrad Mawbey	**Received By:**	**Received By:** Elvis Dsouza	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☑ Courier ☑ Hand Delivered ☐ Postal HAND DELIVERED BY ELVIS FROM EUROFINS 26/9/18	9.26°C
Date & Time 26/09/2018	**Date & Time:**	**Date & Time:** 26/9/18 12:45Pm	5 DAY ☑ 10 DAY ☐ Other:	**Courier Consignment # :**	**Report number:** 619676
Signature: J. Mawbey	**Signature:**	**Signature:**			

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Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Sep 26, 2018 12:45 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:**	619676	**Due:**	Oct 4, 2018
		Phone:	02 4222 2300	**Priority:**	5 Day
		Fax:	02 4222 2301	**Contact Name:**	Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	21247477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Ammonia (as N)	Cyanide (total)	Eurofins | mgt Suite B6 (filtered metals)	Polycyclic Aromatic Hydrocarbons (Trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	201	Sep 25, 2018		Water	S18-Se34668	X	X	X	X
2	204	Sep 25, 2018		Water	S18-Se34669	X	X	X	X
3	MW2	Sep 25, 2018		Water	S18-Se34670	X	X	X	X
4	MW3	Sep 25, 2018		Water	S18-Se34671	X	X	X	X
5	MW6	Sep 25, 2018		Water	S18-Se34672	X	X	X	X
6	QC1	Sep 25, 2018		Water	S18-Se34673	X	X	X	X
7	205	Sep 25, 2018		Water	S18-Se34679	X	X	X	X
Test Counts						7	7	7	7

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Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

NATA Accredited
Accreditation Number 1261
Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Jarrad Mawbey**

Report **621814-S**
Project name CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID 2127477-TASK 3J FOR CONTAMINATION
Received Date Oct 09, 2018

Client Sample ID			**BH11 4.5-5.0**	**BH11 12.0-12.25**	**BH11 18.1-18.5**	**BH11 19.6-20.0**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B18-Oc11582**	**B18-Oc11583**	**B18-Oc11584**	**B18-Oc11585**
Date Sampled			**Aug 13, 2018**	**Aug 13, 2018**	**Aug 21, 2018**	**Aug 21, 2018**
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	9.7	6.9	6.5	6.0
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	2.9
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	< 0.005	0.065	< 0.005	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	40	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	7.6	0.26	0.30	n/a
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	1500	51	60	n/a
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	2.4	0.08	0.10	n/a
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	120	110	28	44
>2mm Fraction	0.005	g	14	0.060	< 0.005	< 0.005
Analysed Material	0.1	%	89	100	100	100
Extraneous Material	0.1	%	11	< 0.1	< 0.1	< 0.1
% Moisture	1	%	14	13	21	23

Client Sample ID			BH12 9.0-9.45	BH12 12.25-12.45	BH12 13.5-13.95	BH17 7.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11586	B18-Oc11587	B18-Oc11588	B18-Oc11589
Date Sampled			Aug 29, 2018	Aug 29, 2018	Aug 29, 2018	Sep 07, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	7.6	5.3	4.6	6.5
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	3.7	59	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	0.09	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.027	0.15	4.6	0.73
Chromium Reducible Sulfur -acidity units	3	mol H+/t	17	90	2900	450
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	0.44	n/a	n/a	0.61
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	88	n/a	n/a	120
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	0.14	n/a	n/a	0.19
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	0.14	4.7	0.60
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	94	2900	370
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	7.1	220	28
Extraneous Material						
<2mm Fraction	0.005	g	75	80	60	44
>2mm Fraction	0.005	g	1.2	< 0.005	< 0.005	< 0.005
Analysed Material	0.1	%	98	100	100	100
Extraneous Material	0.1	%	1.5	< 0.1	< 0.1	< 0.1
% Moisture	1	%	17	19	29	37

Client Sample ID			BH21 9.0-9.12	GBH01 2.7-3.0	QC14	GBH01 7.7-8.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11590	B18-Oc11591	B18-Oc11592	B18-Oc11593
Date Sampled			Sep 07, 2018	Sep 07, 2018	Sep 07, 2018	Sep 07, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	5.3	9.5	9.5	8.4
Acid trail - Titratable Actual Acidity	2	mol H+/t	7.1	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.005	0.007	0.009	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	n/a	1.3	1.3	0.50
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	n/a	260	260	100
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	n/a	0.41	0.42	0.16
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02

Client Sample ID			BH21 9.0-9.12	GBH01 2.7-3.0	QC14	GBH01 7.7-8.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B18-Oc11590**	**B18-Oc11591**	**B18-Oc11592**	**B18-Oc11593**
Date Sampled			**Sep 07, 2018**	**Sep 07, 2018**	**Sep 07, 2018**	**Sep 07, 2018**
Test/Reference	LOR	Unit				
Chromium Suite						
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	67	57	69	68
>2mm Fraction	0.005	g	< 0.005	0.030	0.060	2.4
Analysed Material	0.1	%	100	100	100	97
Extraneous Material	0.1	%	< 0.1	< 0.1	< 0.1	3.4
% Moisture	1	%	13	3.1	3.1	16

Client Sample ID			GBH02 0.4-0.6	GBH02 4.2-4.45	GBH02 4.8-5.0	GBH03 2.3-2.5
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B18-Oc11594**	**B18-Oc11595**	**B18-Oc11596**	**B18-Oc11597**
Date Sampled			**Aug 21, 2018**	**Aug 21, 2018**	**Aug 21, 2018**	**Aug 21, 2018**
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	12	8.4	9.7	9.6
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.42	1.1	< 0.005	0.007
Chromium Reducible Sulfur -acidity units	3	mol H+/t	260	700	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	55	17	10	1.8
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	11000	3300	2000	370
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	18	5.3	3.3	0.58
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	22	26	36	35
>2mm Fraction	0.005	g	12	< 0.005	1.6	0.13
Analysed Material	0.1	%	65	100	96	100
Extraneous Material	0.1	%	35	< 0.1	4.3	0.4
% Moisture	1	%	6.0	36	9.6	6.0

Client Sample ID			GBH04 2.7-3.0	QC13	BH05 20.0-20.45	GBH05 1.7-2.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11598	B18-Oc11599	B18-Oc11600	B18-Oc11601
Date Sampled			Sep 07, 2018	Sep 07, 2018	Aug 21, 2018	Aug 29, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	8.1	8.4	7.2	9.4
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	< 0.005	< 0.005	0.012	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	0.54	1.1	0.53	3.0
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	110	220	110	600
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	0.17	0.36	0.17	0.97
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	74	39	32	63
>2mm Fraction	0.005	g	0.10	0.20	< 0.005	0.21
Analysed Material	0.1	%	100	99	100	100
Extraneous Material	0.1	%	0.1	0.5	< 0.1	0.3
% Moisture	1	%	6.3	5.4	22	2.3

Client Sample ID			GBH05 4.7-5.0	GBH05 7.7-8.0	GBH06 0.5-0.7	GBH06 3.7-4.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11602	B18-Oc11603	B18-Oc11604	B18-Oc11605
Date Sampled			Aug 31, 2018	Aug 31, 2018	Aug 29, 2018	Aug 29, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	9.7	9.7	9.6	9.7
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.008	0.009	0.008	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	9.2	15	9.4	3.2
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	1800	3000	1900	640
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	3.0	4.8	3.0	1.0
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02

Client Sample ID			GBH05 4.7-5.0	GBH05 7.7-8.0	GBH06 0.5-0.7	GBH06 3.7-4.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B18-Oc11602**	**B18-Oc11603**	**B18-Oc11604**	**B18-Oc11605**
Date Sampled			**Aug 31, 2018**	**Aug 31, 2018**	**Aug 29, 2018**	**Aug 29, 2018**
Test/Reference	LOR	Unit				
Chromium Suite						
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	80	70	68	42
>2mm Fraction	0.005	g	0.54	0.75	2.7	< 0.005
Analysed Material	0.1	%	99	99	96	100
Extraneous Material	0.1	%	0.7	1.1	3.8	< 0.1
% Moisture	1	%	3.9	16	1.2	4.0

Client Sample ID			GBH06 7.7-8.0	GBH06 9.7-10.0	GBH07 1.7-2.0	GBH07 4.7-5.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B18-Oc11606**	**B18-Oc11607**	**B18-Oc11608**	**B18-Oc11609**
Date Sampled			**Aug 29, 2018**	**Aug 29, 2018**	**Sep 07, 2018**	**Sep 07, 2018**
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	9.8	7.3	9.5	9.7
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.018	< 0.005	0.006	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	11	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	16	0.53	1.4	6.3
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	3100	110	270	1300
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	5.0	0.17	0.44	2.0
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	70	48	62	73
>2mm Fraction	0.005	g	0.37	< 0.005	2.2	< 0.005
Analysed Material	0.1	%	99	100	97	100
Extraneous Material	0.1	%	0.5	< 0.1	3.4	< 0.1
% Moisture	1	%	16	27	4.2	15

Client Sample ID			GBH07 8.7-9.0	BH09 15.15-15.25	GBH08 2.2-2.4	GBH09 2.2-2.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11610	B18-Oc11611	B18-Oc11612	B18-Oc11613
Date Sampled			Sep 07, 2018	Sep 07, 2018	Sep 07, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	8.4	5.5	9.6	9.5
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	5.3	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.33	0.60	< 0.005	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	210	370	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	5.9	n/a	4.4	1.3
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	1200	n/a	880	260
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	1.9	n/a	1.4	0.42
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	0.60	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	380	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	28	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	44	44	33	36
>2mm Fraction	0.005	g	2.6	< 0.005	< 0.005	0.26
Analysed Material	0.1	%	95	100	100	99
Extraneous Material	0.1	%	5.5	< 0.1	< 0.1	0.7
% Moisture	1	%	33	20	2.6	3.4

Client Sample ID			GBH10 4.4-4.6	GBH11 2.1-2.3	GBH12 1.7-2.0	GBH13 2.7-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11614	B18-Oc11615	B18-Oc11616	B18-Oc11617
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	10	9.5	9.0	9.6
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.049	0.009	0.020	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	31	< 3	12	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	8.5	1.6	1.4	7.2
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	1700	320	280	1400
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	2.7	0.50	0.44	2.3
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02

Client Sample ID			GBH10 4.4-4.6	GBH11 2.1-2.3	GBH12 1.7-2.0	GBH13 2.7-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11614	B18-Oc11615	B18-Oc11616	B18-Oc11617
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	31	31	36	32
>2mm Fraction	0.005	g	1.5	< 0.005	0.89	0.39
Analysed Material	0.1	%	95	100	98	99
Extraneous Material	0.1	%	4.6	< 0.1	2.4	1.2
% Moisture	1	%	9.2	3.8	10	3.2

Client Sample ID			GBH13 5.7-6.0	GBH14 2.7-3.0	GBH15 3.7-4.0	GBH16 3.7-4.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11618	B18-Oc11619	B18-Oc11620	B18-Oc11621
Date Sampled			Aug 21, 2018	Sep 07, 2018	Aug 21, 2018	Sep 07, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	9.7	9.6	9.7	9.8
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	< 0.005	< 0.005	< 0.005	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	8.0	4.4	3.5	7.4
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	1600	890	700	1500
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	2.6	1.4	1.1	2.4
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	62	73	49	72
>2mm Fraction	0.005	g	0.13	0.60	< 0.005	< 0.005
Analysed Material	0.1	%	100	99	100	100
Extraneous Material	0.1	%	0.2	0.8	< 0.1	< 0.1
% Moisture	1	%	15	3.0	3.3	2.7

Client Sample ID			GBH16 9.7-10.0	GBH16 3.7-4.0	GBH18 2.7-3.0	GBH18 4.7-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11622	B18-Oc11623	B18-Oc11624	B18-Oc11625
Date Sampled			Sep 07, 2018	Sep 07, 2018	Sep 07, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	9.0	9.8	9.8	9.8
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.041	0.014	0.012	0.009
Chromium Reducible Sulfur -acidity units	3	mol H+/t	26	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	2.0	7.7	5.7	8.9
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	400	1500	1100	1800
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	0.64	2.5	1.8	2.9
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	64	44	62	44
>2mm Fraction	0.005	g	4.6	1.5	0.48	8.4
Analysed Material	0.1	%	93	97	99	84
Extraneous Material	0.1	%	6.7	3.3	0.8	16
% Moisture	1	%	18	4.5	4.5	13

Client Sample ID			GBH19 2.7-3.0	GBH19 3.7-4.0	GBH20 1.7-2.0	GBH20 4.7-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11626	B18-Oc11627	B18-Oc11628	B18-Oc11629
Date Sampled			Aug 21, 2018	Aug 21, 2018	Sep 07, 2018	Sep 07, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	9.8	9.8	9.8	9.8
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.008	0.008	0.010	0.014
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	8.5	11	7.1	14
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	1700	2200	1400	2800
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	2.7	3.6	2.3	4.4
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02

Client Sample ID			GBH19 2.7-3.0	GBH19 3.7-4.0	GBH20 1.7-2.0	GBH20 4.7-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11626	B18-Oc11627	B18-Oc11628	B18-Oc11629
Date Sampled			Aug 21, 2018	Aug 21, 2018	Sep 07, 2018	Sep 07, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	38	51	76	51
>2mm Fraction	0.005	g	< 0.005	3.1	3.2	3.7
Analysed Material	0.1	%	100	94	96	93
Extraneous Material	0.1	%	< 0.1	5.8	4.1	6.7
% Moisture	1	%	3.2	3.4	4.6	20

Client Sample ID			GBH20 8.7-9.0	GBH21 3.7-4.0	GBH22 4.2-4.5	GBH23 2.7-3.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11630	B18-Oc11631	B18-Oc11632	B18-Oc11633
Date Sampled			Sep 07, 2018	Aug 21, 2018	Aug 21, 2018	Sep 07, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	9.4	9.8	9.7	9.8
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.017	0.011	0.015	0.013
Chromium Reducible Sulfur -acidity units	3	mol H+/t	10	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	7.9	9.9	5.9	6.5
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	1600	2000	1200	1300
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	2.5	3.2	1.9	2.1
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	58	37	46	69
>2mm Fraction	0.005	g	7.3	1.6	1.5	0.16
Analysed Material	0.1	%	89	96	97	100
Extraneous Material	0.1	%	11	4.2	3.1	0.2
% Moisture	1	%	17	7.6	19	4.7

Client Sample ID			GBH23 9.7-10.0	GBH24 4.7-4.9	GBH25 3.5-3.7	GBH26 1.8-2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11634	B18-Oc11635	B18-Oc11636	B18-Oc11637
Date Sampled			Sep 07, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	9.3	9.6	9.8	9.7
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.066	0.042	0.013	0.013
Chromium Reducible Sulfur -acidity units	3	mol H+/t	41	26	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	6.7	7.4	6.4	5.1
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	1300	1500	1300	1000
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	2.1	2.4	2.0	1.7
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	42	21	57	31
>2mm Fraction	0.005	g	23	1.4	0.26	0.28
Analysed Material	0.1	%	65	94	100	99
Extraneous Material	0.1	%	35	6.2	0.5	0.9
% Moisture	1	%	16	16	4.3	2.2

Client Sample ID			GBH26 2.8-3.0	GBH28 2.3-2.5	GBH27 1.7-2.0	GBH27 4.7-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11638	B18-Oc11639	B18-Oc11640	B18-Oc11641
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	9.7	9.6	9.7	9.8
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.011	0.007	< 0.005	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	3.9	3.8	4.6	10
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	770	760	920	2100
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	1.2	1.2	1.5	3.3
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02

Client Sample ID			GBH26 2.8-3.0	GBH28 2.3-2.5	GBH27 1.7-2.0	GBH27 4.7-5.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11638	B18-Oc11639	B18-Oc11640	B18-Oc11641
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	36	26	53	57
>2mm Fraction	0.005	g	1.5	< 0.005	0.36	< 0.005
Analysed Material	0.1	%	96	100	99	100
Extraneous Material	0.1	%	4.1	< 0.1	0.7	< 0.1
% Moisture	1	%	3.3	1.1	2.2	11

Client Sample ID			GBH27 9.7-10.0	GBH29 2.4-2.6	GBH30 3.8-4.0	GBH31 1.7-2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11642	B18-Oc11643	B18-Oc11644	B18-Oc11645
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	7.9	9.7	9.7	9.5
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	0.011	< 0.005	< 0.005	0.008
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	0.51	7.7	7.1	2.6
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	100	1500	1400	520
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	0.16	2.5	2.3	0.83
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	67	41	34	76
>2mm Fraction	0.005	g	< 0.005	0.63	0.24	3.8
Analysed Material	0.1	%	100	98	99	95
Extraneous Material	0.1	%	< 0.1	1.5	0.7	4.8
% Moisture	1	%	18	3.1	4.7	8.1

Client Sample ID			QC15	GBH31 2.7-3.0	GBH32 4.1-4.2	GBH33 3.8-4.0
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B18-Oc11646**	**B18-Oc11647**	**B18-Oc11648**	**B18-Oc11649**
Date Sampled			**Aug 21, 2018**	**Aug 21, 2018**	**Aug 21, 2018**	**Aug 21, 2018**
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	8.8	9.7	9.8	9.8
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	< 0.005	0.006	< 0.005	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	0.42	1.5	7.8	8.9
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	83	290	1600	1800
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	0.13	0.47	2.5	2.9
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	45	59	41	48
>2mm Fraction	0.005	g	1.1	< 0.005	1.9	0.71
Analysed Material	0.1	%	98	100	96	99
Extraneous Material	0.1	%	2.4	< 0.1	4.3	1.5
% Moisture	1	%	17	6.6	4.7	6.2

Client Sample ID			GBH33 4.8-5.0	GBH34 0.6-0.8	GBH34 4.8-5.0	GBH35 4.5-4.7
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**B18-Oc11650**	**B18-Oc11651**	**B18-Oc11652**	**B18-Oc11653**
Date Sampled			**Aug 21, 2018**	**Aug 21, 2018**	**Aug 21, 2018**	**Aug 21, 2018**
Test/Reference	LOR	Unit				
Chromium Suite						
pH-KCL	0.1	pH Units	9.8	9.5	9.7	9.7
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	< 0.005	0.011	< 0.005	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	6.8	3.3	6.6	7.5
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	1300	670	1300	1500
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	2.2	1.1	2.1	2.4
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02	< 0.02

Client Sample ID			GBH33 4.8-5.0	GBH34 0.6-0.8	GBH34 4.8-5.0	GBH35 4.5-4.7
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11650	B18-Oc11651	B18-Oc11652	B18-Oc11653
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Chromium Suite						
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1	< 1
Extraneous Material						
<2mm Fraction	0.005	g	45	27	41	45
>2mm Fraction	0.005	g	0.060	3.2	0.19	0.24
Analysed Material	0.1	%	100	89	100	99
Extraneous Material	0.1	%	0.1	11	0.5	0.5
% Moisture	1	%	13	4.9	14	2.7

