Appendix H - Laboratory certificates

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000

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: **Anna Montgomery**

Report **725302-W**
Project name BREEN RESOURCES - EIS
Project ID 12529041
Received Date Jun 11, 2020

Client Sample ID			**SW1**	**SW2**	**SW3**	[G01]**SW4**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**S20-Jn21405**	**S20-Jn21406**	**S20-Jn21407**	**S20-Jn21408**
Date Sampled			**Jun 11, 2020**	**Jun 11, 2020**	**Jun 11, 2020**	**Jun 11, 2020**
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-C36 (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	%	72	87	88	81
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						
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

Client Sample ID			SW1	SW2	SW3	[G01]SW4
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Jn21405	S20-Jn21406	S20-Jn21407	S20-Jn21408
Date Sampled			Jun 11, 2020	Jun 11, 2020	Jun 11, 2020	Jun 11, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
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	%	112	55	65	77
p-Terphenyl-d14 (surr.)	1	%	101	57	52	53
Organochlorine Pesticides						
Chlordanes - Total	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
4.4'-DDD	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
4.4'-DDE	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
4.4'-DDT	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
a-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
b-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
d-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endosulfan II	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Methoxychlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Toxaphene	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Aldrin and Dieldrin (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
DDT + DDE + DDD (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Vic EPA IWRG 621 OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vic EPA IWRG 621 Other OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibutylchlorendate (surr.)	1	%	102	133	111	121
Tetrachloro-m-xylene (surr.)	1	%	79	63	68	55
Polychlorinated Biphenyls						
Aroclor-1016	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Aroclor-1221	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Aroclor-1232	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Aroclor-1242	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Aroclor-1248	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Aroclor-1254	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Aroclor-1260	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Total PCB*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibutylchlorendate (surr.)	1	%	102	133	111	121
Tetrachloro-m-xylene (surr.)	1	%	79	63	68	55

Client Sample ID			SW1	SW2	SW3	[G01]SW4
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Jn21405	S20-Jn21406	S20-Jn21407	S20-Jn21408
Date Sampled			Jun 11, 2020	Jun 11, 2020	Jun 11, 2020	Jun 11, 2020
Test/Reference	LOR	Unit				
Ammonia (as N)	0.01	mg/L	0.05	0.05	0.16	87
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	< 5	< 5	< 5	< 5
Chemical Oxygen Demand (COD)	25	mg/L	< 25	< 25	< 25	270
Chloride	1	mg/L	20	47	51	340
Cyanide (total)	0.005	mg/L	< 0.005	< 0.005	< 0.005	0.007
Fluoride (Total)	0.5	mg/L	< 0.5	< 0.5	< 0.5	< 0.5
Nitrate & Nitrite (as N)	0.05	mg/L	2.2	0.14	0.26	< 2.5
Nitrate (as N)	0.02	mg/L	2.1	0.12	0.23	< 1
Nitrite (as N)	0.02	mg/L	0.03	< 0.02	0.03	< 1
pH (at 25°C)	0.1	pH Units	8.0	7.9	7.9	8.2
Phosphate total (as P)	0.01	mg/L	0.03	< 0.01	0.01	0.02
Sulphate (as SO4)	5	mg/L	36	98	99	230
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	170	320	380	1400
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.4	0.6	0.9	96
Total Nitrogen (as N)*	0.2	mg/L	2.6	0.74	1.16	96
Total Suspended Solids Dried at 103–105°C	1	mg/L	14	41	26	50
Hardness mg equivalent CaCO3/L	5	mg/L	77	180	200	410
Heavy Metals						
Arsenic	0.001	mg/L	< 0.001	0.002	0.004	0.004
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.002	0.003	0.003	0.012
Copper	0.001	mg/L	0.007	0.003	0.003	0.009
Lead	0.001	mg/L	< 0.001	0.003	0.003	0.004
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Molybdenum	0.005	mg/L	< 0.005	< 0.005	0.007	< 0.005
Nickel	0.001	mg/L	0.001	0.002	0.002	0.008
Selenium	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Silver	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Tin	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	0.005	mg/L	< 0.005	0.006	0.005	0.015
Alkali Metals						
Calcium	0.5	mg/L	22	58	65	95
Magnesium	0.5	mg/L	5.7	8.4	8.8	42
Potassium	0.5	mg/L	1.3	4.1	5.2	60
Sodium	0.5	mg/L	22	33	34	230

Client Sample ID			SW5	FD01	RB01	TS
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Jn21409	S20-Jn21410	S20-Jn21411	S20-Jn21412
Date Sampled			Jun 11, 2020	Jun 11, 2020	Jun 11, 2020	Jun 11, 2020
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-C36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	-

Client Sample ID			SW5	FD01	RB01	TS
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Jn21409	S20-Jn21410	S20-Jn21411	S20-Jn21412
Date Sampled			Jun 11, 2020	Jun 11, 2020	Jun 11, 2020	Jun 11, 2020
Test/Reference	LOR	Unit				
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	%	90	138	148	-
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	-
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	-	-
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	-	-
Anthracene	0.001	mg/L	< 0.001	< 0.001	-	-
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	-	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	-	-
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001	-	-
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001	-	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	-	-
Chrysene	0.001	mg/L	< 0.001	< 0.001	-	-
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001	-	-
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	-	-
Fluorene	0.001	mg/L	< 0.001	< 0.001	-	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	-	-
Naphthalene	0.001	mg/L	< 0.001	< 0.001	-	-
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	-	-
Pyrene	0.001	mg/L	< 0.001	< 0.001	-	-
Total PAH*	0.001	mg/L	< 0.001	< 0.001	-	-
2-Fluorobiphenyl (surr.)	1	%	69	61	-	-
p-Terphenyl-d14 (surr.)	1	%	98	99	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.001	mg/L	< 0.001	< 0.001	-	-
4.4'-DDD	0.0001	mg/L	< 0.0001	< 0.0001	-	-
4.4'-DDE	0.0001	mg/L	< 0.0001	< 0.0001	-	-
4.4'-DDT	0.0001	mg/L	< 0.0001	< 0.0001	-	-
a-BHC	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Aldrin	0.0001	mg/L	< 0.0001	< 0.0001	-	-
b-BHC	0.0001	mg/L	< 0.0001	< 0.0001	-	-
d-BHC	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Dieldrin	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Endosulfan I	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Endosulfan II	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Endosulfan sulphate	0.0001	mg/L	< 0.0001	< 0.0001	-	-

Client Sample ID			SW5	FD01	RB01	TS
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Jn21409	S20-Jn21410	S20-Jn21411	S20-Jn21412
Date Sampled			Jun 11, 2020	Jun 11, 2020	Jun 11, 2020	Jun 11, 2020
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Endrin	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Endrin aldehyde	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Endrin ketone	0.0001	mg/L	< 0.0001	< 0.0001	-	-
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Heptachlor	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Heptachlor epoxide	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Hexachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Methoxychlor	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Toxaphene	0.01	mg/L	< 0.01	< 0.01	-	-
Aldrin and Dieldrin (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	-	-
DDT + DDE + DDD (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	-	-
Vic EPA IWRG 621 OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	-	-
Dibutylchlorendate (surr.)	1	%	116	112	-	-
Tetrachloro-m-xylene (surr.)	1	%	83	62	-	-
Polychlorinated Biphenyls						
Aroclor-1016	0.001	mg/L	< 0.001	< 0.001	-	-
Aroclor-1221	0.001	mg/L	< 0.001	< 0.001	-	-
Aroclor-1232	0.001	mg/L	< 0.001	< 0.001	-	-
Aroclor-1242	0.001	mg/L	< 0.001	< 0.001	-	-
Aroclor-1248	0.001	mg/L	< 0.001	< 0.001	-	-
Aroclor-1254	0.001	mg/L	< 0.001	< 0.001	-	-
Aroclor-1260	0.001	mg/L	< 0.001	< 0.001	-	-
Total PCB*	0.001	mg/L	< 0.001	< 0.001	-	-
Dibutylchlorendate (surr.)	1	%	116	112	-	-
Tetrachloro-m-xylene (surr.)	1	%	83	62	-	-
Ammonia (as N)	0.01	mg/L	0.04	0.06	-	-
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	< 5	< 5	-	-
Chemical Oxygen Demand (COD)	25	mg/L	< 25	< 25	-	-
Chloride	1	mg/L	28	21	-	-
Cyanide (total)	0.005	mg/L	< 0.005	< 0.005	-	-
Fluoride (Total)	0.5	mg/L	< 0.5	< 0.5	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	0.14	2.1	-	-
Nitrate (as N)	0.02	mg/L	0.14	2.1	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	0.03	-	-
pH (at 25°C)	0.1	pH Units	7.9	7.9	-	-
Phosphate total (as P)	0.01	mg/L	0.01	< 0.01	-	-
Sulphate (as SO4)	5	mg/L	120	35	-	-
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	270	150	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	0.3	-	-
Total Nitrogen (as N)*	0.2	mg/L	0.74	2.4	-	-
Total Suspended Solids Dried at 103–105°C	1	mg/L	42	10	-	-
Hardness mg equivalent CaCO3/L	5	mg/L	170	79	-	-
Heavy Metals						
Arsenic	0.001	mg/L	0.001	< 0.001	< 0.001	-
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	-
Chromium	0.001	mg/L	0.003	0.002	< 0.001	-
Copper	0.001	mg/L	0.005	0.008	< 0.001	-