Client Sample ID			GBH37 2.4-2.6	GBH38 2.7-3.0	GBH39 4.5-4.7
Sample Matrix			Soil	Soil	Soil
Eurofins | mgt Sample No.			B18-Oc11654	B18-Oc11655	B18-Oc11656
Date Sampled			Aug 21, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit			
Chromium Suite					
pH-KCL	0.1	pH Units	9.8	9.4	9.7
Acid trail - Titratable Actual Acidity	2	mol H+/t	< 2	< 2	< 2
sulfidic - TAA equiv. S% pyrite	0.02	% pyrite S	< 0.02	< 0.02	< 0.02
Chromium Reducible Sulfur[S04]	0.005	% S	< 0.005	0.011	< 0.005
Chromium Reducible Sulfur -acidity units	3	mol H+/t	< 3	< 3	< 3
Sulfur - KCl Extractable	0.02	% S	n/a	n/a	n/a
HCl Extractable Sulfur	0.02	% S	n/a	n/a	n/a
Net Acid soluble sulfur	0.02	% S	n/a	n/a	n/a
Net Acid soluble sulfur - acidity units	10	mol H+/t	n/a	n/a	n/a
Net Acid soluble sulfur - equivalent S% pyrite[S02]	0.02	% S	n/a	n/a	n/a
Acid Neutralising Capacity (ANCbt)	0.01	%CaCO3	7.9	4.8	6.4
Acid Neutralising Capacity - acidity (a-ANCbt)	2	mol H+/t	1600	950	1300
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)[S03]	0.02	% S	2.5	1.5	2.0
ANC Fineness Factor		factor	1.5	1.5	1.5
CRS Suite - Net Acidity (Sulfur Units)	0.02	% S	< 0.02	< 0.02	< 0.02
CRS Suite - Net Acidity (Acidity Units)	10	mol H+/t	< 10	< 10	< 10
CRS Suite - Liming Rate[S01]	1	kg CaCO3/t	< 1	< 1	< 1
Extraneous Material					
<2mm Fraction	0.005	g	40	33	44
>2mm Fraction	0.005	g	2.1	13	2.1
Analysed Material	0.1	%	95	71	95
Extraneous Material	0.1	%	5.1	29	4.5
% Moisture	1	%	3.9	11	3.7

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Chromium Reducible Sulfur Suite			
Chromium Suite	Brisbane	Oct 10, 2018	6 Week
- Method: LTM-GEN-7070			
Extraneous Material	Brisbane	Oct 10, 2018	6 Week
- Method: LTM-GEN-7050/7070			
% Moisture	Brisbane	Oct 10, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 621814
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Oct 9, 2018 9:37 AM
Due: Oct 16, 2018
Priority: 5 Day
Contact Name: Jarrad Mawbey

Project Name: CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID: 2127477-TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	BH11 4.5-5.0	Aug 13, 2018		Soil	B18-Oc11582	X	X
2	BH11 12.0-12.25	Aug 13, 2018		Soil	B18-Oc11583	X	X
3	BH11 18.1-18.5	Aug 21, 2018		Soil	B18-Oc11584	X	X
4	BH11 19.6-20.0	Aug 21, 2018		Soil	B18-Oc11585	X	X
5	BH12 9.0-9.45	Aug 29, 2018		Soil	B18-Oc11586	X	X
6	BH12 12.25-12.45	Aug 29, 2018		Soil	B18-Oc11587	X	X
7	BH12 13.5-	Aug 29, 2018		Soil	B18-Oc11588	X	X

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Project Name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA				
Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

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Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
	13.95						
8	BH17 7.5	Sep 07, 2018		Soil	B18-Oc11589	X	X
9	BH21 9.0-9.12	Sep 07, 2018		Soil	B18-Oc11590	X	X
10	GBH01 2.7-3.0	Sep 07, 2018		Soil	B18-Oc11591	X	X
11	QC14	Sep 07, 2018		Soil	B18-Oc11592	X	X
12	GBH01 7.7-8.0	Sep 07, 2018		Soil	B18-Oc11593	X	X
13	GBH02 0.4-0.6	Aug 21, 2018		Soil	B18-Oc11594	X	X
14	GBH02 4.2-4.45	Aug 21, 2018		Soil	B18-Oc11595	X	X
15	GBH02 4.8-5.0	Aug 21, 2018		Soil	B18-Oc11596	X	X
16	GBH03 2.3-2.5	Aug 21, 2018		Soil	B18-Oc11597	X	X
17	GBH04 2.7-3.0	Sep 07, 2018		Soil	B18-Oc11598	X	X

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Received:	Oct 9, 2018 9:37 AM
Due:	Oct 16, 2018
Priority:	5 Day
Contact Name:	Jarrad Mawbey

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
18	QC13	Sep 07, 2018		Soil	B18-Oc11599	X	X
19	BH05 20.0-20.45	Aug 21, 2018		Soil	B18-Oc11600	X	X
20	GBH05 1.7-2.7	Aug 29, 2018		Soil	B18-Oc11601	X	X
21	GBH05 4.7-5.0	Aug 31, 2018		Soil	B18-Oc11602	X	X
22	GBH05 7.7-8.0	Aug 31, 2018		Soil	B18-Oc11603	X	X
23	GBH06 0.5-0.7	Aug 29, 2018		Soil	B18-Oc11604	X	X
24	GBH06 3.7-4.0	Aug 29, 2018		Soil	B18-Oc11605	X	X
25	GBH06 7.7-8.0	Aug 29, 2018		Soil	B18-Oc11606	X	X
26	GBH06 9.7-10.0	Aug 29, 2018		Soil	B18-Oc11607	X	X
27	GBH07 1.7-2.0	Sep 07, 2018		Soil	B18-Oc11608	X	X
28	GBH07 4.7-5.0	Sep 07, 2018		Soil	B18-Oc11609	X	X

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Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
29	GBH07 8.7-9.0	Sep 07, 2018		Soil	B18-Oc11610	X	X
30	BH09 15.15-15.25	Sep 07, 2018		Soil	B18-Oc11611	X	X
31	GBH08 2.2-2.4	Sep 07, 2018		Soil	B18-Oc11612	X	X
32	GBH09 2.2-2.4	Aug 21, 2018		Soil	B18-Oc11613	X	X
33	GBH10 4.4-4.6	Aug 21, 2018		Soil	B18-Oc11614	X	X
34	GBH11 2.1-2.3	Aug 21, 2018		Soil	B18-Oc11615	X	X
35	GBH12 1.7-2.0	Aug 21, 2018		Soil	B18-Oc11616	X	X
36	GBH13 2.7-3.0	Aug 21, 2018		Soil	B18-Oc11617	X	X
37	GBH13 5.7-6.0	Aug 21, 2018		Soil	B18-Oc11618	X	X
38	GBH14 2.7-3.0	Sep 07, 2018		Soil	B18-Oc11619	X	X
39	GBH15 3.7-4.0	Aug 21, 2018		Soil	B18-Oc11620	X	X

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Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
40	GBH16 3.7-4.0	Sep 07, 2018		Soil	B18-Oc11621	X	X
41	GBH16 9.7-10.0	Sep 07, 2018		Soil	B18-Oc11622	X	X
42	GBH16 3.7-4.0	Sep 07, 2018		Soil	B18-Oc11623	X	X
43	GBH18 2.7-3.0	Sep 07, 2018		Soil	B18-Oc11624	X	X
44	GBH18 4.7-5.0	Aug 21, 2018		Soil	B18-Oc11625	X	X
45	GBH19 2.7-3.0	Aug 21, 2018		Soil	B18-Oc11626	X	X
46	GBH19 3.7-4.0	Aug 21, 2018		Soil	B18-Oc11627	X	X
47	GBH20 1.7-2.0	Sep 07, 2018		Soil	B18-Oc11628	X	X
48	GBH20 4.7-5.0	Sep 07, 2018		Soil	B18-Oc11629	X	X
49	GBH20 8.7-9.0	Sep 07, 2018		Soil	B18-Oc11630	X	X
50	GBH21 3.7-4.0	Aug 21, 2018		Soil	B18-Oc11631	X	X

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Project ID: 2127477-TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
51	GBH22 4.2-4.5	Aug 21, 2018		Soil	B18-Oc11632	X	X
52	GBH23 2.7-3.0	Sep 07, 2018		Soil	B18-Oc11633	X	X
53	GBH23 9.7-10.0	Sep 07, 2018		Soil	B18-Oc11634	X	X
54	GBH24 4.7-4.9	Aug 21, 2018		Soil	B18-Oc11635	X	X
55	GBH25 3.5-3.7	Aug 21, 2018		Soil	B18-Oc11636	X	X
56	GBH26 1.8-2.0	Aug 21, 2018		Soil	B18-Oc11637	X	X
57	GBH26 2.8-3.0	Aug 21, 2018		Soil	B18-Oc11638	X	X
58	GBH28 2.3-2.5	Aug 21, 2018		Soil	B18-Oc11639	X	X
59	GBH27 1.7-2.0	Aug 21, 2018		Soil	B18-Oc11640	X	X
60	GBH27 4.7-5.0	Aug 21, 2018		Soil	B18-Oc11641	X	X
61	GBH27 9.7-10.0	Aug 21, 2018		Soil	B18-Oc11642	X	X

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
62	GBH29 2.4-2.6	Aug 21, 2018		Soil	B18-Oc11643	X	X
63	GBH30 3.8-4.0	Aug 21, 2018		Soil	B18-Oc11644	X	X
64	GBH31 1.7-2.0	Aug 21, 2018		Soil	B18-Oc11645	X	X
65	QC15	Aug 21, 2018		Soil	B18-Oc11646	X	X
66	GBH31 2.7-3.0	Aug 21, 2018		Soil	B18-Oc11647	X	X
67	GBH32 4.1-4.2	Aug 21, 2018		Soil	B18-Oc11648	X	X
68	GBH33 3.8-4.0	Aug 21, 2018		Soil	B18-Oc11649	X	X
69	GBH33 4.8-5.0	Aug 21, 2018		Soil	B18-Oc11650	X	X
70	GBH34 0.6-0.8	Aug 21, 2018		Soil	B18-Oc11651	X	X
71	GBH34 4.8-5.0	Aug 21, 2018		Soil	B18-Oc11652	X	X
72	GBH35 4.5-4.7	Aug 21, 2018		Soil	B18-Oc11653	X	X
73	GBH37 2.4-2.6	Aug 21, 2018		Soil	B18-Oc11654	X	X

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Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Oct 9, 2018 9:37 AM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	621814 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Oct 16, 2018 5 Day Jarrad Mawbey
Project Name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA				
Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
74	GBH38 2.7-3.0	Aug 21, 2018		Soil	B18-Oc11655	X	X
75	GBH39 4.5-4.7	Aug 21, 2018		Soil	B18-Oc11656	X	X
Test Counts						75	75

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Chromium Suite							
Chromium Reducible Sulfur	%	97			70-130	Pass	
Acid Neutralising Capacity (ANCbt)	%	101			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
pH-KCL	B18-Oc11582	CP	pH Units	9.7	9.7	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	B18-Oc11582	CP	mol H+/t	< 2	< 2	<1	30%	Pass	
sulfidic - TAA equiv. S% pyrite	B18-Oc11582	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass	
Chromium Reducible Sulfur	B18-Oc11582	CP	% S	< 0.005	< 0.005	<1	30%	Pass	
Chromium Reducible Sulfur -acidity units	B18-Oc11582	CP	mol H+/t	< 3	< 3	<1	30%	Pass	
Sulfur - KCl Extractable	B18-Oc11582	CP	% S	n/a	n/a	n/a	30%	Pass	
HCl Extractable Sulfur	B18-Oc11582	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	B18-Oc11582	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	B18-Oc11582	CP	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	B18-Oc11582	CP	% S	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity (ANCbt)	B18-Oc11582	CP	%CaCO3	7.6	7.6	1.0	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	B18-Oc11582	CP	% S	2.4	2.4	1.0	30%	Pass	
ANC Fineness Factor	B18-Oc11582	CP	factor	1.5	1.5	<1	30%	Pass	
CRS Suite - Net Acidity (Sulfur Units)	B18-Oc11582	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
CRS Suite - Net Acidity (Acidity Units)	B18-Oc11582	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
CRS Suite - Liming Rate	B18-Oc11582	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B18-Oc11582	CP	%	14	15	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B18-Oc11590	CP	%	13	12	2.0	30%	Pass	
Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
pH-KCL	B18-Oc11592	CP	pH Units	9.5	9.6	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	B18-Oc11592	CP	mol H+/t	< 2	< 2	<1	30%	Pass	
sulfidic - TAA equiv. S% pyrite	B18-Oc11592	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass	
Chromium Reducible Sulfur	B18-Oc11592	CP	% S	0.009	0.009	<1	30%	Pass	
Chromium Reducible Sulfur -acidity units	B18-Oc11592	CP	mol H+/t	< 3	< 3	<1	30%	Pass	
Sulfur - KCl Extractable	B18-Oc11592	CP	% S	n/a	n/a	n/a	30%	Pass	
HCl Extractable Sulfur	B18-Oc11592	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	B18-Oc11592	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	B18-Oc11592	CP	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	B18-Oc11592	CP	% S	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity (ANCbt)	B18-Oc11592	CP	%CaCO3	1.3	1.3	2.0	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	B18-Oc11592	CP	% S	0.42	0.42	2.0	30%	Pass	
ANC Fineness Factor	B18-Oc11592	CP	factor	1.5	1.5	<1	30%	Pass	

Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
CRS Suite - Net Acidity (Sulfur Units)	B18-Oc11592	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
CRS Suite - Net Acidity (Acidity Units)	B18-Oc11592	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
CRS Suite - Liming Rate	B18-Oc11592	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B18-Oc11600	CP	%	22	23	4.0	30%	Pass	
Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
pH-KCL	B18-Oc11602	CP	pH Units	9.7	9.7	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	B18-Oc11602	CP	mol H+/t	< 2	< 2	<1	30%	Pass	
sulfidic - TAA equiv. S% pyrite	B18-Oc11602	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass	
Chromium Reducible Sulfur	B18-Oc11602	CP	% S	0.008	0.008	<1	30%	Pass	
Chromium Reducible Sulfur -acidity units	B18-Oc11602	CP	mol H+/t	< 3	< 3	<1	30%	Pass	
Sulfur - KCl Extractable	B18-Oc11602	CP	% S	n/a	n/a	n/a	30%	Pass	
HCl Extractable Sulfur	B18-Oc11602	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	B18-Oc11602	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	B18-Oc11602	CP	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	B18-Oc11602	CP	% S	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity (ANCbt)	B18-Oc11602	CP	%CaCO3	9.2	9.2	1.0	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	B18-Oc11602	CP	% S	3.0	2.9	1.0	30%	Pass	
ANC Fineness Factor	B18-Oc11602	CP	factor	1.5	1.5	<1	30%	Pass	
CRS Suite - Net Acidity (Sulfur Units)	B18-Oc11602	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
CRS Suite - Net Acidity (Acidity Units)	B18-Oc11602	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
CRS Suite - Liming Rate	B18-Oc11602	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B18-Oc11610	CP	%	33	28	17	30%	Pass	
Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
pH-KCL	B18-Oc11612	CP	pH Units	9.6	9.6	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	B18-Oc11612	CP	mol H+/t	< 2	< 2	<1	30%	Pass	
sulfidic - TAA equiv. S% pyrite	B18-Oc11612	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass	
Chromium Reducible Sulfur	B18-Oc11612	CP	% S	< 0.005	< 0.005	<1	30%	Pass	
Chromium Reducible Sulfur -acidity units	B18-Oc11612	CP	mol H+/t	< 3	< 3	<1	30%	Pass	
Sulfur - KCl Extractable	B18-Oc11612	CP	% S	n/a	n/a	n/a	30%	Pass	
HCl Extractable Sulfur	B18-Oc11612	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	B18-Oc11612	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	B18-Oc11612	CP	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	B18-Oc11612	CP	% S	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity (ANCbt)	B18-Oc11612	CP	%CaCO3	4.4	4.4	1.0	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	B18-Oc11612	CP	% S	1.4	1.4	1.0	30%	Pass	
ANC Fineness Factor	B18-Oc11612	CP	factor	1.5	1.5	<1	30%	Pass	
CRS Suite - Net Acidity (Sulfur Units)	B18-Oc11612	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
CRS Suite - Net Acidity (Acidity Units)	B18-Oc11612	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
CRS Suite - Liming Rate	B18-Oc11612	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B18-Oc11620	CP	%	3.3	3.2	4.0	30%	Pass	
Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
pH-KCL	B18-Oc11622	CP	pH Units	9.0	9.0	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	B18-Oc11622	CP	mol H+/t	< 2	< 2	<1	30%	Pass	
sulfidic - TAA equiv. S% pyrite	B18-Oc11622	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass	
Chromium Reducible Sulfur	B18-Oc11622	CP	% S	0.041	0.038	8.0	30%	Pass	
Chromium Reducible Sulfur -acidity units	B18-Oc11622	CP	mol H+/t	26	24	8.0	30%	Pass	
Sulfur - KCl Extractable	B18-Oc11622	CP	% S	n/a	n/a	n/a	30%	Pass	
HCl Extractable Sulfur	B18-Oc11622	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	B18-Oc11622	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	B18-Oc11622	CP	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	B18-Oc11622	CP	% S	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity (ANCbt)	B18-Oc11622	CP	%CaCO3	2.0	2.1	4.0	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	B18-Oc11622	CP	% S	0.64	0.66	4.0	30%	Pass	
ANC Fineness Factor	B18-Oc11622	CP	factor	1.5	1.5	<1	30%	Pass	
CRS Suite - Net Acidity (Sulfur Units)	B18-Oc11622	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
CRS Suite - Net Acidity (Acidity Units)	B18-Oc11622	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
CRS Suite - Liming Rate	B18-Oc11622	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B18-Oc11630	CP	%	17	17	4.0	30%	Pass	
Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
pH-KCL	B18-Oc11632	CP	pH Units	9.7	9.7	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	B18-Oc11632	CP	mol H+/t	< 2	< 2	<1	30%	Pass	
sulfidic - TAA equiv. S% pyrite	B18-Oc11632	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass	
Chromium Reducible Sulfur	B18-Oc11632	CP	% S	0.015	0.015	1.0	30%	Pass	
Chromium Reducible Sulfur -acidity units	B18-Oc11632	CP	mol H+/t	< 3	< 3	<1	30%	Pass	
Sulfur - KCl Extractable	B18-Oc11632	CP	% S	n/a	n/a	n/a	30%	Pass	
HCl Extractable Sulfur	B18-Oc11632	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	B18-Oc11632	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	B18-Oc11632	CP	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	B18-Oc11632	CP	% S	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity (ANCbt)	B18-Oc11632	CP	%CaCO3	5.9	5.9	<1	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	B18-Oc11632	CP	% S	1.9	1.9	<1	30%	Pass	
ANC Fineness Factor	B18-Oc11632	CP	factor	1.5	1.5	<1	30%	Pass	
CRS Suite - Net Acidity (Sulfur Units)	B18-Oc11632	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
CRS Suite - Net Acidity (Acidity Units)	B18-Oc11632	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
CRS Suite - Liming Rate	B18-Oc11632	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B18-Oc11640	CP	%	2.2	2.0	5.0	30%	Pass	

Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
pH-KCL	B18-Oc11642	CP	pH Units	7.9	7.9	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	B18-Oc11642	CP	mol H+/t	< 2	< 2	<1	30%	Pass	
sulfidic - TAA equiv. S% pyrite	B18-Oc11642	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass	
Chromium Reducible Sulfur	B18-Oc11642	CP	% S	0.011	0.011	<1	30%	Pass	
Chromium Reducible Sulfur -acidity units	B18-Oc11642	CP	mol H+/t	< 3	< 3	<1	30%	Pass	
Sulfur - KCl Extractable	B18-Oc11642	CP	% S	n/a	n/a	n/a	30%	Pass	
HCl Extractable Sulfur	B18-Oc11642	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	B18-Oc11642	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	B18-Oc11642	CP	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	B18-Oc11642	CP	% S	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity (ANCbt)	B18-Oc11642	CP	%CaCO3	0.51	0.50	3.0	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	B18-Oc11642	CP	% S	0.16	0.16	3.0	30%	Pass	
ANC Fineness Factor	B18-Oc11642	CP	factor	1.5	1.5	<1	30%	Pass	
CRS Suite - Net Acidity (Sulfur Units)	B18-Oc11642	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
CRS Suite - Net Acidity (Acidity Units)	B18-Oc11642	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
CRS Suite - Liming Rate	B18-Oc11642	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B18-Oc11650	CP	%	13	13	1.0	30%	Pass	
Duplicate									
Chromium Suite				Result 1	Result 2	RPD			
pH-KCL	B18-Oc11652	CP	pH Units	9.7	9.7	<1	30%	Pass	
Acid trail - Titratable Actual Acidity	B18-Oc11652	CP	mol H+/t	< 2	< 2	<1	30%	Pass	
sulfidic - TAA equiv. S% pyrite	B18-Oc11652	CP	% pyrite S	< 0.02	< 0.02	<1	30%	Pass	
Chromium Reducible Sulfur	B18-Oc11652	CP	% S	< 0.005	< 0.005	<1	30%	Pass	
Chromium Reducible Sulfur -acidity units	B18-Oc11652	CP	mol H+/t	< 3	< 3	<1	30%	Pass	
Sulfur - KCl Extractable	B18-Oc11652	CP	% S	n/a	n/a	n/a	30%	Pass	
HCl Extractable Sulfur	B18-Oc11652	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur	B18-Oc11652	CP	% S	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - acidity units	B18-Oc11652	CP	mol H+/t	n/a	n/a	n/a	30%	Pass	
Net Acid soluble sulfur - equivalent S% pyrite	B18-Oc11652	CP	% S	n/a	n/a	n/a	30%	Pass	
Acid Neutralising Capacity (ANCbt)	B18-Oc11652	CP	%CaCO3	6.6	7.3	11	30%	Pass	
Acid Neutralising Capacity - equivalent S% pyrite (s-ANCbt)	B18-Oc11652	CP	% S	2.1	2.3	11	30%	Pass	
ANC Fineness Factor	B18-Oc11652	CP	factor	1.5	1.5	<1	30%	Pass	
CRS Suite - Net Acidity (Sulfur Units)	B18-Oc11652	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
CRS Suite - Net Acidity (Acidity Units)	B18-Oc11652	CP	mol H+/t	< 10	< 10	<1	30%	Pass	
CRS Suite - Liming Rate	B18-Oc11652	CP	kg CaCO3/t	< 1	< 1	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
S01	Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m3'
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCl if greater than or equal to pH 6.5
S04	Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period

Authorised By

Nibha Vaidya	Analytical Services Manager
Myles Clark	Senior Analyst-SPOCAS (QLD)



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Jarrad Mawbey
Project name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID:	2127477-TASK 3J FOR CONTAMINATION
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Oct 9, 2018 9:37 AM
Eurofins | mgt reference:	**621814**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Jarrad Mawbey - jarrad.mawbey@ghd.com.

Enviro Sample Bris

To: Alena Bounkeua
Subject: RE: Chromium Reducible Sulfur Sample Selection (ECGP 2127477)

From: Jarrad Mawbey [mailto:Jarrad.Mawbey@ghd.com]
Sent: Tuesday, 9 October 2018 9:37 AM
To: Alena Bounkeua
Cc: Nibha Vaidya; Enviro Sample NSW
Subject: Chromium Reducible Sulfur Sample Selection (ECGP 2127477)

Hi Alena,

I've attached the an excel spreadsheet with the sample selection for Chromium Reducible sulphur suite, please test samples highlighted in yellow.

This table should capture all the Acid Sulphate soil samples sent for the East Coast Gas Project 2127477, If there are samples not captured on this list can you please advise and I will decide whether testing is needed.

Kind regards,

9/10/18

Jarrad Mawbey
BSc (Geology)
Environmental Geologist

GHD
Proudly employee owned
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GHD WOLLONGONG	ASS INVESTIGATION Acid Sı	pH-F (Field pH test)*	pH-FOX (Field pH Peroxide test)*	Reaction Ratings*	Change				Total selected	75
BH11 3.0-3.5	S18-Au21817	8.8	9.5	4	-0.7	fill	Sand	Brown , grey		
BH11 4.5-5.0	S18-Au21818	9	9.4	4	-0.4	fill	Sand	Brown , grey		1
BH11 6.0-6.4	S18-Au21819	9.1	8.2	4	0.9	fill	Sand	Brown , grey		
BH11 7.6-8.0	S18-Au21820	8.9	8.4	4	0.5	fill	Sand	Brown , grey		
BH11 9.1-9.5	S18-Au21821	8.9	8.7	4	0.2	fill	Sand	pale grey		
BH11 12.0-12.25	S18-Au21822	7.9	2.6	4	5.3	Alluvium	Sandy CLAY	orange brown pale grey		1
BH11 13.65-14.0	S18-Au21823	7.5	7.7	4	-0.2	Alluvium	Sandy CLAY	grey , patchy orange		
BH11 15-15.3	S18-Au21824	7.4	7.6	4	-0.2	Alluvium	Sandy CLAY	grey , patchy orange , brown		
BH11 16.5-16.9	S18-Au38708	7.5	6.8	4	0.7	Alluvium	Sandy CLAY	pale grey ,red , brown, patchy		
BH11 18.1-18.5	S18-Au38709	6.5	6.9	4	-0.4	Alluvium	CLAY	pale grey, brown		1
BH11 19.6-20.0	S18-Au38710	6.2	6.2	4	0	Alluvium	CLAY	grey, brown		1
BH11 21.1-21.5	S18-Au38711	6.8	6.8	4	0	Alluvium	CLAY	grey, brown		
BH12 0-0.5	S18-Se00909	10	8.1	4	1.9	No log				
BH12 0.5-1.0	S18-Se00910	9.7	9.6	4	0.1	No log				
BH12 1.0-1.5	S18-Se00911	9.9	7.9	4	2	No log				
BH12 6.0-6.45	S18-Se00912	9.8	9.1	4	0.7	No log				
BH12 9.0-9.45	S18-Se00913	8.6	6	2	2.6	No log				1
BH12 12.25-12.45	S18-Se00914	7.7	2.4	2	5.3	No log				1
BH12 13.5-13.95	S18-Se00915	6.2	1.7	4	4.5	No log				1
BH17 7.5	S18-Se22910	8.3	2.3	4	6	No log				1
BH17 13.5	S18-Se22913	8.2	7.2	2	1	No log				
BH21 6.0-6.45	S18-Se22915	6.5	5.6	2	0.9	No log				
BH21 9.0-9.12	S18-Se22918	6.9	5.6	2	1.3	No log				1
GBH01 1.7-2.0	S18-Se22863	9.7	8.4	4	1.3	fill	sand	pale brown, grey		
GBH01 2.7-3.0	S18-Se22864	9.8	8.2	4	1.6	fill	sand	pale brown, grey		1
QC14	S18-Se22869	9.8	7.4	2	2.4	fill	sand	pale brown, grey	Duplicate of GBH01 2	1
GBH01 3.7-4.0	S18-Se22865	9.7	8.6	4	1.1	fill	sand	pale brown, grey		
GBH01 4.7-5.0	S18-Se22866	9.8	8.3	4	1.5	fill	sand	pale brown, yellow		
GBH01 6.7-7.0	S18-Se22867	9.4	7.3	1	2.1	fill	sand	pale brown, yellow		
GBH01 7.7-8.0	S18-Se22868	8.6	7.1	1	1.5	estaurine	silty sand	dark brown, grey		1
GBH02 0.1-0.4	S18-Au38714	11	11	4	0	fill	Sand	pale green		
GBH02 0.4-0.6	S18-Au38715	12	11	4	1	fill	Sandy GRAVEL	pale brown		1
GBH02 1.2-1.4	S18-Au38716	9.5	7.3	4	2.2	fill	Sand	brown		
GBH02 4.2-4.45	S18-Au38717	8.3	6.3	4	2	fill	Clayey Sand	black, dark grey		1
GBH02 4.8-5.0	S18-Au38718	9.4	7.1	4	2.3	fill	Sand	brown		1
GBH03 1.0-1.2	S18-Au38741	9.9	9.8	4	0.1	fill	Sand	brown, orange		
GBH03 2.3-2.5	S18-Au38742	9.5	7.8	4	1.7	fill	Sand	brown, orange		1
GBH03 4.0-4.2	S18-Au38743	9.4	9.9	4	-0.5	fill	Sand	pale brown		
GBH04 2.7-3.0	S18-Se22870	7.6	8	4	-0.4	fill	sand	dark brown		1
QC13	S18-Se22873	7.9	8.2	4	-0.3	fill	sand	dark brown	Duplicate of GBH04 2	1
GBH04 3.7-4.0	S18-Se22871	9.3	10	4	-0.7	fill	sand	dark brown		
GBH04 4.7-5.0	S18-Se22872	9.6	8.1	4	1.5	fill	sand	dark brown		
BH05 12.1-12.85	S18-Au38746	8.9	7.4	1	1.5	fill/alluvium	sand	pale grey, brown		
BH05 20.0-20.45	S18-Au38747	8.4	8.5	4	-0.1	alluvium	clay	grey mottled orange brown		1
GBH05 0.5-0.7	S18-Se00904	9.3	8	4	1.3	fill	Sand	brown		

GBH05 1.7-2.7	S18-Se00905	8.8	7.5	4	1.3	fill	Sand	brown	1
GBH05 2.7-3.0	S18-Se00906	9.4	8.1	4	1.3	fill	Sand	brown	
GBH05 3.7-4.0	S18-Se08777	9.3	8.1	4	1.2	fill	Sand	brown	
GBH05 4.7-5.0	S18-Se08778	9.5	8.2	4	1.3	fill	Sand	brown	1
GBH05 6.7-7.0	S18-Se08779	9.4	7.9	1	1.5	fill	Sand	brown	
GBH05 7.7-8.0	S18-Se08780	9.5	7.9	1	1.6	fill	Sand	brown	1
GBH06 0.5-0.7	S18-Se00894	9.5	9.6	4	-0.1	fill	Gravelly SAND	black	1
GBH06 1.7-2.0	S18-Se00895	9.6	8.9	4	0.7	fill	Sand	pale brown	
GBH06 2.7-3.0	S18-Se00896	9.6	9.1	4	0.5	fill	Sand	pale brown	
GBH06 3.7-4.0	S18-Se00897	9.4	8.7	4	0.7	fill	Sand	pale brown	1
GBH06 4.7-5.0	S18-Se00898	9.6	8.1	4	1.5	fill	Sand	pale brown	
GBH06 5.7-6.0	S18-Se00899	9.1	7.7	4	1.4	fill	Sand	pale brown	
GBH06 6.7-7.0	S18-Se00900	8.9	8	4	0.9	fill	Sand	pale brown	
GBH06 7.7-8.0	S18-Se00903	9.5	7.9	4	1.6	fill	Sand	pale brown	1
GBH06 8.9-9.0	S18-Se00901	9.5	8.1	2	1.4	fill	Sand	pale brown	
GBH06 9.7-10.0	S18-Se00902	8.4	7.2	2	1.2	fill	Clay	brown, grey	1
GBH07 1.7-2.0	S18-Se22874	9.2	7.5	4	1.7	fill	sand	brown	1
GBH07 2.7-3.0	S18-Se22875	9.4	7.4	4	2	fill	sand	brown	
GBH07 3.7-4.0	S18-Se22876	8.5	7.1	4	1.4	fill	sand	brown	
GBH07 4.7-5.0	S18-Se22877	9.3	7.3	2	2	fill	sand	brown	1
GBH07 6.7-7.0	S18-Se22878	9.6	7.2	2	2.4	fill	sand	brown, yellow	
GBH07 8.7-9.0	S18-Se22879	8.9	2.8	4	6.1	fill	sand	brown, yellow	1
BH09 13	S18-Au38757	8.2	7	1	1.2	alluvium?	sand	pale grey, brown	
BH09 15.15-15.25	S18-Au38758	8	2.1	4	5.9	alluvium	sand	pale grey, mottled pale brown -orange	1
GBH08 1.2-1.4	S18-Au38720	9.5	7.6	4	1.9	fill	Sand	brown	
GBH08 2.2-2.4	S18-Au38721	9.5	7.6	4	1.9	fill	Sand	pale brown	1
GBH08 4.3-4.5	S18-Au38722	9.5	7.2	4	2.3	fill	Sand	pale brown	
GBH08 4.8-5.0	S18-Au38723	9.5	7.8	4	1.7	fill	Sand	pale brown	
GBH09 2.2-2.4	S18-Au38755	9.4	8.7	4	0.7	fill	sand	pale brown	1
GBH09 4.2-4.4	S18-Au38756	8.5	7.5	4	1	fill	Silty CLAY/SILT	grey, orange, black	
GBH10 2.0-2.2	S18-Au38588	9.1	7.9	4	1.2	fill	sand	pale brown	
GBH10 4.4-4.6	S18-Au38589	10	8.7	4	1.3	fill	sand	pale brown, yellow	1
GBH11 2.1-2.3	S18-Au38593	9.6	7.5	4	2.1	fill	sand	pale brown, pale grey	1
GBH11 5.0-5.1	S18-Au38594	9.2	8.6	4	0.6	fill	clay	dark grey	
GBH12 1.7-2.0	S18-Au38605	8.9	6.9	4	2	fill	sand	pale brown	1
GBH12 2.7-3.0	S18-Au38606	9.4	8.1	4	1.3	fill	sand	pale brown	
GBH12 3.7-4.0	S18-Au38607	9.1	7.2	4	1.9	fill	sand	pale brown	
GBH12 4.0-5.0	S18-Au38608	9.3	7.4	4	1.9	fill	sand	pale brown	
GBH13 1.2-1.3	S18-Au38726	10	7.8	4	2.2	fill	Gravelly Sand	grey	
GBH13 2.7-3.0	S18-Au38727	9.4	7.8	4	1.6	fill	Sand	brown	1
GBH13 3.7-4.0	S18-Au38728	9.6	8.2	4	1.4	fill	Sand	brown	
GBH13 4.7-5.0	S18-Au38729	9.3	7.6	4	1.7	fill	Sand	brown	
GBH13 5.7-6.0	S18-Au38730	9.2	7.3	4	1.9	fill	Sand	brown	1
GBH14 2.7-3.0	S18-Se22886	9.3	7.5	2	1.8	fill	sand	pale brown	1

GBH14 3.7-4.0	S18-Se22887	9.4	7.3	2	2.1	fill	sand	pale brown	
GBH14 4.7-5.0	S18-Se22888	9.8	8.8	4	1	fill	sand	pale brown	
GBH15 1.7-1.9	S18-Au38609	9	8.1	4	0.9	fill	sand	pale brown	
GBH15 2.7-3.0	S18-Au38610	9.2	7.9	4	1.3	fill	sand	pale brown	
GBH15 3.7-4.0	S18-Au38611	9.3	7.2	4	2.1	fill	sand	pale brown	1
GBH15 4.2-4.5	S18-Au38612	9.5	7.3	4	2.2	fill	sand	pale brown	
GBH16 1.7-2.0	S18-Se22896	11	9.6	2	1.4	fill	sand	brown, yellow	
GBH16 2.7-3.0	S18-Se22897	9.7	7.5	2	2.2	fill	sand	brown, yellow	
GBH16 3.7-4.0	S18-Se22898	9.7	7.9	4	1.8	fill	sand	brown, yellow	1
GBH16 4.7-5.0	S18-Se22899	9.7	7.2	2	2.5	fill	sand	brown, yellow	
GBH16 5.7-6.0	S18-Se22900	9.5	7.2	1	2.3	fill	sand	brown, yellow	
GBH16 9.7-10.0	S18-Se22901	9	7.2	2	1.8	fill	sand	brown, yellow	1
GBH17 2.7-3.0	S18-Au38614	9.5	10	4	-0.5	fill	Sand	brown, grey	
GBH17 3.7-4.0	S18-Au38615	9.6	9.3	4	0.3	fill	Sand	brown, grey	1
GBH17 4.7-5.0	S18-Au38616	9.5	7.7	4	1.8	fill	Sand	brown, grey	
GBH18 1.5-1.7	S18-Au38618	10	10	4	0	fill	sand	pale brown	
GBH18 2.7-3.0	S18-Au38619	9.6	9.4	4	0.2	fill	sand	pale brown	1
GBH18 3.7-4.0	S18-Au38620	9.6	7.7	4	1.9	fill	sand	pale brown	
GBH18 4.7-5.0	S18-Au38621	9.6	7.7	4	1.9	fill	sand	pale brown	1
GBH19 1.4-1.7	S18-Au38623	9.6	9.4	4	0.2	fill	sand	pale brown	
GBH19 2.7-3.0	S18-Au38624	9.6	8.1	4	1.5	fill	sand	pale brown	1
GBH19 3.7-4.0	S18-Au38625	9.5	8.2	4	1.3	fill	sand	pale brown	1
GBH19 4.7-5.0	S18-Au38626	9.5	9.4	4	0.1	fill	sand	pale brown	
GBH20 1.7-2.0	S18-Se22889	9.3	9	4	0.3	fill	sand	brown	1
GBH20 2.7-3.0	S18-Se22890	9.5	10	4	-0.5	fill	sand	brown	
GBH20 3.7-4.0	S18-Se22891	9.7	9.4	4	0.3	fill	sand	brown	
GBH20 4.7-5.0	S18-Se22892	9.3	9.1	4	0.2	fill	sand	brown	1
GBH20 6.7-7.0	S18-Se22893	9.5	7.4	2	2.1	fill	sand	brown	
GBH20 8.7-9.0	S18-Se22894	8.6	7.3	2	1.3	fill	sand	brown	1
GBH21 0.5-0.7	S18-Au38736	9.6	8.2	4	1.4	fill	Sandy GRAVEL	brown, grey	
GBH21 1.5-1.8	S18-Au38737	9.8	8.9	4	0.9	fill	Silty SAND	brown	
GBH21 3.7-4.0	S18-Au38738	9.4	8.4	4	1	fill	Sand	brown	1
GBH21 4.7-5.0	S18-Au38739	9.2	10	4	-0.8	fill	Sand	brown	
GBH22 3.2-3.5	S18-Au38733	9.6	8.9	4	0.7	fill	Sand	brown	
GBH22 4.2-4.5	S18-Au38734	9.2	8.2	4	1	fill	Sand	brown	1
GBH22 5.2-5.5	S18-Au38735	9.3	8.5	4	0.8	fill	Sand	brown	
GBH23 1.7-2.0	S18-Se22903	9.5	9.4	4	0.1	fill	sand	brown	
GBH23 2.7-3.0	S18-Se22904	9	10	4	-1	fill	sand	brown	1
GBH23 3.7-4.0	S18-Se22905	9.2	8.9	4	0.3	fill	sand	brown	
GBH23 6.7-7.0	S18-Se22906	9.4	7.4	2	2	fill	sand	brown	
GBH23 9.7-10.0	S18-Se22908	8.6	8.1	4	0.5	fill	sand	brown	1
QC18	S18-Se22909	8.9	5.6	4	3.3	fill	sand	brown	