Client Sample ID			SW5	FD01	RB01	TS
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Jn21409	S20-Jn21410	S20-Jn21411	S20-Jn21412
Date Sampled			Jun 11, 2020	Jun 11, 2020	Jun 11, 2020	Jun 11, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	0.001	mg/L	0.005	< 0.001	< 0.001	-
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Molybdenum	0.005	mg/L	< 0.005	< 0.005	-	-
Nickel	0.001	mg/L	0.002	0.001	< 0.001	-
Selenium	0.001	mg/L	< 0.001	< 0.001	-	-
Silver	0.005	mg/L	< 0.005	< 0.005	-	-
Tin	0.005	mg/L	< 0.005	< 0.005	-	-
Zinc	0.005	mg/L	0.010	< 0.005	< 0.005	-
Alkali Metals						
Calcium	0.5	mg/L	58	22	-	-
Magnesium	0.5	mg/L	4.6	6.0	-	-
Potassium	0.5	mg/L	3.1	1.3	-	-
Sodium	0.5	mg/L	20	22	-	-
Total Recoverable Hydrocarbons						
Naphthalene	1	%	-	-	-	120
TRH C6-C10	1	%	-	-	-	100
TRH C6-C9	1	%	-	-	-	100
BTEX						
Benzene	1	%	-	-	-	120
Ethylbenzene	1	%	-	-	-	120
m&p-Xylenes	1	%	-	-	-	120
o-Xylene	1	%	-	-	-	130
Toluene	1	%	-	-	-	120
Xylenes - Total	1	%	-	-	-	120
4-Bromofluorobenzene (surr.)	1	%	-	-	-	107

Client Sample ID			TB
Sample Matrix			Water
Eurofins Sample No.			S20-Jn21413
Date Sampled			Jun 11, 2020
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
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	%	73
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

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.

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	Jun 15, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Jun 15, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 15, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons	Melbourne	Jun 15, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Eurofins | mgt Suite B6			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 15, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8	Melbourne	Jun 15, 2020	180 Days
- Method:			
Eurofins | mgt Suite B7			
Polycyclic Aromatic Hydrocarbons	Melbourne	Jun 15, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Suite B13: OCP/PCB			
Organochlorine Pesticides	Melbourne	Jun 15, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)			
Polychlorinated Biphenyls	Melbourne	Jun 15, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8082)			
Eurofins | mgt Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P			
Ammonia (as N)	Melbourne	Jun 15, 2020	28 Days
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Nitrate & Nitrite (as N)	Melbourne	Jun 15, 2020	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrate (as N)	Melbourne	Jun 15, 2020	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrite (as N)	Melbourne	Jun 15, 2020	2 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Phosphate total (as P)	Melbourne	Jun 15, 2020	28 Days
- Method: APHA 4500-P E. Phosphorus			
Total Kjeldahl Nitrogen (as N)	Melbourne	Jun 15, 2020	7 Days
- Method: LTM-INO-4310 TKN in Waters & Soils by FIA			
Biochemical Oxygen Demand (BOD-5 Day)	Melbourne	Jun 15, 2020	2 Days
- Method: LTM-INO-4010 Biochemical Oxygen Demand (BOD5) in Water			
Chemical Oxygen Demand (COD)	Melbourne	Jun 15, 2020	28 Days
- Method: LTM-INO-4220 Determination of COD in Water			
Chloride	Melbourne	Jun 15, 2020	28 Days
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
Cyanide (total)	Melbourne	Jun 15, 2020	14 Days
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride (Total)	Melbourne	Jun 15, 2020	28 Days
- Method: APHA 4500 F-C Fluoride by Ion Selective Electrode			
pH (at 25°C)	Melbourne	Jun 15, 2020	0 Hours
- Method: LTM-GEN-7090 pH in water by ISE			
Sulphate (as SO4)	Melbourne	Jun 15, 2020	28 Days
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Total Suspended Solids Dried at 103–105°C	Melbourne	Jun 15, 2020	7 Days
- Method: LTM-INO-4070 Analysis of Suspended Solids in Water by Gravimetry			