GBH24 2.0-2.2	S18-Au38663	9.3	10	4	-0.7	fill	Sand	pale brown		
GBH24 3.7-3.9	S18-Au38664	9.3	9.1	4	0.2	fill	Sand	pale brown		
GBH24 4.7-4.9	S18-Au38666	9.1	7.3	4	1.8	fill	Sand	pale brown		1
GBH25 1.5-1.7	S18-Au38627	9.6	8.5	4	1.1	fill	Sand	pale brown		
GBH25 2.5-2.7	S18-Au38628	9.6	10	4	-0.4	fill	Sand	pale brown		
GBH25 3.5-3.7	S18-Au38629	9.5	10	4	-0.5	fill	Sand	pale brown		1
GBH26 1.8-2.0	S18-Au38669	9.1	7.4	4	1.7	fill	Sand	brown		1
GBH26 2.8-3.0	S18-Au38670	9.3	7.5	4	1.8	fill	Sand	brown		*1*
GBH26 3.8-4.0	S18-Au38671	9.4	7.5	4	1.9	fill	Sand	brown		
GBH26 4.75-4.9	S18-Au38672	9.1	7.2	4	1.9	fill	Sand	brown		
GBH28 1.4-1.6	S18-Au38674	9.6	7.5	4	2.1	fill	Sand	brown, orange		
GBH28 2.3-2.5	S18-Au38675	9.1	7.1	4	2	fill	Sand	brown, orange		1
GBH28 3.8-4.0	S18-Au38676	9.4	9.8	4	-0.4	fill	Sand	pale brown		
GBH27 1.7-2.0	S18-Au38630	8.7	7.8	4	0.9	fill	Sand	pale brown		1
GBH27 2.7-3.0	S18-Au38631	9	7.7	4	1.3	fill	Sand	dark brown		
GBH27 3.7-4.0	S18-Au38632	9.5	7.9	4	1.6	fill	Sand	pale brown		
GBH27 4.7-5.0	S18-Au38633	9.5	7.7	2	1.8	fill	Sand	pale brown		1
GBH27 5.7-6.0	S18-Au38634	9.3	7.6	2	1.7	fill	Sand	pale brown		
GBH27 6.7-7.0	S18-Au38960	9.4	7.9	2	1.5	fill	sand	pale brown		
GBH27 9.7-10	S18-Se00893	8.1	6.4	2	1.7	estuarine	silty sand	dark brown		1
GBH29 2.4-2.6	S18-Au38680	9.6	7.3	4	2.3	fill	Sand	pale brown		1
GBH29 4.0-4.2	S18-Au38681	9.3	7.5	4	1.8	fill	Sand	brown, orange		
GBH29	S18-Au38682	11	11	4	0					
GBH30 1.2-1.4	S18-Au38596	10	10	4	0	fill	clayey Gravelly	brown		
GBH30 3.8-4.0	S18-Au38597	9.6	7.4	4	2.2	fill	Sand	pale brown		1
GBH30 4.8-5.0	S18-Au38598	9.6	7.7	4	1.9	fill	Sand	pale brown, yellow		
GBH31 1.7-2.0	S18-Se22880	9.5	8.2	4	1.3	fill	Silty Sand	dark brown		1
QC15	S18-Se22884	8.7	7.2	2	1.5	fill	Silty Sand	dark brown	Duplicate of GBH31 1	1
GBH31 2.7-3.0	S18-Se22881	9.6	7.7	4	1.9	fill	Silty Sand	dark brown		1
GBH31 3.7-4.0	S18-Se22882	10	8.3	4	1.7	fill	Silty Sand	dark brown		
GBH31 4.7-5.0	S18-Se22883	9.5	7.3	2	2.2	fill	Silty Sand	dark brown		
GBH32 4.1-4.2	S18-Au38752	9.4	10	4	-0.6	fill	sand	pale brown, yellow		1
GBH33 0.2-0.4	S18-Au38684	9.3	9.5	4	-0.2	fill	Sandy GRAVEL	black		
GBH33 1.4-1.6	S18-Au38685	9.5	7.5	4	2	fill	Sand	brown		
GBH33 2.4-2.6	S18-Au38713	9.5	10	4	-0.5	fill	Sand	brown		
GBH33 3.8-4.0	S18-Au38686	9.6	10	4	-0.4	fill	Sand	brown		1
GBH33 4.8-5.0	S18-Au38687	9.4	7.9	4	1.5	fill	Sand	pale brown		1
GBH34 0.6-0.8	S18-Au38690	9.7	9.3	4	0.4	fill	Sandy GRAVEL	black		1
GBH34 1.0-1.2	S18-Au38691	9.2	9	4	0.2	fill	Sand	brown, orange		
GBH34 1.9-2.1	S18-Au38692	9.2	9.4	4	-0.2	fill	Sand	light grey		

GBH34 2.8-3.0	S18-Au38693	9.6	9.4	4	0.2	fill	Sand	light grey	
GBH34 4.8-5.0	S18-Au38694	9.1	11	4	-1.9	fill	Sand	light grey	1
GBH35 2.5-2.7	S18-Au38599	9.2	7.9	4	1.3	fill	sand	pale grey	
GBH35 4.5-4.7	S18-Au38600	9.6	8.2	4	1.4	fill	sand	pale grey, yellow	1
GBH37 0.6-0.8	S18-Au38697	10	9.6	4	0.4	fill	Sandy GRAVEL	grey	
GBH37 2.4-2.6	S18-Au38699	9.5	9.8	4	-0.3	fill	Sand	light brown / brown	1
GBH37 3.8-4.0	S18-Au38700	10	10	4	0	fill	Sand	light brown / brown	
GBH38 1.7-2.0	S18-Au38636	9.4	8	4	1.4	fill	Sand	brown	
GBH38 2.7-3.0	S18-Au38637	9.3	7.7	4	1.6	fill	Sand	brown	1
GBH38 3.7-4.0	S18-Au38638	9.1	7.9	4	1.2	fill	Sand	brown	
GBH38 4.7-5.0	S18-Au38639	9.3	8.1	4	1.2	fill	Sand	brown	
GBH39 1.0-1.2	S18-Au38601	9.2	8.9	4	0.3	fill	Sand	pale brown	
GBH39 2.2-2.4	S18-Au38602	9.2	8.3	4	0.9	fill	clayey sand	brown, black	
GBH39 4.5-4.7	S18-Au38603	8.7	7.3	4	1.4	fill	sand	brown, dark brown	1

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Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 621814
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Oct 9, 2018 9:37 AM
Due: Oct 16, 2018
Priority: 5 Day
Contact Name: Jarrad Mawbey

Project Name: CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID: 2127477-TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	BH11 4.5-5.0	Aug 13, 2018		Soil	B18-Oc11582	X	X
2	BH11 12.0-12.25	Aug 13, 2018		Soil	B18-Oc11583	X	X
3	BH11 18.1-18.5	Aug 21, 2018		Soil	B18-Oc11584	X	X
4	BH11 19.6-20.0	Aug 21, 2018		Soil	B18-Oc11585	X	X
5	BH12 9.0-9.45	Aug 29, 2018		Soil	B18-Oc11586	X	X
6	BH12 12.25-12.45	Aug 29, 2018		Soil	B18-Oc11587	X	X
7	BH12 13.5-	Aug 29, 2018		Soil	B18-Oc11588	X	X

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Order No.:
Report #: 621814
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Oct 9, 2018 9:37 AM
Due: Oct 16, 2018
Priority: 5 Day
Contact Name: Jarrad Mawbey

Project Name: CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID: 2127477-TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
	13.95						
8	BH17 7.5	Sep 07, 2018		Soil	B18-Oc11589	X	X
9	BH21 9.0-9.12	Sep 07, 2018		Soil	B18-Oc11590	X	X
10	GBH01 2.7-3.0	Sep 07, 2018		Soil	B18-Oc11591	X	X
11	QC14	Sep 07, 2018		Soil	B18-Oc11592	X	X
12	GBH01 7.7-8.0	Sep 07, 2018		Soil	B18-Oc11593	X	X
13	GBH02 0.4-0.6	Aug 21, 2018		Soil	B18-Oc11594	X	X
14	GBH02 4.2-4.45	Aug 21, 2018		Soil	B18-Oc11595	X	X
15	GBH02 4.8-5.0	Aug 21, 2018		Soil	B18-Oc11596	X	X
16	GBH03 2.3-2.5	Aug 21, 2018		Soil	B18-Oc11597	X	X
17	GBH04 2.7-3.0	Sep 07, 2018		Soil	B18-Oc11598	X	X

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Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	621814 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Oct 16, 2018 5 Day Jarrad Mawbey
Project Name:	CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA				
Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
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Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
18	QC13	Sep 07, 2018		Soil	B18-Oc11599	X	X
19	BH05 20.0-20.45	Aug 21, 2018		Soil	B18-Oc11600	X	X
20	GBH05 1.7-2.7	Aug 29, 2018		Soil	B18-Oc11601	X	X
21	GBH05 4.7-5.0	Aug 31, 2018		Soil	B18-Oc11602	X	X
22	GBH05 7.7-8.0	Aug 31, 2018		Soil	B18-Oc11603	X	X
23	GBH06 0.5-0.7	Aug 29, 2018		Soil	B18-Oc11604	X	X
24	GBH06 3.7-4.0	Aug 29, 2018		Soil	B18-Oc11605	X	X
25	GBH06 7.7-8.0	Aug 29, 2018		Soil	B18-Oc11606	X	X
26	GBH06 9.7-10.0	Aug 29, 2018		Soil	B18-Oc11607	X	X
27	GBH07 1.7-2.0	Sep 07, 2018		Soil	B18-Oc11608	X	X
28	GBH07 4.7-5.0	Sep 07, 2018		Soil	B18-Oc11609	X	X

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

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Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
29	GBH07 8.7-9.0	Sep 07, 2018		Soil	B18-Oc11610	X	X
30	BH09 15.15-15.25	Sep 07, 2018		Soil	B18-Oc11611	X	X
31	GBH08 2.2-2.4	Sep 07, 2018		Soil	B18-Oc11612	X	X
32	GBH09 2.2-2.4	Aug 21, 2018		Soil	B18-Oc11613	X	X
33	GBH10 4.4-4.6	Aug 21, 2018		Soil	B18-Oc11614	X	X
34	GBH11 2.1-2.3	Aug 21, 2018		Soil	B18-Oc11615	X	X
35	GBH12 1.7-2.0	Aug 21, 2018		Soil	B18-Oc11616	X	X
36	GBH13 2.7-3.0	Aug 21, 2018		Soil	B18-Oc11617	X	X
37	GBH13 5.7-6.0	Aug 21, 2018		Soil	B18-Oc11618	X	X
38	GBH14 2.7-3.0	Sep 07, 2018		Soil	B18-Oc11619	X	X
39	GBH15 3.7-4.0	Aug 21, 2018		Soil	B18-Oc11620	X	X

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Received: Oct 9, 2018 9:37 AM
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Priority: 5 Day
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Project Name: CONTAMINATION ASSESSMENT- EAST COAST GAS PIPELINE PORT KEMBLA
Project ID: 2127477-TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
40	GBH16 3.7-4.0	Sep 07, 2018		Soil	B18-Oc11621	X	X
41	GBH16 9.7-10.0	Sep 07, 2018		Soil	B18-Oc11622	X	X
42	GBH16 3.7-4.0	Sep 07, 2018		Soil	B18-Oc11623	X	X
43	GBH18 2.7-3.0	Sep 07, 2018		Soil	B18-Oc11624	X	X
44	GBH18 4.7-5.0	Aug 21, 2018		Soil	B18-Oc11625	X	X
45	GBH19 2.7-3.0	Aug 21, 2018		Soil	B18-Oc11626	X	X
46	GBH19 3.7-4.0	Aug 21, 2018		Soil	B18-Oc11627	X	X
47	GBH20 1.7-2.0	Sep 07, 2018		Soil	B18-Oc11628	X	X
48	GBH20 4.7-5.0	Sep 07, 2018		Soil	B18-Oc11629	X	X
49	GBH20 8.7-9.0	Sep 07, 2018		Soil	B18-Oc11630	X	X
50	GBH21 3.7-4.0	Aug 21, 2018		Soil	B18-Oc11631	X	X

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Project ID:	2127477-TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
51	GBH22 4.2-4.5	Aug 21, 2018		Soil	B18-Oc11632	X	X
52	GBH23 2.7-3.0	Sep 07, 2018		Soil	B18-Oc11633	X	X
53	GBH23 9.7-10.0	Sep 07, 2018		Soil	B18-Oc11634	X	X
54	GBH24 4.7-4.9	Aug 21, 2018		Soil	B18-Oc11635	X	X
55	GBH25 3.5-3.7	Aug 21, 2018		Soil	B18-Oc11636	X	X
56	GBH26 1.8-2.0	Aug 21, 2018		Soil	B18-Oc11637	X	X
57	GBH26 2.8-3.0	Aug 21, 2018		Soil	B18-Oc11638	X	X
58	GBH28 2.3-2.5	Aug 21, 2018		Soil	B18-Oc11639	X	X
59	GBH27 1.7-2.0	Aug 21, 2018		Soil	B18-Oc11640	X	X
60	GBH27 4.7-5.0	Aug 21, 2018		Soil	B18-Oc11641	X	X
61	GBH27 9.7-10.0	Aug 21, 2018		Soil	B18-Oc11642	X	X

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Chromium Reducible Sulfur Suite	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
62	GBH29 2.4-2.6	Aug 21, 2018		Soil	B18-Oc11643	X	X
63	GBH30 3.8-4.0	Aug 21, 2018		Soil	B18-Oc11644	X	X
64	GBH31 1.7-2.0	Aug 21, 2018		Soil	B18-Oc11645	X	X
65	QC15	Aug 21, 2018		Soil	B18-Oc11646	X	X
66	GBH31 2.7-3.0	Aug 21, 2018		Soil	B18-Oc11647	X	X
67	GBH32 4.1-4.2	Aug 21, 2018		Soil	B18-Oc11648	X	X
68	GBH33 3.8-4.0	Aug 21, 2018		Soil	B18-Oc11649	X	X
69	GBH33 4.8-5.0	Aug 21, 2018		Soil	B18-Oc11650	X	X
70	GBH34 0.6-0.8	Aug 21, 2018		Soil	B18-Oc11651	X	X
71	GBH34 4.8-5.0	Aug 21, 2018		Soil	B18-Oc11652	X	X
72	GBH35 4.5-4.7	Aug 21, 2018		Soil	B18-Oc11653	X	X
73	GBH37 2.4-2.6	Aug 21, 2018		Soil	B18-Oc11654	X	X

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

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Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
74	GBH38 2.7-3.0	Aug 21, 2018		Soil	B18-Oc11655	X	X
75	GBH39 4.5-4.7	Aug 21, 2018		Soil	B18-Oc11656	X	X
Test Counts						75	75

Certificate of Analysis

GHD Pty Ltd WOLLONGONG
Level 3, 200 Crown St
Wollongong
NSW 2500

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Colee Quayle**

Report **623417-L**
Project name CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID 21247477- TASK 3J FOR CONTAMINATION
Received Date Oct 17, 2018

Client Sample ID			**GBH32 1.0-1.2**	**GBH30 0.3-0.5**	**BH16 1.0**	**BH11 1.5-2.0**
Sample Matrix			**US Leachate**	**US Leachate**	**US Leachate**	**US Leachate**
Eurofins | mgt Sample No.			**M18-Oc23696**	**M18-Oc23697**	**M18-Oc23699**	**M18-Oc23700**
Date Sampled			**Aug 23, 2018**	**Aug 24, 2018**	**Sep 05, 2018**	**Aug 13, 2018**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.001	mg/L	-	-	-	< 0.001
Acenaphthylene	0.001	mg/L	-	-	-	< 0.001
Anthracene	0.001	mg/L	-	-	-	< 0.001
Benz(a)anthracene	0.001	mg/L	-	-	-	< 0.001
Benzo(a)pyrene	0.001	mg/L	-	-	-	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	-	-	-	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	-	-	-	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	-	-	-	< 0.001
Chrysene	0.001	mg/L	-	-	-	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	-	-	-	< 0.001
Fluoranthene	0.001	mg/L	-	-	-	< 0.001
Fluorene	0.001	mg/L	-	-	-	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	-	-	-	< 0.001
Naphthalene	0.001	mg/L	-	-	-	< 0.001
Phenanthrene	0.001	mg/L	-	-	-	< 0.001
Pyrene	0.001	mg/L	-	-	-	< 0.001
Total PAH*	0.001	mg/L	-	-	-	< 0.001
2-Fluorobiphenyl (surr.)	1	%	-	-	-	58
p-Terphenyl-d14 (surr.)	1	%	-	-	-	67
Heavy Metals						
Chromium	0.01	mg/L	< 0.01	< 0.01	0.02	-
USA Leaching Procedure						
Leachate Fluid[C01]		comment	1.0	2.0	1.0	1.0
pH (initial)	0.1	pH Units	11	12	11	9.5
pH (Leachate fluid)	0.1	pH Units	5.0	2.9	5.0	5.0
pH (off)	0.1	pH Units	11	11	11	6.6
pH (USA HCl addition)	0.1	pH Units	2.0	9.4	2.0	1.5

Client Sample ID			GBH33 0.2-0.4	GBH34 2.8-3.0	GBH26 4.75-4.9	GBH29 2.4-2.5
Sample Matrix			US Leachate	US Leachate	US Leachate	US Leachate
Eurofins | mgt Sample No.			M18-Oc23701	M18-Oc23702	M18-Oc23703	M18-Oc23704
Date Sampled			Aug 20, 2018	Aug 20, 2018	Aug 21, 2018	Aug 21, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	77	56	60	67
p-Terphenyl-d14 (surr.)	1	%	90	65	73	79
USA Leaching Procedure						
Leachate Fluid[C01]		comment	1.0	1.0	1.0	1.0
pH (initial)	0.1	pH Units	9.7	9.2	8.9	9.4
pH (Leachate fluid)	0.1	pH Units	5.0	5.0	5.0	5.0
pH (off)	0.1	pH Units	6.5	6.5	6.6	6.5
pH (USA HCl addition)	0.1	pH Units	1.6	1.6	1.6	1.5

Client Sample ID			GBH09 4.2-4.4	GBH22 0.4-0.5	GBH13 2.7-3.0
Sample Matrix			US Leachate	US Leachate	US Leachate
Eurofins | mgt Sample No.			M18-Oc23705	M18-Oc23706	M18-Oc23707
Date Sampled			Aug 23, 2018	Aug 22, 2018	Aug 22, 2018
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	0.011	< 0.001

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	GBH09 4.2-4.4 US Leachate M18-Oc23705 Aug 23, 2018	GBH22 0.4-0.5 US Leachate M18-Oc23706 Aug 22, 2018	GBH13 2.7-3.0 US Leachate M18-Oc23707 Aug 22, 2018
Polycyclic Aromatic Hydrocarbons					
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	0.011	< 0.001
2-Fluorobiphenyl (surr.)	1	%	57	59	56
p-Terphenyl-d14 (surr.)	1	%	65	71	69
USA Leaching Procedure					
Leachate Fluid[C01]		comment	1.0	1.0	1.0
pH (initial)	0.1	pH Units	8.9	9.1	9.2
pH (Leachate fluid)	0.1	pH Units	5.0	5.0	5.0
pH (off)	0.1	pH Units	6.6	7.1	6.5
pH (USA HCl addition)	0.1	pH Units	1.7	1.6	1.6

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Polycyclic Aromatic Hydrocarbons	Melbourne	Oct 22, 2018	7 Day
- Method:			
Heavy Metals	Melbourne	Oct 19, 2018	180 Day
- Method:			

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Site # 1254 & 14271

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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 623417
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Oct 17, 2018 6:51 PM
Due: Oct 22, 2018
Priority: 2 Day
Contact Name: Colee Quayle

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						CANCELLED	Chromium	Polycyclic Aromatic Hydrocarbons	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	GBH32 1.0-1.2	Aug 23, 2018		US Leachate	M18-Oc23696		X		X
2	GBH30 0.3-0.5	Aug 24, 2018		US Leachate	M18-Oc23697		X		X
3	GBH39 2.2-2.4	Aug 24, 2018		US Leachate	M18-Oc23698	X			
4	BH16 1.0	Sep 05, 2018		US Leachate	M18-Oc23699		X		X
5	BH11 1.5-2.0	Aug 13, 2018		US Leachate	M18-Oc23700			X	X
6	GBH33 0.2-0.4	Aug 20, 2018		US Leachate	M18-Oc23701			X	X
7	GBH34 2.8-3.0	Aug 20, 2018		US Leachate	M18-Oc23702			X	X
8	GBH26 4.75-4.9	Aug 21, 2018		US Leachate	M18-Oc23703			X	X
9	GBH29 2.4-2.5	Aug 21, 2018		US Leachate	M18-Oc23704			X	X

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web : www.eurofins.com.au

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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	GHD Pty Ltd WOLLONGONG	**Order No.:**		**Received:**	Oct 17, 2018 6:51 PM
Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:** **Phone:** **Fax:**	623417 02 4222 2300 02 4222 2301	**Due:** **Priority:** **Contact Name:**	Oct 22, 2018 2 Day Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	21247477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						CANCELLED	Chromium	Polycyclic Aromatic Hydrocarbons	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
10	GBH09 4.2-4.4	Aug 23, 2018		US Leachate	M18-Oc23705			X	X
11	GBH22 0.4-0.5	Aug 22, 2018		US Leachate	M18-Oc23706			X	X
12	GBH13 2.7-3.0	Aug 22, 2018		US Leachate	M18-Oc23707			X	X
Test Counts						1	3	8	11

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Nibha Vaidya	Analytical Services Manager
Chris Bennett	Senior Analyst-Metal (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)



Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Sample Receipt Advice

Company name:	**GHD Pty Ltd WOLLONGONG**
Contact name:	Colee Quayle
Project name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT
Project ID:	21247477 TASK 3J FOR CONTAMINATION
COC number:	Not provided
Turn around time:	2 Day
Date/Time received:	Oct 17, 2018 6:51 PM
Eurofins | mgt reference:	**623417**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☒ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Insufficient sample for GBH39 2.2-2.4 to conduct TCLP testing

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Colee Quayle - colee.quayle@ghd.com.

Enviro Sample Vic

From: Enviro Sample NSW
Sent: Wednesday, 17 October 2018 6:51 PM
To: Enviro Sample Vic Transit; Enviro Sample Vic; Harry Bacalis
Cc: Nibha Vaidya
Subject: FW: TCLP test request.xlsx
Attachments: image001.png; image002.png; image003.png; image004.png; TCLP test request.xlsx; SAU04PRT01018101706480.pdf

Hi Melbourne,

5 day TAT additional for samples in Melbourne

Original document from the client is attached – I've also attached a copy with report/sample IDs

Let us know if there are any issues

Thanks,

Ursula

Tony W.
17/10/18. 2.28pm
Report: 623417

Enviro Sample NSW
Sample Receipt NSW

Eurofins | mgt
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone : +61 2 9900 8492

Email : EnviroSampleNSW@Eurofins.com
Website: www.eurofins.com.au/environmental-testing

From: Colee Quayle [mailto:Colee.Quayle@ghd.com]
Sent: Wednesday, 17 October 2018 2:28 PM
To: Enviro Sample NSW
Cc: Nibha Vaidya
Subject: TCLP test request.xlsx

Hi Nibha

Would you please carry out TCLP testing as per the attached spreadsheet?

We will need results by Friday 19/10/2018? Is that possible?

Thanks.

Regards

Colee Quayle | A GHD Associate
B. Apps. Sci. (Geology/Environmental Science)
Senior Environmental Scientist
Team Leader Contamination – Canberra Illawarra South Coast

23/08/2018	24/08/2018	24/08/2018	5/09/2018	13/08/2018	20/08/2018	20/08/2018	21/08/2018	21/08/2018	23/08/2018	22/08/2018	22/08/2018
GBH32 1.0-1.2	GBH30 0.3-0.5	GBH39 2.2-2.4	BH16 1.0	BH11 1.5-2.0	GBH33 0.2-0.4	GBH34 2.8-3.0	GBH26 4.75-4.9	GBH29 2.4-2.5	GBH09 4.2-4.4	GBH22 0.4-0.5	GBH13 2.7-3.0
Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil
TCLP	Chromium	Chromium	Lead	Chromium	BaP	BaP	BaP	BaP	BaP	BaP	BaP	BaP
TCLP					PAH	PAH	PAH	PAH	PAH	PAH	PAH	PAH

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ABN– 50 005 085 521
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NATA # 1261
Site # 23736

Company Name: GHD Pty Ltd WOLLONGONG
Address: Level 3, 200 Crown St
Wollongong
NSW 2500

Order No.:
Report #: 623417
Phone: 02 4222 2300
Fax: 02 4222 2301

Received: Oct 17, 2018 6:51 PM
Due: Oct 22, 2018
Priority: 2 Day
Contact Name: Colee Quayle

Project Name: CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA
Project ID: 21247477- TASK 3J FOR CONTAMINATION

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						CANCELLED	Chromium	Polycyclic Aromatic Hydrocarbons	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	GBH32 1.0-1.2	Aug 23, 2018		US Leachate	M18-Oc23696		X		X
2	GBH30 0.3-0.5	Aug 24, 2018		US Leachate	M18-Oc23697		X		X
3	GBH39 2.2-2.4	Aug 24, 2018		US Leachate	M18-Oc23698	X			
4	BH16 1.0	Sep 05, 2018		US Leachate	M18-Oc23699		X		X
5	BH11 1.5-2.0	Aug 13, 2018		US Leachate	M18-Oc23700			X	X
6	GBH33 0.2-0.4	Aug 20, 2018		US Leachate	M18-Oc23701			X	X
7	GBH34 2.8-3.0	Aug 20, 2018		US Leachate	M18-Oc23702			X	X
8	GBH26 4.75-4.9	Aug 21, 2018		US Leachate	M18-Oc23703			X	X
9	GBH29 2.4-2.5	Aug 21, 2018		US Leachate	M18-Oc23704			X	X

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Address:	Level 3, 200 Crown St Wollongong NSW 2500	**Report #:**	623417	**Due:**	Oct 22, 2018
		Phone:	02 4222 2300	**Priority:**	2 Day
		Fax:	02 4222 2301	**Contact Name:**	Colee Quayle
Project Name:	CONTAMINATION ASSESSMENT - EAST COAST GAS PIPELINE PROJECT PORT KEMBLA				
Project ID:	21247477- TASK 3J FOR CONTAMINATION				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						CANCELLED	Chromium	Polycyclic Aromatic Hydrocarbons	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X
Sydney Laboratory - NATA Site # 18217									
Brisbane Laboratory - NATA Site # 20794									
Perth Laboratory - NATA Site # 23736									
10	GBH09 4.2-4.4	Aug 23, 2018		US Leachate	M18-Oc23705			X	X
11	GBH22 0.4-0.5	Aug 22, 2018		US Leachate	M18-Oc23706			X	X
12	GBH13 2.7-3.0	Aug 22, 2018		US Leachate	M18-Oc23707			X	X
Test Counts						1	3	8	11

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1821425**	Page	: 1 of 5
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: IAIN LINDLEY	Telephone	: +61-7-3243 7222
Project	: 2127477	Date Samples Received	: 04-Sep-2018
Site	:	Issue Date	: 11-Sep-2018
Sampler	: ----	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Laboratory Control Spike (LCS) Recoveries							
EG035T: Total Recoverable Mercury by FIMS	QC-MRG4-19145050	----	**Mercury**	7439-97-6	136 %	78-122%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-1919399-002	----	**Benzo(b+j)fluoranthene**	205-99-2 205-82-3	136 %	59-129%	**Recovery greater than upper control limit**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	QC-1919399-002	----	**Benzo(a)pyrene**	50-32-8	128 %	76-121%	**Recovery greater than upper control limit**
Matrix Spike (MS) Recoveries							
EP080/071: Total Petroleum Hydrocarbons	EB1821483--001	Anonymous	**C10 - C14 Fraction**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP080/071: Total Petroleum Hydrocarbons	EB1821483--001	Anonymous	**C15 - C28 Fraction**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	EB1821483--001	Anonymous	**>C10 - C16 Fraction**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	EB1821483--001	Anonymous	**>C16 - C34 Fraction**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Buchi Ammonia	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method	***Sample Date***	*Extraction / Preparation*			*Analysis*		
Container / *Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
QC8A	**24-Aug-2018**	**----**	----	----	**05-Sep-2018**	07-Sep-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
QC8A	**24-Aug-2018**	**06-Sep-2018**	20-Feb-2019	✓	**07-Sep-2018**	20-Feb-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
QC8A	**24-Aug-2018**	**06-Sep-2018**	21-Sep-2018	✓	**10-Sep-2018**	21-Sep-2018	✓
EK055: Ammonia as N							
Soil Glass Jar - Unpreserved (EK055)							
QC8A	**24-Aug-2018**	**----**	----	----	**05-Sep-2018**	20-Feb-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
QC8A	**24-Aug-2018**	**06-Sep-2018**	07-Sep-2018	✓	**07-Sep-2018**	16-Oct-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
QC8A	**24-Aug-2018**	**05-Sep-2018**	07-Sep-2018	✓	**06-Sep-2018**	07-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP071)							
QC8A	**24-Aug-2018**	**06-Sep-2018**	07-Sep-2018	✓	**07-Sep-2018**	16-Oct-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
QC8A	**24-Aug-2018**	**05-Sep-2018**	07-Sep-2018	✓	**06-Sep-2018**	07-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP071)							
QC8A	**24-Aug-2018**	**06-Sep-2018**	07-Sep-2018	✓	**07-Sep-2018**	16-Oct-2018	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
QC8A	**24-Aug-2018**	**05-Sep-2018**	07-Sep-2018	✓	**06-Sep-2018**	07-Sep-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Buchi Ammonia	EK055	0	1	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Buchi Ammonia	EK055	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Buchi Ammonia	EK055	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Buchi Ammonia	EK055	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Buchi Ammonia	EK055	SOIL	In house: Referenced to APHA 4500-NH3 B&G, H Samples are steam distilled (Buchi) prior to analysis and quantified using titration, FIA or Discrete Analyser.
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1821425**	Page	: 1 of 6
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: IAIN LINDLEY	Contact	: Caroline Hill
Address	: Level 11, 200 Crown Street, Wollongong, NSW 2500 2500	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 2127477	Date Samples Received	: 04-Sep-2018 14:10
Order number	:	Date Analysis Commenced	: 05-Sep-2018
C-O-C number	: ----	Issue Date	: 11-Sep-2018 17:17
Sampler	: ----		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP075(SIM): High LCS recovery deemed acceptable as all associated analyte results are less than LOR.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	QC8A	----	----	----	----
			Client sampling date / time	24-Aug-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1821425-001	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**5.6**	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**3**	----	----	----	----
Copper	7440-50-8	5	mg/kg	<5	----	----	----	----
Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg	<20	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC8A	----	----	----	----
				Client sampling date / time	24-Aug-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1821425-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	----	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**85.8**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**68.2**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**42.7**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**93.0**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**116**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**101**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**102**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC8A	----	----	----	----
				Client sampling date / time	24-Aug-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		EB1821425-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	0.2	%		**82.3**	**----**	**----**	**----**	**----**
4-Bromofluorobenzene	460-00-4	0.2	%		**88.3**	**----**	**----**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	35	155
2-Chlorophenol-D4	93951-73-6	42	153
2.4.6-Tribromophenol	118-79-6	26	157
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	34	157
Anthracene-d10	1719-06-8	37	153
4-Terphenyl-d14	1718-51-0	42	172
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	53	134
Toluene-D8	2037-26-5	60	131
4-Bromofluorobenzene	460-00-4	59	127

log as EB

General: EB1821425
DIOXIN: EB1890038

eurofins | mgt

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Environmental Division
Brisbane
Work Order Reference
EB1821425

Telephone : +61-7-3243 7222

CHAIN OF CUSTODY RECORD

CLIENT DETAILS — Page 1

Company Name :	GHD Pty Ltd	Contact Name:	Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address :	Level 11, 200 Crown Street	Project Manager :	Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
	Wollongong, NSW 2500	Email for results :	iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format:

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Some common holding times (with correct preserval
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	Zip lock	ASS	Amber 1L	Plastic	Sample comments:
1	GBH10	0.1-0.3	24/08/2018	S	x			x				x	x	x	x				X	X				
2	GBH10	0.6-0.8	24/08/2018	S															X	X				
3	GBH10	2.0-2.2	24/08/2018	S							x								X	X	X			
4	GBH10	4.4-4.6	24/08/2018	S							x								X	X	X			
5	QC8	-	24/08/2018	S	x							x	x	x	x				X	X				
6	QC8A	-	24/08/2018	S	x							x	x	x	x				X	X				Forward to ALS
7	GBH11	0.05-0.3	24/08/2018	S	x														X	X				
8	GBH11	1.4-1.6	24/08/2018	S	x			x				x	x	x	x				X	X				
9	GBH11	2.1-2.3	24/08/2018	S							x								X	X	X			
10	GBH11	5.0-5.1	24/08/2018	S							x								X	X	X			
11	GBH30	0.1-0.3	24/08/2018	S															X	X				
12	GBH30	0.3-0.5	24/08/2018	S	x			x											X	X				
13	GBH30	1.2-1.4	24/08/2018	S	x						x								X	X	X			
14	GBH30	3.8-4.0	24/08/2018	S							x								X	X	X			
15	GBH30	4.8-5.0	24/08/2018	S							x								X	X	X			
16	GBH35	0.05-0.3	24/08/2018	S															X	X				

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Colee Quayle	Received By: JBoyle	Received By: VLONG	1 DAY ☐ 2 DAY ☐ 3 DAY ☐ 5 DAY ☑ 10 DAY ☐ Other:	☐ Courier ☐ Hand Delivered ☐ Postal Courier Consignment # :	
Date & Time 29/8/2018	Date & Time: 4/9 10.10	Date & Time: 30/8 12.12am			Report number: 614912
Signature: C. Quayle	Signature:	Signature:			

Received - Syd. - ALS Crows Nest
31/8/18 12:00pm 13.6°C

Rec. - Syd
31/8/18 1500
13.5°C

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1821425**	Page	: 1 of 6
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: IAIN LINDLEY	Contact	: Caroline Hill
Address	: Level 11, 200 Crown Street, Wollongong, NSW 2500 2500	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 2127477	Date Samples Received	: 04-Sep-2018
Order number	:	Date Analysis Commenced	: 05-Sep-2018
C-O-C number	: ----	Issue Date	: 11-Sep-2018
Sampler	: ----		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 1		
No. of samples analysed	: 1		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1914524)									
EB1821384-056	Anonymous	EA055: Moisture Content	----	0.1	%	11.8	11.0	6.69	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1914505)									
EB1821384-056	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	13	13	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	10	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	12	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	12	16.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	29	29	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1914506)									
EB1821384-056	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1919399)									
EB1821384-056	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1919399) - continued									
EB1821384-056	Anonymous	EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1914521)									
EB1821384-056	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1914521)									
EB1821384-056	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 1914521)									
EB1821384-056	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1914505)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	106 mg/kg	100	84	123
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1 mg/kg	110	88	117
EG005T: Chromium	7440-47-3	2	mg/kg	<2	16.5 mg/kg	104	83	125
EG005T: Copper	7440-50-8	5	mg/kg	<5	50.6 mg/kg	98.1	86	122
EG005T: Lead	7439-92-1	5	mg/kg	<5	64.4 mg/kg	85.1	84	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	13.3 mg/kg	105	89	126
EG005T: Zinc	7440-66-6	5	mg/kg	<5	120.3 mg/kg	93.3	87	127
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1914506)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.09821 mg/kg	# 136	78	122
EK055: Ammonia as N (QCLot: 1914420)								
EK055: Ammonia as N	7664-41-7	20	mg/kg	<20	25 mg/kg	93.4	80	110
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1919399)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	1.5 mg/kg	106	74	119
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	1.5 mg/kg	99.4	74	118
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	1.5 mg/kg	119	83	121
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	1.5 mg/kg	108	81	116
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.5 mg/kg	116	72	117
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	1.5 mg/kg	111	72	115
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.5 mg/kg	114	70	116
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	1.5 mg/kg	112	70	134
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5 mg/kg	115	64	120
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	1.5 mg/kg	116	66	119
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	1.5 mg/kg	# 136	59	129
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.5 mg/kg	126	70	129
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.5 mg/kg	# 128	76	121
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.5 mg/kg	124	53	135
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	1.5 mg/kg	114	45	134
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.5 mg/kg	109	64	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1914521)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	16 mg/kg	107	72	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1919401)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	318 mg/kg	97.0	79	123
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	531 mg/kg	102	77	123

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1919401) - continued								
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1914521)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	18.5 mg/kg	106	70	119
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1919401)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	428 mg/kg	100	81	122
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	395 mg/kg	97.9	74	122
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
EP080: BTEXN (QCLot: 1914521)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	99.3	69	118
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	95.5	73	123
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	93.7	73	115
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	97.2	75	115
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	96.7	75	115
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	101	71	113

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1914505)							
EB1821384-056	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	93.3	70	130
		EG005T: Cadmium	7440-43-9	25 mg/kg	103	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	91.9	70	130
		EG005T: Copper	7440-50-8	50 mg/kg	101	70	130
		EG005T: Lead	7439-92-1	50 mg/kg	91.3	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	92.9	70	130
		EG005T: Zinc	7440-66-6	50 mg/kg	89.5	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1914506)							
EB1821384-056	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	101	70	130
EK055: Ammonia as N (QCLot: 1914420)							
EB1821425-001	QC8A	EK055: Ammonia as N	7664-41-7	100 mg/kg	96.1	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1919399)							
EB1821470-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	1.5 mg/kg	118	70	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1919399) - continued							
EB1821470-002	Anonymous	EP075(SIM): Pyrene	129-00-0	1.5 mg/kg	109	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1914521)							
EB1821425-001	QC8A	EP080: C6 - C9 Fraction	----	8 mg/kg	78.2	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1919401)							
EB1821483-001	Anonymous	EP071: C10 - C14 Fraction	----	318 mg/kg	# Not Determined	70	130
		EP071: C15 - C28 Fraction	----	531 mg/kg	# Not Determined	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1914521)							
EB1821425-001	QC8A	EP080: C6 - C10 Fraction	C6_C10	8 mg/kg	77.0	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1919401)							
EB1821483-001	Anonymous	EP071: >C10 - C16 Fraction	----	428 mg/kg	# Not Determined	70	130
		EP071: >C16 - C34 Fraction	----	395 mg/kg	# Not Determined	70	130
EP080: BTEXN (QCLot: 1914521)							
EB1821425-001	QC8A	EP080: Benzene	71-43-2	2 mg/kg	96.4	70	130
		EP080: Toluene	108-88-3	2 mg/kg	89.4	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1825865**	Page	: 1 of 7
Amendment	: **1**		
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: Colee Quayle	Telephone	: (02) 8784 8504
Project	: 2127477	Date Samples Received	: 03-Sep-2018
Site	:	Issue Date	: 22-Oct-2018
Sampler	: ----	No. of samples received	: 4
Order number	:	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method / Container / Client Sample ID(s)	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA055: Moisture Content (Dried @ 105-110°C)						
Soil Glass Jar - Unpreserved						
QC2a	----	----	----	05-Sep-2018	03-Sep-2018	**2**
EK026SF: Total CN by Segmented Flow Analyser						
Soil Glass Jar - Unpreserved						
QC2a	05-Sep-2018	03-Sep-2018	**2**	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons						
Soil Glass Jar - Unpreserved						
QC2a	05-Sep-2018	03-Sep-2018	**2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons						
Soil Glass Jar - Unpreserved						
QC2a	05-Sep-2018	03-Sep-2018	**2**	05-Sep-2018	03-Sep-2018	**2**
Soil Glass Jar - Unpreserved						
QC2a	05-Sep-2018	03-Sep-2018	**2**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Soil Glass Jar - Unpreserved						
QC2a	05-Sep-2018	03-Sep-2018	**2**	05-Sep-2018	03-Sep-2018	**2**
Soil Glass Jar - Unpreserved						
QC2a	05-Sep-2018	03-Sep-2018	**2**	----	----	----
EP080: BTEXN						
Soil Glass Jar - Unpreserved						
QC2a	05-Sep-2018	03-Sep-2018	**2**	05-Sep-2018	03-Sep-2018	**2**
EP090: Organotin Compounds						
Soil Glass Jar - Unpreserved						
QC2a	07-Sep-2018	03-Sep-2018	**4**	----	----	----