Description	Testing Site	Extracted	Holding Time
Heavy Metals	Melbourne	Jun 15, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Total Dissolved Solids Dried at 180°C ± 2°C	Melbourne	Jun 15, 2020	7 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			
Eurofins | mgt Suite B11D: Na/K/Ca/Mg and Hardness			
Hardness mg equivalent CaCO3/L	Melbourne	Jun 15, 2020	28 Days
- Method: APHA 2340B Hardness by Calculation			
Alkali Metals	Melbourne	Jun 15, 2020	180 Days
- Method: LTM-MET-3010 Alkali Metals Sulfur Silicon Phosphorus by ICP-AES			

eurofins | Environment Testing

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IANZ # 1290

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: BREEN RESOURCES - EIS
Project ID: 12529041

Order No.: 12529041
Report #: 725302
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Jun 11, 2020 6:50 PM
Due: Jun 18, 2020
Priority: 5 Day
Contact Name: Anna Montgomery

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	Chloride	Cyanide (total)	Fluoride (Total)	Molybdenum	pH (at 25°C)	Selenium	Silver	Sulphate (as SO4)	Tin	Total Suspended Solids Dried at 103–105°C	Suite B13: OCP/PCB	Eurofins | mgt Suite B7	Eurofins | mgt Suite B6	BTEXN and Volatile TRH	Eurofins | mgt Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins | mgt Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P	BTEXN and Volatile TRH	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	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	SW1	Jun 11, 2020		Water	S20-Jn21405	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X
2	SW2	Jun 11, 2020		Water	S20-Jn21406	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X
3	SW3	Jun 11, 2020		Water	S20-Jn21407	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X
4	SW4	Jun 11, 2020		Water	S20-Jn21408	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X
5	SW5	Jun 11, 2020		Water	S20-Jn21409	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X
6	FD01	Jun 11, 2020		Water	S20-Jn21410	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X
7	RB01	Jun 11, 2020		Water	S20-Jn21411															X					
8	TS	Jun 11, 2020		Water	S20-Jn21412																			X	
9	TB	Jun 11, 2020		Water	S20-Jn21413																X				
Test Counts						6	6	6	6	6	6	6	6	6	6	6	6	6	6	1	1	6	6	1	6

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid 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. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. 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	US Department of Defense Quality Systems Manual Version 5.3
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 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 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							
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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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	
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							
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							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	mg/L	< 5			5	Pass	
Chemical Oxygen Demand (COD)	mg/L	< 25			25	Pass	
Chloride	mg/L	< 1			1	Pass	
Cyanide (total)	mg/L	< 0.005			0.005	Pass	
Fluoride (Total)	mg/L	< 0.5			0.5	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as SO4)	mg/L	< 5			5	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10			10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Suspended Solids Dried at 103–105°C	mg/L	< 1			1	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	
Molybdenum	mg/L	< 0.005			0.005	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Silver	mg/L	< 0.005			0.005	Pass	
Tin	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Sodium	mg/L	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	116			70-130	Pass	
TRH C10-C14	%	81			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	115			70-130	Pass	
Toluene	%	116			70-130	Pass	
Ethylbenzene	%	106			70-130	Pass	
m&p-Xylenes	%	114			70-130	Pass	
Xylenes - Total*	%	113			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	122			70-130	Pass	
TRH C6-C10	%	117			70-130	Pass	
TRH >C10-C16	%	77			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	116			70-130	Pass	
Acenaphthylene	%	110			70-130	Pass	
Anthracene	%	83			70-130	Pass	
Benz(a)anthracene	%	85			70-130	Pass	
Benzo(a)pyrene	%	90			70-130	Pass	
Benzo(b&j)fluoranthene	%	111			70-130	Pass	
Benzo(g.h.i)perylene	%	87			70-130	Pass	
Benzo(k)fluoranthene	%	116			70-130	Pass	
Chrysene	%	107			70-130	Pass	
Dibenz(a.h)anthracene	%	111			70-130	Pass	
Fluoranthene	%	124			70-130	Pass	
Fluorene	%	107			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	99			70-130	Pass	
Naphthalene	%	119			70-130	Pass	
Phenanthrene	%	111			70-130	Pass	
Pyrene	%	121			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4.4'-DDD	%	84			70-130	Pass	
4.4'-DDE	%	118			70-130	Pass	
4.4'-DDT	%	76			70-130	Pass	
a-BHC	%	87			70-130	Pass	
Aldrin	%	123			70-130	Pass	
b-BHC	%	78			70-130	Pass	
d-BHC	%	91			70-130	Pass	
Dieldrin	%	124			70-130	Pass	
Endosulfan I	%	85			70-130	Pass	
Endosulfan II	%	92			70-130	Pass	
Endosulfan sulphate	%	92			70-130	Pass	
Endrin	%	103			70-130	Pass	
Endrin aldehyde	%	87			70-130	Pass	
Endrin ketone	%	84			70-130	Pass	
g-BHC (Lindane)	%	89			70-130	Pass	
Heptachlor	%	87			70-130	Pass	
Heptachlor epoxide	%	110			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Hexachlorobenzene	%	99			70-130	Pass	
Methoxychlor	%	76			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	121			70-130	Pass	
LCS - % Recovery							
Ammonia (as N)	%	101			70-130	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	%	99			70-130	Pass	
Chemical Oxygen Demand (COD)	%	71			70-130	Pass	
Chloride	%	88			70-130	Pass	
Cyanide (total)	%	92			70-130	Pass	
Fluoride (Total)	%	89			70-130	Pass	
Nitrate & Nitrite (as N)	%	103			70-130	Pass	
Nitrate (as N)	%	103			70-130	Pass	
Nitrite (as N)	%	104			70-130	Pass	
Phosphate total (as P)	%	94			70-130	Pass	
Sulphate (as SO4)	%	98			70-130	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	%	110			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	105			70-130	Pass	
Total Suspended Solids Dried at 103–105°C	%	103			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	98			80-120	Pass	
Cadmium	%	96			80-120	Pass	
Chromium	%	95			80-120	Pass	
Copper	%	99			80-120	Pass	
Lead	%	94			80-120	Pass	
Mercury	%	98			75-125	Pass	
Molybdenum	%	97			80-120	Pass	
Nickel	%	98			80-120	Pass	
Selenium	%	99			80-120	Pass	
Silver	%	82			80-120	Pass	
Tin	%	99			80-120	Pass	
Zinc	%	101			80-120	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	100			70-130	Pass	
Magnesium	%	89			70-130	Pass	
Potassium	%	94			70-130	Pass	
Sodium	%	82			70-130	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	B20-Jn23133	NCP	%	85			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	B20-Jn23133	NCP	%	80			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S20-Jn21821	NCP	%	110			70-130	Pass	
Acenaphthylene	S20-Jn21821	NCP	%	109			70-130	Pass	
Anthracene	S20-Jn21821	NCP	%	76			70-130	Pass	
Benz(a)anthracene	S20-Jn21821	NCP	%	75			70-130	Pass	
Benzo(a)pyrene	S20-Jn21821	NCP	%	90			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(b&j)fluoranthene	S20-Jn21821	NCP	%	95			70-130	Pass	
Benzo(g.h.i)perylene	S20-Jn21821	NCP	%	77			70-130	Pass	
Benzo(k)fluoranthene	S20-Jn21821	NCP	%	98			70-130	Pass	