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Organotin Analysis	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Organotin Analysis	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) QC2a	**20-Aug-2018**	**----**	----	----	**05-Sep-2018**	03-Sep-2018	×
Soil Glass Jar - Unpreserved (EA055) QC7a	**23-Aug-2018**	**----**	----	----	**05-Sep-2018**	06-Sep-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) QC2a	**20-Aug-2018**	**07-Sep-2018**	16-Feb-2019	✓	**07-Sep-2018**	16-Feb-2019	✓
Soil Glass Jar - Unpreserved (EG005T) QC7a	**23-Aug-2018**	**07-Sep-2018**	19-Feb-2019	✓	**07-Sep-2018**	19-Feb-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) QC2a	**20-Aug-2018**	**07-Sep-2018**	17-Sep-2018	✓	**10-Sep-2018**	17-Sep-2018	✓
Soil Glass Jar - Unpreserved (EG035T) QC7a	**23-Aug-2018**	**07-Sep-2018**	20-Sep-2018	✓	**10-Sep-2018**	20-Sep-2018	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF) QC2a	**20-Aug-2018**	**05-Sep-2018**	03-Sep-2018	×	**06-Sep-2018**	19-Sep-2018	✓
EK055: Ammonia as N							
Soil Glass Jar - Unpreserved (EK055) QC2a	**20-Aug-2018**	**----**	----	----	**10-Sep-2018**	16-Feb-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) QC2a	**20-Aug-2018**	**05-Sep-2018**	03-Sep-2018	×	**06-Sep-2018**	15-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) QC7a	**23-Aug-2018**	**05-Sep-2018**	06-Sep-2018	✓	**06-Sep-2018**	15-Oct-2018	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071) QC2a	**20-Aug-2018**	**05-Sep-2018**	03-Sep-2018	×	**06-Sep-2018**	15-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP080) QC2a	**20-Aug-2018**	**05-Sep-2018**	03-Sep-2018	×	**05-Sep-2018**	03-Sep-2018	×
Soil Glass Jar - Unpreserved (EP080) QC7a	**23-Aug-2018**	**05-Sep-2018**	06-Sep-2018	✓	**05-Sep-2018**	06-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP071) QC7a	**23-Aug-2018**	**05-Sep-2018**	06-Sep-2018	✓	**06-Sep-2018**	15-Oct-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071) QC2a	**20-Aug-2018**	**05-Sep-2018**	03-Sep-2018	×	**06-Sep-2018**	15-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP080) QC2a	**20-Aug-2018**	**05-Sep-2018**	03-Sep-2018	×	**05-Sep-2018**	03-Sep-2018	×
Soil Glass Jar - Unpreserved (EP080) QC7a	**23-Aug-2018**	**05-Sep-2018**	06-Sep-2018	✓	**05-Sep-2018**	06-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP071) QC7a	**23-Aug-2018**	**05-Sep-2018**	06-Sep-2018	✓	**06-Sep-2018**	15-Oct-2018	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) QC2a	**20-Aug-2018**	**05-Sep-2018**	03-Sep-2018	×	**05-Sep-2018**	03-Sep-2018	×
Soil Glass Jar - Unpreserved (EP080) QC7a	**23-Aug-2018**	**05-Sep-2018**	06-Sep-2018	✓	**05-Sep-2018**	06-Sep-2018	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved (EP090) QC2a	**20-Aug-2018**	**07-Sep-2018**	03-Sep-2018	×	**07-Sep-2018**	17-Oct-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Buchi Ammonia	EK055	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	0	1	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Buchi Ammonia	EK055	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	1	**200.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Buchi Ammonia	EK055	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Buchi Ammonia	EK055	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)
Buchi Ammonia	EK055	SOIL	In house: Referenced to APHA 4500-NH3 B&G, H Samples are steam distilled (Buchi) prior to analysis and quantified using titration, FIA or Discrete Analyser.
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
Organotin Analysis	EP090	SOIL	In house: Referenced to USEPA SW 846 - 8270D Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Organotin Sample Preparation	ORG35	SOIL	In house: 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1825865**	Page	: 1 of 6
Amendment	: **1**		
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: Colee Quayle	Contact	: Brenda Hong
Address	: Level 11, 200 Crown Street, Wollongong, NSW 2500 2500	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2127477	Date Samples Received	: 03-Sep-2018 11:45
Order number	:	Date Analysis Commenced	: 05-Sep-2018
C-O-C number	: ----	Issue Date	: 22-Oct-2018 12:23
Sampler	: ----		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 4		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ashesh Patel	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- 22/10/2018: This report has been amended following changes to the SRN.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC2a	QC7a	----	----	----
				Client sampling date / time	20-Aug-2018 00:00	[23-Aug-2018]	----	----	----
Compound	CAS Number	LOR	Unit		ES1825865-001	ES1825865-004	--------	--------	--------
					Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**4.7**	**3.9**	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg		**3**	<2	----	----	----
Copper	7440-50-8	5	mg/kg		**11**	<5	----	----	----
Lead	7439-92-1	5	mg/kg		**11**	<5	----	----	----
Nickel	7440-02-0	2	mg/kg		**2**	<2	----	----	----
Zinc	7440-66-6	5	mg/kg		**31**	**14**	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		<1	----	----	----	----
EK055: Ammonia as N									
Ammonia as N	7664-41-7	20	mg/kg		<20	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		**0.8**	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		**3.6**	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		**2.7**	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		**1.6**	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg		**1.6**	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		**1.8**	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		**0.7**	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		**1.2**	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		**0.8**	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		**0.9**	<0.5	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		**15.7**	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		**1.7**	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC2a	QC7a	----	----	----
				Client sampling date / time	20-Aug-2018 00:00	[23-Aug-2018]	----	----	----
Compound	CAS Number	LOR	Unit		ES1825865-001	ES1825865-004	--------	--------	--------
					Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**2.0**	**0.6**	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**2.2**	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	<50	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	<50	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
EP090: Organotin Compounds									
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**82.4**	**85.2**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**86.4**	**89.0**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**54.1**	**58.6**	----	----	----
EP075(SIM)T: PAH Surrogates									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC2a	QC7a	----	----	----
				Client sampling date / time	20-Aug-2018 00:00	[23-Aug-2018]	----	----	----
Compound	CAS Number	LOR	Unit		ES1825865-001	ES1825865-004	--------	--------	--------
					Result	Result	----	----	----
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	0.5	%		93.6	91.6	----	----	----
Anthracene-d10	1719-06-8	0.5	%		84.2	83.9	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		87.8	88.5	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		103	103	----	----	----
Toluene-D8	2037-26-5	0.2	%		108	103	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		115	110	----	----	----
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		55.0	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130
EP090S: Organotin Surrogate			
Tripropyltin	----	35	130

12.9.18

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS — Page 3 of 7

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

HT

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH34	4.8-5.0	20/08/2018	S							x							
2	GBH36	0.0-0.15	21/08/2018	S														x
3	GBH37	0.05-0.3	21/08/2018	S														x
4	GBH37	0.6-0.8	21/08/2018	S				x			x							
5	GBH37	1.9-2.1	21/08/2018	S	x							x	x	x	x			
6	GBH37	2.4-2.6	21/08/2018	S							x							
7	GBH37	3.8-4.0	21/08/2018	S							x							
8	GBH37	4.8-5.0	21/08/2018	S	x						x							
9	PACM 1	-	21/08/2018	M				x										
10	PACM 2	-	21/08/2018	M				x										
11	QC1		20/08/2018	S	x													
12	QC2		20/08/2018	S	x							x	x	x	x			
13	QC2a		20/08/2018	S	x							x	x	x	x			
14	QC3		20/08/2018	S														x
15	QC3a		20/08/2018	S														x
16	QC4		21/08/2018	S	x													

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

	Jar	ASS	Asbestos	Amber 1L	Plastic
1	X	X	X		
2			X		
3	X				
4	X	X	X		
5	X		X		
6	X	X	X		
7	X	X	X		
8	X	X	X		
9		X	X		
10		X	X		
11	X				
12	X				
13	X				
14	X				
15	X				
16	X				

Sample comments:

Environmental Division Sydney
Work Order Reference
ES1825865

Telephone : +61-2-8784 8555

Forward to ALS

Temperature on arrival: 2-26

Report number:

GHD Staff	Courier	Laboratory Staff
Relinquished By: Iain Lindley	Received By:	Received By:
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8/18 1:42pm
Signature: I. Lindley	Signature:	Signature:

Turn around time: 1 DAY ☐ 2 DAY ☐ 3 DAY ☐ 5 DAY ☑ 10 DAY ☐ Other:

Method Of Shipment: ☐ Courier ☐ Hand Delivered ☐ Postal
Courier Consignment # :

Subcon: Forward Lab / Split WO
Lab / Analysis: Brisbane
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No: ES1825865
Attach By PO / Internal Sheet:

QS3009_R0 Issue Date: 25 February 2013 Page 1 of 1

Received: Dep M. ALS Crows Nest 3/9/18 1145am 11.2°C 3/9/18 Justin 4pm

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	ASS	Asbestos	Vial	Sample comments:
1	QC5	-	21/08/2018	S														x	X				
2	QC5a	-	21/08/2018	S														x	X				Forward to ALS
3	QC6	-	22/08/2018	S														x	X				
4	Soil Trip Blank	-	21/08/2018	S					x	x												X	
5	Soil Trip Spike	-	21/08/2018	S					x													X	
6	BH11	16.5-16.9	15/08/2018	S							x								X	X	X		
7	BH11	18.1-18.5	15/08/2018	S							x								X	X	X		
8	BH11	19.6-20.0	15/08/2018	S	x						x	x	x	x	x				X	X	X		
9	BH11	21.1-21.5	15/08/2018	S							x								X	X	X		
10	GBH29	1.7-1.9	21/08/2018	S														x			X		
11	GBH33	2.4-2.6	20/08/2018	S							x										X		
12	GBH02	0.1-0.4	23/08/2018	S	x			x			x								X	X	X		
13	GBH02	0.4-0.6	23/08/2018	S	x						x	x	x	x	x				X	X	X		
14	GBH02	1.2-1.4	23/08/2018	S							x								X	X	X		
15	GBH02	4.2-4.45	23/08/2018	S							x								X	X	X		
16	GBH02	4.8-5.0	23/08/2018	S							x								X	X	X		

Analytes

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

GHD Staff	Courier	Laboratory Staff
Relinquished By: Iain Lindley	Received By:	Received By:
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8 11.47pm
Signature: I. Lindley	Signature:	Signature:

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☑ 10 DAY ☐ Other:

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival:

Report number:

Received: Sep M. — ALS Crows Nest 3/9/18 11:45am

3/9/18 Jodie 4pm

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CHAIN OF CUSTODY RECORD

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Office Address :	Level 11, 200 Crown Street	Project Manager :	Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
	Wollongong, NSW 2500	Email for results :	iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold	Containers: Jar	ASS	Asbestos	Vial	Sample comments:
1	GBH22	5.2-5.5	22/08/2018	S							x								X	X	X		
2	GBH21	0.5-0.7	22/08/2018	S	x			x			x								X	X	X		
3	GBH21	1.5-1.8	22/08/2018	S	x						x								X	X	X		
4	GBH21	3.7-4.0	22/08/2018	S							x								X	X	X		
5	GBH21	4.7-5.0	22/08/2018	S							x								X	X	X		
6	GBH03	0.1-0.4	23/08/2018	S	x			x											X	X			
7	GBH03	0.4-0.6	23/08/2018	S														x	X	X			
8	GBH03	1.0-1.2	23/08/2018	S							x								X	X	X		
9	GBH03	2.3-2.5	23/08/2018	S	x						x	x	x	x	x				X	X	X		
10	GBH03	4.0-4.2	23/08/2018	S							x								X	X	X		
11	BH05	15.5-15.95	23/08/2018	S	x							x	x	x	x				X				
12	BH05	17.0-17.45	23/08/2018	S														x	X				
13	BH05	12.1-12.85	23/08/2018	S							x									X			
14	BH05	20.0-20.45	23/08/2018	S	x						x								X	X			
15	QC7	-	-	S	x														X				
16	QC7a	-	-	S	x														X				Forward to ALS

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
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Ferrous iron	7 days	ASLP, TCLP	7 days

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Iain Lindley	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 23/8/2018	Date & Time:	Date & Time: 29/8 11.42pm	5 DAY ☑ 10 DAY ☐ Other:	Courier Consignment # :	Report number:
Signature: I. Lindley	Signature:	Signature:			

Received: Sap M - ALS Crows Nest 3/9/18 Justin 4pm
3/9/18 11:45am

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1825865**	Page	: 1 of 7
Amendment	: **1**		
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: Colee Quayle	Contact	: Brenda Hong
Address	: Level 11, 200 Crown Street, Wollongong, NSW 2500 2500	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2127477	Date Samples Received	: 03-Sep-2018
Order number	:	Date Analysis Commenced	: 05-Sep-2018
C-O-C number	: ----	Issue Date	: 22-Oct-2018
Sampler	: ----		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 4		
No. of samples analysed	: 2		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ashesh Patel	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1915216)									
ES1825865-001	QC2a	EA055: Moisture Content	----	0.1	%	4.7	4.7	0.00	No Limit
ES1826012-006	Anonymous	EA055: Moisture Content	----	0.1	%	18.3	17.9	1.83	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 1920818)									
ES1825865-001	QC2a	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	3	3	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	8	25.6	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	7	35.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	31	30	3.69	No Limit
ES1826106-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	5	48.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	5	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	32	21	38.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	36	31	14.7	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	86	84	2.89	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1920817)									
ES1825865-001	QC2a	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1826106-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 1916795)									
ES1825865-001	QC2a	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EK055: Ammonia as N (QC Lot: 1922263)									
ES1825865-001	QC2a	EK055: Ammonia as N	7664-41-7	20	mg/kg	<20	<20	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1915350)									
ES1825865-001	QC2a	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	0.8	0.9	17.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	3.6	3.9	6.82	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	2.7	2.9	8.88	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	1.6	1.8	7.27	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	1.6	1.6	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	1.8	2.1	14.2	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	0.7	0.8	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	1.2	1.4	15.2	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	0.8	0.8	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	0.9	0.9	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	15.7	17.1	8.54	0% - 20%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	1.7	2.0	14.1	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1914550)									
ES1826060-006	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1826060-012	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1915351)									
ES1825865-001	QC2a	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1914550)									
ES1826060-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1826060-012	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1915351)									
ES1825865-001	QC2a	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 1914550)									
ES1826060-006	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 1914550) - continued									
ES1826060-006	Anonymous	EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES1826060-012	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1920818)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	104	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	102	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	104	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	105	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	104	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	108	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	114	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1920817)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	80.3	70	105
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1916795)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	106	81	129
EK055: Ammonia as N (QCLot: 1922263)								
EK055: Ammonia as N	7664-41-7	20	mg/kg	<20	125 mg/kg	96.8	84	104
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1915350)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	97.7	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	91.2	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	89.2	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	89.2	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	96.0	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	90.4	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	91.8	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	90.9	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	96.7	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	99.6	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	91.6	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	99.8	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	94.2	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	83.4	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	84.6	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	88.2	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1914550)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	97.0	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1915351)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	LCS: Spike Recovery (%)	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1915351) - continued								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	96.1	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	92.3	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	90.2	71	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1914550)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	99.6	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1915351)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	92.5	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	91.5	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	91.8	63	131
EP080: BTEXN (QCLot: 1914550)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	100	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	105	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	100	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	94.2	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	99.8	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	94.6	63	119
EP090: Organotin Compounds (QCLot: 1919140)								
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	1.25 µgSn/kg	98.2	52	139

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1920818)							
ES1825865-001	QC2a	EG005T: Arsenic	7440-38-2	50 mg/kg	94.9	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.8	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	97.4	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	97.7	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	93.8	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	94.3	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	99.7	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1920817)							
ES1825865-001	QC2a	EG035T: Mercury	7439-97-6	5 mg/kg	71.3	70	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 1916795)							
ES1825865-001	QC2a	EK026SF: Total Cyanide	57-12-5	40 mg/kg	107	70	130
EK055: Ammonia as N (QCLot: 1922263)							
ES1825865-001	QC2a	EK055: Ammonia as N	7664-41-7	50 mg/kg	93.0	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1915350)							
ES1825865-001	QC2a	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	85.9	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.7	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1914550)							
ES1826060-006	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	91.6	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1915351)							
ES1825865-001	QC2a	EP071: C10 - C14 Fraction	----	523 mg/kg	97.0	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	108	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	116	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1914550)							
ES1826060-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	92.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1915351)							
ES1825865-001	QC2a	EP071: >C10 - C16 Fraction	----	860 mg/kg	100	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	111	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	108	52	132
EP080: BTEXN (QCLot: 1914550)							
ES1826060-006	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	85.5	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	90.1	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	90.7	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	89.3	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	92.6	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	84.6	70	130

Client	**GHD PTY LTD**	**Laboratory :**	Environmental Division Brisbane		
Contact	Iain Lindley	**Contact**	CUSTOMER.SERVICES.EB	**Work Order:**	**EB1890038**
Address:	LEVEL 11 200 CROWN ST WOLLONGONG, NSW 2500	**Address:**	2 Byth Street Stafford QLD 4053 Australia		
Project	2127477	**Quote #**	----	**Received:**	4 Sep 2018
Order #	- Not provided -			**Issued**	6 Sep 2018
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	iain.lindley@ghd.com	**E-mail**	ALSEnviro.Brisbane@alsglobal.com	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-7-3243 7222	**Received:**	1
Fax	- Not provided -	**Fax**	+61-7-3243 7218	**Analysed:**	3

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence

1 I -TEQ$_{(zero)}$ and WHO-TEQ$_{(zero)}$ calculated treating <LOR as zero concentration
2 I -TEQ$_{(0.5\ LOR)}$ and WHO-TEQ$_{(0.5\ zero)}$ calculated treating <LOR as 0.5 LoR concentration
3 I-TEQ$_{(LOR)}$ and WHO-TEQ$_{(LOR)}$ calculated treating <LOR as LoR concentration
4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound
5 13C12 Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency.

T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

Samples analysed 'as received', results reported on 'dry weight' basis.

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory - 825

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Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Client : GHD PTY LTD
Project : 2127477

Work Order : EB1890038
ALS Quote Reference : ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB1890038001
Client Sample ID: QC8A

Qc Lot Number: 4533314
Sample Matrix: SOIL

Date Sampled: 24-Aug-2018
Date Extracted: 05-Sep-2018
Date Analysed: 05-Sep-2018

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	67.6
12378-PeCDD	<2.5	2.5	1	0.00	1.23	2.47	0.5	0.00	0.62	1.23	72.6
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	81.2
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	75.0
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	93.9
OCDD	<9.9	9.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.01	56.3
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	48.4
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	64.6
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.23	65.1
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	72.8
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	70.0
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	74.9
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	65.0
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	73.8
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	76.7
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	0.00	2.82	5.63	-	0.00	2.48	4.95	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	<0.5	0.5	1
Penta-Dioxins	<2.5	2.5	1
Hexa-Dioxins	<2.5	2.5	1
Hepta-Dioxins	<2.5	2.5	1
Octa-Dioxin	<9.9	9.9	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<4.9	4.9	1
PCDD/Fs	0.0		

Client	**GHD PTY LTD**	**Laboratory :**	Environmental Division Brisbane		
Contact	Iain Lindley	**Contact**	CUSTOMER.SERVICES.EB	**Work Order:**	**EB1890038**
Address:	LEVEL 11 200 CROWN ST WOLLONGONG, NSW 2500	**Address:**	Stafford QLD 4053 Australia		

Project	2127477	**Quote #**	----	**Received:**	4 Sep 2018
Order #	- Not provided -			**Issued**	6 Sep 2018
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	iain.lindley@ghd.com	**E-mail**	ALSEnviro.Brisbane@alsglobal.c	**Number of Samples**	
Phone	- Not provided -	**Phone**	+61-7-3243 7222	**Received:**	1
Fax	- Not provided -	**Fax**	+61-7-3243 7218	**Analysed:**	3

Samples analysed 'as received', results reported on 'dry weight' basis.

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Quality Control Report
Laboratory Duplicates (DUP)

	Original Result	Duplicate Result
Laboratory Sample Id :	EM1890021001	5579608-007
Client Sample Id :	Anonymous	Anonymous
Sample Mass (g) :	10.0	10.0
Qc Lot Number :	4533315	4533315
Moisture Content (%) :		

Compound	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
2378-TCDD	<0.5	0.5	<0.5	0.5	-
12378-PeCDD	4.8	2.5	5.1	2.4	6.1
123478-HxCDD	9.5	2.5	9.7	2.4	2.1
123678-HxCDD	14.2	2.5	15.2	2.4	6.8
123789-HxCDD	21.6	2.5	22.0	2.4	1.8
1234678-HpCDD	447.0	2.5	448.0	2.4	0.2
OCDD	28600.0	9.8	29200.0	9.8	2.1
2378-TCDF	<0.5	0.5	<0.5	0.5	-
12378-PeCDF	<2.5	2.5	<2.4	2.4	-
23478-PeCDF	<2.5	2.5	<2.4	2.4	-
123478-HxCDF	<2.5	2.5	<2.4	2.4	-
123678-HxCDF	<2.5	2.5	<2.4	2.4	-
234678-HxCDF	<2.5	2.5	<2.4	2.4	-
123789-HxCDF	<2.5	2.5	<2.4	2.4	-
1234678-HpCDF	2.8	2.5	<2.4	2.4	-
1234789-HpCDF	<2.5	2.5	<2.4	2.4	-
OCDF	<4.9	4.9	<4.9	4.9	-

Group Totals	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
Tetra-Dioxins	9.0	5.4	8.6	3.4	4.5
Penta-Dioxins	25.6	17.2	25.1	19.6	2.0
Hexa-Dioxins	198.0	17.2	197.0	17.1	0.5
Hepta-Dioxins	933.0	4.9	950.0	4.9	1.8
Octa-Dioxin	28600.0	9.8	29200.0	9.8	2.1
Tetra-Furans	35.0	9.3	33.1	8.3	5.6
Penta-Furans	<7.4	7.4	<19.6	19.6	-
Hexa-Furans	<7.4	7.4	<12.2	12.2	-
Hepta-Furans	<7.4	7.4	5.2	4.9	-
Octa-Furan	<4.9	4.9	<4.9	4.9	-
PCDD/Fs	**29800.6**		**30419.0**		**2.1**

Notes
LOR = Limit of reporting
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa
CDD, dioxin = chlorinated debenzo-p-dioxin
CDF, furan = chlorinated debenzofuran
RPD = relative per cent difference
Permitted ranges for RPD are depencant upon the magnitude of the result in comparison to the LOR.
Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%
- = Where results are less than the LOR, no RPD is reported.

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Quality Control Report
Laboratory Duplicates (DUP)

	Original Result	Duplicate Result
Laboratory Sample Id :	EM1890021011	5579608-026
Client Sample Id :	Anonymous	Anonymous
Sample Mass (g) :	10.0	10.0
Qc Lot Number :	4533315	4533315
Moisture Content (%) :		

Compound	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
2378-TCDD	<0.5	0.5	<0.5	0.5	-
12378-PeCDD	<2.4	2.4	<2.5	2.5	-
123478-HxCDD	<2.4	2.4	<2.5	2.5	-
123678-HxCDD	3.9	2.4	3.5	2.5	10.8
123789-HxCDD	5.1	2.4	4.4	2.5	14.7
1234678-HpCDD	134.0	2.4	140.0	2.5	4.4
OCDD	9170.0	9.8	9260.0	9.8	1.0
2378-TCDF	<0.5	0.5	<0.5	0.5	-
12378-PeCDF	<2.4	2.4	<2.5	2.5	-
23478-PeCDF	<2.4	2.4	<2.5	2.5	-
123478-HxCDF	<2.4	2.4	<2.5	2.5	-
123678-HxCDF	<2.4	2.4	<2.5	2.5	-
234678-HxCDF	<2.4	2.4	<2.5	2.5	-
123789-HxCDF	<2.4	2.4	<2.5	2.5	-
1234678-HpCDF	2.5	2.4	<2.5	2.5	-
1234789-HpCDF	<2.4	2.4	<2.5	2.5	-
OCDF	5.1	4.9	5.2	4.9	1.9

Group Totals	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
Tetra-Dioxins	<0.5	0.5	<0.5	0.5	-
Penta-Dioxins	<19.6	19.6	<19.6	19.6	-
Hexa-Dioxins	52.9	17.1	56.1	17.2	5.9
Hepta-Dioxins	336.0	4.9	356.0	7.4	5.8
Octa-Dioxin	9170.0	9.8	9260.0	9.8	1.0
Tetra-Furans	15.8	5.4	18.0	6.4	13.0
Penta-Furans	<34.2	34.2	<36.8	36.8	-
Hexa-Furans	<22.0	22.0	<22.1	22.1	-
Hepta-Furans	<9.8	9.8	<7.4	7.4	-
Octa-Furan	5.1	4.9	5.2	4.9	1.9
PCDD/Fs	**9579.8**		**9695.3**		**1.2**

Notes
LOR = Limit of reporting
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa
CDD, dioxin = chlorinated debenzo-p-dioxin
CDF, furan = chlorinated debenzofuran
RPD = relative per cent difference
Permitted ranges for RPD are depencant upon the magnitude of the result in comparison to the LOR.
Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%
- = Where results are less than the LOR, no RPD is reported.

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Quality Control Results
Laboratory Control Samples(LCS)

Laboratory Sample Id : 5579608-010
QC Lot Number : 4533315
Sample Name : BCR 529 Sandy soil

Compound	Conc pg/g	Lower 1 pg/g	Upper 1 pg/g	$^{13}C_{12}$ Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	4520.0	3900	5100	69.6	25	164
12378-PeCDD	472.0	390	490	109.4	25	181
123478-HxCDD	1300.0	900	1500	93.3	32	141
123678-HxCDD	5510.0	4500	6300	73.7	28	130
123789-HxCDD	3240.0	2600	3400	-	-	-
2378-TCDF	85.1	65	91	52.6	24	169
12378-PeCDF	147.0	110	170	72.0	24	185
23478-PeCDF	407.0	290	430	72.2	21	178
123478-HxCDF	3640.0	2900	3900	89.3	26	152
123678-HxCDF	1190.0	940	1240	75.7	26	123
234678-HxCDF	404.0	330	410	85.1	28	136
123789-HxCDF	705.0	12	32	75.1	29	147

Notes
1. Acceptable concentration limits are as quoted on the analytical certificate for the cerified reference material
2. Acceptable recovery limits are derived from EPA1613 Revision B
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa

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Quality Control Report
Method Blank (MB)

Laboratory Sample ID: 5579608-001
Qc Lot Number : 4533315

Sample Matrix: SOIL
Date Extracted: 05-Sep-2018
Date Analysed: 05-Sep-2018

Compound											
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	66.0
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.50	0.5	0.00	0.63	1.25	89.9
123478-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	81.3
123678-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	71.9
123789-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	-
1234678-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	97.8
OCDD	<10.0	10.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.01	0.01	66.8
2378-TCDF	<0.5	0.5	0.1	0.00	0.03	0.05	0.1	0.00	0.03	0.05	51.5
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.08	0.05	0.00	0.06	0.13	76.3
23478-PeCDF	<2.5	2.5	0.3	0.00	0.38	0.75	0.5	0.00	0.63	1.25	75.5
123478-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	76.9
123678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	73.7
234678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	79.5
123789-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	73.8
1234678-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	77.2
1234789-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	90.4
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.01	-
			TEQ(WHO)	0.00	2.89	5.72	TEQ(I)	0.00	2.55	5.04	

Group Totals			
Tetra-Dioxins	<0.5	0.5	1
Penta-Dioxins	<2.5	2.5	1
Hexa-Dioxins	<2.5	2.5	1
Hepta-Dioxins	<5.0	5.0	2
Octa-Dioxin	<10.0	10.0	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
PCDD/Fs	0.00		

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence (pg/g)
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence (pg/g)
T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran
1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration (pg/g)
2 I-TEQ(0.5 LOR) and WHO-TEQ(0.5 LOR) calculated treating <LOR as 50% LoR concentration (pg/g)
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration (pg/g)
4 Totals LORs are calculated by mutiplying the number of peaks by the individual LOR per compound

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EB1890038**		
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: Iain Lindley	Contact	: Customer Services Brisbane
Address	: LEVEL 11 200 CROWN ST WOLLONGONG, NSW 2500	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: iain.lindley@ghd.com	E-mail	: ALSEnviro.Brisbane@alsglobal.com
Telephone	: ----	Telephone	: +61 7 3243 7222
Facsimile	: ----	Facsimile	: +61 7 3243 7218
Project	: 2127477	Page	: 1 of 2
Order number	: ----		
C-O-C number	: ----	Quote number	: ----
Site	: ----		
Sampler	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received	: 04-SEP-2018	Issue Date	: 04-SEP-2018 20:56
Client Requested Due Date	: 18-SEP-2018	Scheduled Reporting Date	: **18-SEP-2018**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 4.0°C - Ice present
No. of coolers/boxes	: 1	No. of samples received	: 1
Security Seal	: Intact.	No. of samples analysed	: 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **This work order has been created to report dioxins analysis only. All other results will be reported as work order EB1821425.**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' etc. suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to Michelle Herin (Samples.Brisbane@alsglobal.com)
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958),
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - HRMS - Combined Dioxins and Furans (SOILS)
EB1890038-001	24-AUG-2018 15:00	QC8A	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

Iain Lindley

- A4 - AU Sample Receipt Notification - Environmental HT (SRN	Email	iain.lindley@ghd.com
- AU Certificate of Analysis - DIOXINS/HRMS (DIONA)	Email	iain.lindley@ghd.com
- AU QC Report - DIOXINS/HRMS (DQCNA)	Email	iain.lindley@ghd.com
- Chain of Custody (CoC) (COC)	Email	iain.lindley@ghd.com
- EDI Format - ESDAT GHD (ESDAT_GHD)	Email	iain.lindley@ghd.com
- EDI Format - XTab (XTAB)	Email	iain.lindley@ghd.com

THE ACCOUNTS PAYABLE (Brisbane)

- A4 - AU Tax Invoice (INV)	Email	ap-fss@ghd.com

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1826527**	Page	: 1 of 4
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: Colee Quayle	Telephone	: (02) 8784 8504
Project	: 2127477	Date Samples Received	: 07-Sep-2018
Site	:	Issue Date	: 13-Sep-2018
Sampler	: ----	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
QC11A	**31-Aug-2018**	**----**	----	----	**10-Sep-2018**	14-Sep-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
QC11A	**31-Aug-2018**	**12-Sep-2018**	27-Feb-2019	✓	**12-Sep-2018**	27-Feb-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
QC11A	**31-Aug-2018**	**12-Sep-2018**	28-Sep-2018	✓	**13-Sep-2018**	28-Sep-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
QC11A	**31-Aug-2018**	**11-Sep-2018**	14-Sep-2018	✓	**12-Sep-2018**	21-Oct-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
QC11A	**31-Aug-2018**	**08-Sep-2018**	14-Sep-2018	✓	**11-Sep-2018**	14-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP071)							
QC11A	**31-Aug-2018**	**11-Sep-2018**	14-Sep-2018	✓	**12-Sep-2018**	21-Oct-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
QC11A	**31-Aug-2018**	**08-Sep-2018**	14-Sep-2018	✓	**11-Sep-2018**	14-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP071)							
QC11A	**31-Aug-2018**	**11-Sep-2018**	14-Sep-2018	✓	**12-Sep-2018**	21-Oct-2018	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
QC11A	**31-Aug-2018**	**08-Sep-2018**	14-Sep-2018	✓	**11-Sep-2018**	14-Sep-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1826527**	Page	: 1 of 6
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: Colee Quayle	Contact	: Brenda Hong
Address	: LEVEL 15, 133 CASTLEREAGH STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2127477	Date Samples Received	: 07-Sep-2018 14:50
Order number	:	Date Analysis Commenced	: 08-Sep-2018
C-O-C number	: ----	Issue Date	: 13-Sep-2018 19:53
Sampler	: ----		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	QC11A	----	----	----	----
			Client sampling date / time	31-Aug-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1826527-001	--------	--------	--------	--------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**16.0**	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**7**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**2**	----	----	----	----
Copper	7440-50-8	5	mg/kg	<5	----	----	----	----
Lead	7439-92-1	5	mg/kg	**6**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**39**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC11A	----	----	----	----
				Client sampling date / time	31-Aug-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1826527-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	----	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**82.5**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**79.8**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**61.9**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**86.9**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**94.8**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**85.2**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**94.2**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**99.6**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC11A	----	----	----	----
				Client sampling date / time	31-Aug-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1826527-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**98.4**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

eurofins | mgt

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Phone: +617 3902 4600
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☐ Melbourne
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD Pty Ltd	Contact Name:	Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address :	Level 11, 200 Crown Street	Project Manager :	Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
	Wollongong, NSW 2500	Email for results :	iain.lindley@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	M8: Metals	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH13	5.7-6.0	22/08/2018	S									x					
2	GBH22	5.2-5.5	22/08/2018	S									x					
3	GBH05	3.7-4.0	31/08/2018	S							x							
4	GBH05	4.7-5.0	31/08/2018	S							x							
5	GBH05	6.7-7.0	31/08/2018	S	x						x							
6	GBH05	7.7-8.0	31/08/2018	S							x							
7	GBH05	8.7-9.0	31/08/2018	S	x													
8	QC11	-	31/08/2018	S	x													
9	QC11A	-	31/08/2018	S	x													
10	QC12	-	31/08/2018	S	x													
11	BH15	2.6-2.7	3/09/2018	S														x
12	BH15	10.5-10.95	3/09/2018	S														x
13	BH15	19.5-19.95	4/09/2018	S														x
14	BH15	15-15.45	4/09/2018	S														x
15	BH15	6.0-6.35	3/09/2018	S														x
16	BH15	3.9	3/09/2018	S														x

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX,	
Ferrous iron	7 days	ASLP, TCLP	

Containers:

	Jar	Zip lock	ASS	Amber 1L	Plastic
1	X	X	X		
2	X	X	X		
3	X	X	X		
4	X	X	X		
5	X	X	X		
6	X	X	X		
7	X	X	X		
8	X	X	X		
9	X		X		
10	X	X	X		
11	X				
12		X			
13			X		
14			X		
15			X		
16			X		

Environmental Division
Sydney
Work Order Reference
ES1826527

Telephone : + 61-2-8784 8555

GHD Staff	Courier	Laboratory Staff
Relinquished By: Colee Quayle	Received By:	Received By:
Date & Time 6/9/2018	Date & Time:	Date & Time: 11:29 am 6/9
Signature:	Signature:	Signature:

Turn around time
1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☑ 10 DAY ☐ Other:

Method Of Shipment
☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 3.43°C

Report number:

Received: Sep M. - ALS Cows Nest 7/9/18 1450 9.2°C

Received; MGould @ Smithfield 7.9.18 19:40

QUALITY CONTROL REPORT

Work Order	: **ES1826527**	Page	: 1 of 7
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: Colee Quayle	Contact	: Brenda Hong
Address	: LEVEL 15, 133 CASTLEREAGH STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2127477	Date Samples Received	: 07-Sep-2018
Order number	:	Date Analysis Commenced	: 08-Sep-2018
C-O-C number	: ----	Issue Date	: 13-Sep-2018
Sampler	: ----		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

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Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1923792)									
ES1826303-022	Anonymous	EA055: Moisture Content	----	0.1	%	10.9	10.9	0.00	0% - 50%
ES1826303-033	Anonymous	EA055: Moisture Content	----	0.1	%	6.8	6.7	0.00	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1927387)									
EB1821449-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	16	6.66	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	98	105	6.41	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	46	44	3.19	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	47	69	38.5	0% - 50%
ES1826607-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	20	18.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	8	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	23	22	5.64	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	58	48	19.1	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	127	110	14.5	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1927388)									
EB1821449-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1826607-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1922552)									
ES1826540-016	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1922552) - continued									
ES1826540-016	Anonymous	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1826526-042	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	1.5	1.3	8.76	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	5.1	4.7	8.29	0% - 50%
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	2.0	1.7	16.5	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	20.1	20.6	2.38	0% - 20%
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	18.9	20.0	5.83	0% - 20%
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	8.7	9.3	7.18	0% - 50%
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	7.3	8.1	9.86	0% - 50%
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	9.5	9.7	2.12	0% - 50%
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	3.5	4.0	14.1	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	8.7	9.1	4.90	0% - 50%
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	4.7	5.3	11.1	0% - 50%
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	1.2	1.4	17.1	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	6.0	6.2	3.80	0% - 50%
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	97.2	101	4.23	0% - 20%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	12.7	13.5	6.12	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1921732)									
ES1826496-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1826609-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1922550)									
ES1826540-016	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1826526-042	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	240	220	7.04	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	210	220	5.68	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1921732)									
ES1826496-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	12	12	0.00	No Limit
ES1826609-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1922550)									
ES1826540-016	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1826526-042	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	410	400	3.05	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	110	120	10.1	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 1921732)									
ES1826496-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	1.0	0.9	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	2	2	0.00	No Limit
ES1826609-002	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1927387)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	97.6	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	99.8	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	89.4	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	99.9	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	98.3	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	101	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	112	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1927388)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	79.3	70	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1922552)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	95.5	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	95.7	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	92.9	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	94.0	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	99.7	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	98.0	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	97.9	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	100	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	95.1	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	93.6	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	94.1	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	96.6	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	93.6	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	94.2	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	96.0	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	99.4	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1921732)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	99.7	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1922550)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	99.1	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	110	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	110	71	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1921732)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1921732) - continued								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	105	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1922550)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	101	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	109	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	101	63	131
EP080: BTEXN (QCLot: 1921732)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	102	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	107	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	105	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	101	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	103	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	99.9	63	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1927387)							
EB1821449-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	104	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	102	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	106	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	109	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	100	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	130	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	107	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1927388)							
EB1821449-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	80.1	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1922552)							
ES1826526-042	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	97.6	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	86.0	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1921732)							
ES1826527-001	QC11A	EP080: C6 - C9 Fraction	----	32.5 mg/kg	95.2	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1922550)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1922550) - continued							
ES1826526-042	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	110	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	122	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	124	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1921732)							
ES1826527-001	QC11A	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	97.2	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1922550)							
ES1826526-042	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	105	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	120	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	112	52	132
EP080: BTEXN (QCLot: 1921732)							
ES1826527-001	QC11A	EP080: Benzene	71-43-2	2.5 mg/kg	96.4	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	98.5	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	105	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	103	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	104	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	95.2	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1827755**	Page	: 1 of 5
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: Colee Quayle	Telephone	: (02) 8784 8504
Project	: 2127477	Date Samples Received	: 19-Sep-2018
Site	:	Issue Date	: 24-Sep-2018
Sampler	: ----	No. of samples received	: 4
Order number	:	No. of samples analysed	: 3

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	ES1827425--053	Anonymous	**Arsenic**	7440-38-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG005T: Total Metals by ICP-AES	ES1827425--053	Anonymous	**Chromium**	7440-47-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) QC13a	**06-Sep-2018**	**----**	----	----	**20-Sep-2018**	20-Sep-2018	✓
Soil Glass Jar - Unpreserved (EA055) QC14a	**07-Sep-2018**	**----**	----	----	**20-Sep-2018**	21-Sep-2018	✓
Soil Glass Jar - Unpreserved (EA055) QC18a	**11-Sep-2018**	**----**	----	----	**20-Sep-2018**	25-Sep-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) QC13a	**06-Sep-2018**	**21-Sep-2018**	05-Mar-2019	✓	**24-Sep-2018**	05-Mar-2019	✓
Soil Glass Jar - Unpreserved (EG005T) QC14a	**07-Sep-2018**	**21-Sep-2018**	06-Mar-2019	✓	**24-Sep-2018**	06-Mar-2019	✓
Soil Glass Jar - Unpreserved (EG005T) QC18a	**11-Sep-2018**	**21-Sep-2018**	10-Mar-2019	✓	**24-Sep-2018**	10-Mar-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) QC13a	**06-Sep-2018**	**21-Sep-2018**	04-Oct-2018	✓	**24-Sep-2018**	04-Oct-2018	✓
Soil Glass Jar - Unpreserved (EG035T) QC14a	**07-Sep-2018**	**21-Sep-2018**	05-Oct-2018	✓	**24-Sep-2018**	05-Oct-2018	✓
Soil Glass Jar - Unpreserved (EG035T) QC18a	**11-Sep-2018**	**21-Sep-2018**	09-Oct-2018	✓	**24-Sep-2018**	09-Oct-2018	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) QC13a	**06-Sep-2018**	**20-Sep-2018**	20-Sep-2018	✓	**20-Sep-2018**	30-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) QC14a	**07-Sep-2018**	**20-Sep-2018**	21-Sep-2018	✓	**20-Sep-2018**	30-Oct-2018	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) QC18a	**11-Sep-2018**	**20-Sep-2018**	25-Sep-2018	✓	**20-Sep-2018**	30-Oct-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) QC13a	**06-Sep-2018**	**20-Sep-2018**	20-Sep-2018	✓	**20-Sep-2018**	20-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080) QC14a	**07-Sep-2018**	**20-Sep-2018**	21-Sep-2018	✓	**20-Sep-2018**	21-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080) QC18a	**11-Sep-2018**	**20-Sep-2018**	25-Sep-2018	✓	**20-Sep-2018**	25-Sep-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) QC13a	**06-Sep-2018**	**20-Sep-2018**	20-Sep-2018	✓	**20-Sep-2018**	20-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080) QC14a	**07-Sep-2018**	**20-Sep-2018**	21-Sep-2018	✓	**20-Sep-2018**	21-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080) QC18a	**11-Sep-2018**	**20-Sep-2018**	25-Sep-2018	✓	**20-Sep-2018**	25-Sep-2018	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) QC13a	**06-Sep-2018**	**20-Sep-2018**	20-Sep-2018	✓	**20-Sep-2018**	20-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080) QC14a	**07-Sep-2018**	**20-Sep-2018**	21-Sep-2018	✓	**20-Sep-2018**	21-Sep-2018	✓
Soil Glass Jar - Unpreserved (EP080) QC18a	**11-Sep-2018**	**20-Sep-2018**	25-Sep-2018	✓	**20-Sep-2018**	25-Sep-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

QUALITY CONTROL REPORT

Work Order	: **ES1827755**	Page	: 1 of 7
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: Colee Quayle	Contact	: Brenda Hong
Address	: Level 11, 200 Crown Street, Wollongong, NSW 2500 2500	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2127477	Date Samples Received	: 19-Sep-2018
Order number	:	Date Analysis Commenced	: 20-Sep-2018
C-O-C number	: ----	Issue Date	: 24-Sep-2018
Sampler	: ----		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 4		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 1941628)									
ES1827719-010	Anonymous	EA055: Moisture Content	----	0.1	%	17.5	11.3	43.6	0% - 50%
ES1827747-002	Anonymous	EA055: Moisture Content	----	0.1	%	<1.0	<1.0	0.00	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 1943715)									
ES1827425-053	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	876	887	1.22	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	4	4	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	555	546	1.65	0% - 20%
		EG005T: Copper	7440-50-8	5	mg/kg	796	690	14.2	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	7	8	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	22	25	11.9	No Limit
ES1827755-001	QC14a	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	4	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1943714)									
ES1827075-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1827755-001	QC14a	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1940470)									
ES1827767-006	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1940470) - continued									
ES1827767-006	Anonymous	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1940471)									
ES1827767-006	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1940551)									
ES1827767-006	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1827767-010	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1940471)									
ES1827767-006	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1940551)									
ES1827767-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1827767-010	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 1940551)									
ES1827767-006	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 1940551) - continued									
ES1827767-010	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1943715)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	103	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	99.6	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	98.3	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	117	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	97.5	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	105	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	115	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1943714)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	75.4	70	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1940470)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	121	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	121	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	118	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	122	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	111	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	111	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	115	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	117	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	111	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	117	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	106	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	123	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	120	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	114	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	112	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	112	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1940471)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	107	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	120	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	119	71	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1940551)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	94.9	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1940471)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1940471) - continued								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	109	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	125	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	84.1	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1940551)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	102	68	128
EP080: BTEXN (QCLot: 1940551)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	104	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	101	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	97.2	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	93.2	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	93.8	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	94.5	63	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005T: Total Metals by ICP-AES (QCLot: 1943715)							
ES1827425-053	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	# Not Determined	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	104	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	# Not Determined	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	98.8	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	104	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	104	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	114	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1943714)							
ES1827075-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	93.6	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1940470)							
ES1827767-006	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	99.6	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	126	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1940471)							
ES1827767-006	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	98.2	73	137

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1940471) - continued							
ES1827767-006	Anonymous	EP071: C15 - C28 Fraction	----	2319 mg/kg	123	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	128	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1940551)							
ES1827767-006	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	93.8	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1940471)							
ES1827767-006	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	112	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	128	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	117	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1940551)							
ES1827767-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	95.2	70	130
EP080: BTEXN (QCLot: 1940551)							
ES1827767-006	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	91.1	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	88.1	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	84.5	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	80.9	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	82.9	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	83.8	70	130

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd
Office Address : Level 11, 200 Crown Street
Wollongong, NSW 2500

Contact Name: Iain Lindley 0459 353 385
Project Manager : Colee Quayle 0403 242 431
Email for results : colee.quayle@ghd.com

Purchase Order :
PROJECT Number : 2127477 - Task 3J for Contamination
PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla

COC Number :
Eurofins | mgt quote ID :
Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH01	0.6-0.8	7/09/2018	S														x
2	GBH01	1.7-2.0	7/09/2018	S	x						x							
3	GBH01	2.7-3.0	7/09/2018	S							x							
4	GBH01	3.7-4.0	7/09/2018	S							x							
5	GBH01	4.7-5.0	7/09/2018	S	x						x							
6	GBH01	6.7-7.0	7/09/2018	S							x							
7	GBH01	7.7-8.0	7/09/2018	S	x						x							
8	QC14	-	7/09/2018	S	x						x							
(1) 9	QC14a	-	7/09/2018	S	x													
10	GBH04	1.5-1.7	6/09/2018	S														x
11	GBH04	2.7-3.0	6/09/2018	S	x						x							
12	GBH04	3.7-4.0	6/09/2018	S							x							
13	GBH04	4.7-5.0	6/09/2018	S							x							
14	QC13	-	6/09/2018	S	x						x							
(1) 15	QC13a	-	6/09/2018	S	x													
16	GBH07	0.5-0.7	10/09/2018	S														x

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils
BTEX, MAH, VOC	14 days	BTEX, MAH,
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, P
Heavy Metals	6 months	Heavy Metals
Mercury, CrVI	28 days	Mercury, CrV
Microbiological testing	24 hours	Microbiologic
BOD, Nitrate, Nitrite, Total N	2 days	Anions
Solids - TSS, TDS etc	7 days	SPOCAS, pH
Ferrous iron	7 days	ASLP, TCLP

Containers:

Jar	Zip lock	ASS	Amber 1L	Plastic			
X	X	X					
X	X	X					
X	X	X					
X	X	X					
X	X	X					
X	X	X					
X		X					
X		X					Send to ALS
X	X	X					
X	X	X					
X	X	X					
X	X	X					
X		X					Send to ALS
X	X	X					

Environmental Division
Sydney
Work Order Reference
ES1827755

Telephone : +61-2-8784 8555

GHD Staff	Courier	Laboratory Staff
Relinquished By: Jarrad Mawbey	Received By:	Received By: Elvis D
Date & Time 13/9/2018	Date & Time:	Date & Time: 18/9/18
Signature: J. Mawbey	Signature:	Signature:

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☑
5 DAY ☐ 10 DAY ☐ Other:

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival:

Report number:

Received: 2pm. - ALS Crows Nest
19/09/18 1340 9.7°C

Justin 19/9 3.30pm

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD Pty Ltd	Contact Name:	Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address :	Level 11, 200 Crown Street	Project Manager :	Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
	Wollongong, NSW 2500	Email for results :	colee.quayle@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH07	1.7-2.0	10/09/2018	S							x							
2	GBH07	2.7-3.0	10/09/2018	S							x							
3	GBH07	3.7-4.0	10/09/2018	S							x							
4	GBH07	4.7-5.0	10/09/2018	S							x							
5	GBH07	6.7-7.0	10/09/2018	S	x						x							
6	GBH07	8.7-9.0	10/09/2018	S	x						x							
7	GBH31	0.8-0.9	10/09/2018	S														x
8	GBH31	1.7-2.0	10/09/2018	S							x							
9	GBH31	2.7-3.0	10/09/2018	S							x							
10	GBH31	3.7-4.0	10/09/2018	S							x							
11	GBH31	4.7-5.0	10/09/2018	S	x						x							
12	QC15	-	10/09/2018	S							x							
13	QC15a	-	10/09/2018	S														x
14	GBH14	1.7-2.0	10/09/2018	S	x													
15	GBH14	2.7-3.0	10/09/2018	S							x							
16	GBH14	3.7-4.0	10/09/2018	S							x							

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:								Sample comments:
Jar	Zip lock	ASS	Amber 1L	Plastic				
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X		X						
X		X						
X	X	X						
X	X	X						
X	X	X						

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Jarrad Mawbey	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☑	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 13/9/2018	Date & Time:	Date & Time:	5 DAY ☐ 10 DAY ☐ Other:	Courier Consignment # :	Report number:
Signature: J. Mawbey	Signature:	Signature:			

Justin 19/9 3.30pm

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Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : colee.quayle@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Hold
1	GBH14	4.7-5.0	10/09/2018	S							x							
2	QC16	-	10/09/2018	S														x
3	GBH20	0.5-0.7	10/09/2018	S														x
4	GBH20	1.7-2.0	10/09/2018	S							x							
5	GBH20	2.7-3.0	10/09/2018	S							x							
6	GBH20	3.7-4.0	10/09/2018	S							x							
7	GBH20	4.7-5.0	10/09/2018	S							x							
8	GBH20	6.7-7.0	10/09/2018	S	x						x							
9	GBH20	8.7-9.0	10/09/2018	S	x						x	x		x	x			
10	QC17	-	10/09/2018	S							x							
11	GBH16	0.6-0.8	12/09/2018	S														x
12	GBH16	1.7-2.0	12/09/2018	S							x							
13	GBH16	2.7-3.0	12/09/2018	S							x							
14	GBH16	3.7-4.0	12/09/2018	S							x							
15	GBH16	4.7-5.0	12/09/2018	S							x							
16	GBH16	5.7-6.0	12/09/2018	S	x						x							

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

	Containers:								Sample comments:
	Jar	Zip lock	ASS	Amber 1L	Plastic				
1	X	X	X						
2	X		X						
3	X	X	X						
4	X	X	X						
5	X	X	X						
6	X	X	X						
7	X	X	X						
8	X	X	X						
9	X	X	X						
10	X		X						
11	X	X	X						
12	X	X	X						
13	X	X	X						
14	X	X	X						
15	X	X	X						
16	X	X	X						

GHD Staff	Courier	Laboratory Staff
Relinquished By: Jarrad Mawbey	Received By:	Received By:
Date & Time 13/9/2018	Date & Time:	Date & Time:
Signature: J. Mawbey	Signature:	Signature:

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☑
5 DAY ☐ 10 DAY ☐ Other:

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival:

Report number:

Justa' 19/9 3.30pm

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

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Office Address :	Level 11, 200 Crown Street	Project Manager :	Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
	Wollongong, NSW 2500	Email for results :	colee.quayle@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Metals (M8)	Hold
1	GBH16	9.7-10.0	12/09/2018	S	x						x								
2	GBH23	0.5-0.7	11/09/2018	S	x														
3	GBH23	1.7-2.0	11/09/2018	S							x								
4	GBH23	2.7-3.0	11/09/2018	S							x								
5	GBH23	3.7-4.0	11/09/2018	S							x								
6	GBH23	6.7-7.0	11/09/2018	S							x								
7	GBH23	8.7-9.0	11/09/2018	S	x						x								
8	GBH23	9.7-10.0	11/09/2018	S	x						x	x		x	x				
9	QC18	-	11/09/2018	S	x						x	x		x	x				
10	QC18a	-	11/09/2018	S	x														
11	BH17	7.5	6/09/2018	S							x								
12	BH17	3.5	5/09/2018	S														x	
13	BH17	1.5	5/09/2018	S														x	
14	BH17	13.5	6/09/2018	S							x								
15	BH21	1.3	10/09/2018	S	x														
16	BH21	6.0-6.45	10/09/2018	S							x								

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:								Sample comments:
Jar	Zip lock	ASS	Amber 1L	Plastic				
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X	X	X						
X		X						
X		X						Send to ALS
		X						
X								
X								
		X						
X								
		X						

GHD Staff	Courier	Laboratory Staff
Relinquished By: Jarrad Mawbey	Received By:	Received By:
Date & Time 13/9/2018	Date & Time:	Date & Time:
Signature: J. Mawbey	Signature:	Signature:

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☑
5 DAY ☐ 10 DAY ☐ Other:

Method Of Shipment

☐ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival:

Report number:

Justin 19/9 3.30pm

eurofins | mgt

☑ Sydney
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgtlabmark.com.au

☐ Brisbane
Unit 1-21 Smallwood Place, Murrarie
Phone: +617 3902 4600
Email: enviro.bris@mgtlabmark.com.au

☐ Melbourne
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS — Page 5 of 5

Company Name : GHD Pty Ltd	Contact Name: Iain Lindley 0459 353 385	Purchase Order :	COC Number :
Office Address : Level 11, 200 Crown Street	Project Manager : Colee Quayle 0403 242 431	PROJECT Number : 2127477 - Task 3J for Contamination	Eurofins | mgt quote ID :
Wollongong, NSW 2500	Email for results : colee.quayle@ghd.com	PROJECT Name : Contamination Assessment - East Coast Gas Pipeline Project, Port Kembla	Data output format: ESDAT

Special Directions & Comments :
Ultratrace PAH LOR 0.01 ug/L

Eurofins | mgt DI water batch number:

	Sample ID	Depth (m)	Date	Matrix	B7: TRH, BTEX, PAH, Metals (8)	B15 : OCP, OPP, PCB	TCLP for PAH and heavy metals	Asbestos ID	BTEX	TPH C6-C9, BTEX	pH field screen (ph f and pH fox)	TBT	Dioxins	Cyanide	Ammonia	VOCs	pH	Metals (M8)	B2: TRH, BTEX, Metals (8)	Ultratrace PAH						Hold
1	BH16	1.0	5/09/2018	S														x								
2	BH16	3.0-3.5	6/09/2018	S	x																					
3	BH21	9.0-9.12	10/09/2018	S							x															
4	DS01	-	7/09/2018	S	x																					
5	DW01	-	7/09/2018	W													x		x	x						
6																										
7																										
8																										
9																										
10																										
11																										
12																										
13																										
14																										
15																										
16																										

Some common holding times (with correct preservation). For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

	Jar	Zip lock	ASS	Amber 1L	Plastic	Vials	Metals		Sample comments:
1	X								
2	X								
3			X						
4	X	X	X						
5				X	X	X	X		
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									

GHD Staff	Courier	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Relinquished By: Jarrad Mawbey	Received By:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☑	☐ Courier ☐ Hand Delivered ☐ Postal	
Date & Time 13/9/2018	Date & Time:	Date & Time:	5 DAY ☐ 10 DAY ☐ Other:	Courier Consignment # :	Report number:
Signature: J. Mawbey	Signature:	Signature:			

Justin 14/9 3.30pm

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1827755**	Page	: 1 of 6
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: Colee Quayle	Contact	: Brenda Hong
Address	: Level 11, 200 Crown Street, Wollongong, NSW 2500 2500	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: (02) 8784 8504
Project	: 2127477	Date Samples Received	: 19-Sep-2018 13:40
Order number	:	Date Analysis Commenced	: 20-Sep-2018
C-O-C number	: ----	Issue Date	: 24-Sep-2018 17:20
Sampler	: ----		
Site	:		
Quote number	: EN/005/18		
No. of samples received	: 4		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC14a	QC13a	QC18a	----	----
				Client sampling date / time	07-Sep-2018 00:00	06-Sep-2018 00:00	11-Sep-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1827755-001	ES1827755-002	ES1827755-003	--------	--------
					Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		16.7	5.0	16.7	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	6	8	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg		4	3	10	----	----
Copper	7440-50-8	5	mg/kg		<5	6	9	----	----
Lead	7439-92-1	5	mg/kg		<5	8	25	----	----
Nickel	7440-02-0	2	mg/kg		<2	16	5	----	----
Zinc	7440-66-6	5	mg/kg		<5	266	235	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	1.7	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	0.7	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	3.9	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	2.7	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	1.2	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	1.1	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	1.4	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	0.6	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	1.2	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	0.6	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	0.7	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	15.8	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	1.6	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	1.8	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	2.1	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC14a	QC13a	QC18a	----	----
				Client sampling date / time	07-Sep-2018 00:00	06-Sep-2018 00:00	11-Sep-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1827755-001	ES1827755-002	ES1827755-003	--------	--------
					Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**75.0**	**74.5**	**75.0**	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**78.8**	**77.6**	**78.3**	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**57.8**	**57.1**	**59.4**	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**89.0**	**87.8**	**88.4**	----	----
Anthracene-d10	1719-06-8	0.5	%		**86.6**	**85.6**	**86.1**	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**77.1**	**76.1**	**75.2**	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**94.0**	**94.4**	**89.2**	----	----
Toluene-D8	2037-26-5	0.2	%		**95.7**	**92.0**	**87.1**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	QC14a	QC13a	QC18a	----	----
				Client sampling date / time	07-Sep-2018 00:00	06-Sep-2018 00:00	11-Sep-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1827755-001	ES1827755-002	ES1827755-003	--------	--------
					Result	Result	Result	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**92.3**	**89.1**	**84.7**	**----**	**----**

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130