Chrysene	S20-Jn21821	NCP	%	88			70-130	Pass	
Dibenz(a.h)anthracene	S20-Jn21821	NCP	%	96			70-130	Pass	
Fluoranthene	S20-Jn21821	NCP	%	121			70-130	Pass	
Fluorene	S20-Jn21821	NCP	%	110			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Jn21821	NCP	%	83			70-130	Pass	
Naphthalene	S20-Jn21821	NCP	%	99			70-130	Pass	
Phenanthrene	S20-Jn21821	NCP	%	109			70-130	Pass	
Pyrene	S20-Jn21821	NCP	%	122			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M20-Jn22832	NCP	%	91			70-130	Pass	
Chemical Oxygen Demand (COD)	M20-Jn16375	NCP	%	85			70-130	Pass	
Nitrate & Nitrite (as N)	M20-Jn22832	NCP	%	100			70-130	Pass	
Nitrate (as N)	M20-Jn22832	NCP	%	101			70-130	Pass	
Nitrite (as N)	M20-Jn21020	NCP	%	102			70-130	Pass	
Phosphate total (as P)	P20-Jn21591	NCP	%	93			70-130	Pass	
Sulphate (as SO4)	M20-Jn21577	NCP	%	105			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M20-Jn20092	NCP	%	88			70-130	Pass	
Total Suspended Solids Dried at 103–105°C	S20-Jn20483	NCP	%	111			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M20-Jn19818	NCP	%	107			75-125	Pass	
Cadmium	M20-Jn19818	NCP	%	95			75-125	Pass	
Chromium	M20-Jn19818	NCP	%	100			75-125	Pass	
Copper	M20-Jn19818	NCP	%	104			75-125	Pass	
Lead	M20-Jn19818	NCP	%	97			75-125	Pass	
Mercury	M20-Jn19818	NCP	%	98			70-130	Pass	
Molybdenum	M20-Jn19818	NCP	%	97			75-125	Pass	
Nickel	M20-Jn19818	NCP	%	104			75-125	Pass	
Selenium	M20-Jn19818	NCP	%	108			75-125	Pass	
Silver	M20-Jn19818	NCP	%	73			75-125	Fail	Q08
Tin	M20-Jn19818	NCP	%	106			75-125	Pass	
Zinc	M20-Jn19818	NCP	%	105			75-125	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Potassium	M20-Jn23511	NCP	%	117			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S20-Jn21406	CP	%	78			70-130	Pass	
Aroclor-1260	S20-Jn21406	CP	%	101			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	S20-Jn21410	CP	%	92			70-130	Pass	
Magnesium	S20-Jn21410	CP	%	87			70-130	Pass	
Sodium	S20-Jn21410	CP	%	91			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 C10-C14	S20-Jn21405	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S20-Jn21405	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S20-Jn21405	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S20-Jn21405	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S20-Jn21405	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S20-Jn21405	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S20-Jn21405	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
4.4'-DDD	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
4.4'-DDE	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
4.4'-DDT	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
a-BHC	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Aldrin	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
b-BHC	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
d-BHC	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Dieldrin	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan I	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan II	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan sulphate	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin aldehyde	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin ketone	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
g-BHC (Lindane)	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Heptachlor	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Heptachlor epoxide	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Hexachlorobenzene	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Methoxychlor	S20-Jn21405	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Toxaphene	M20-Jn03945	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Biochemical Oxygen Demand (BOD-5 Day)	S20-Jn21405	CP	mg/L	< 5	< 5	<1	30%	Pass	
Chemical Oxygen Demand (COD)	M20-Jn26368	NCP	mg/L	3700	3500	4.0	30%	Pass	
Fluoride (Total)	S20-Jn21405	CP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Nitrate & Nitrite (as N)	M20-Jn22832	NCP	mg/L	0.12	0.12	6.0	30%	Pass	
Nitrate (as N)	M20-Jn22832	NCP	mg/L	0.12	0.11	6.0	30%	Pass	
Nitrite (as N)	M20-Jn22832	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
pH (at 25°C)	M20-Jn23181	NCP	pH Units	7.9	7.9	pass	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	M20-Jn23553	NCP	mg/L	0.19	0.19	2.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	S20-Jn19749	NCP	mg/L	< 0.2	< 0.2	<1	30%	Pass	
Total Suspended Solids Dried at 103–105°C	S20-Jn20483	NCP	mg/L	22	19	14	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M20-Jn19818	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M20-Jn19818	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M20-Jn19818	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M20-Jn19818	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	M20-Jn19818	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	M20-Jn19818	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Molybdenum	M20-Jn19818	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nickel	M20-Jn19818	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	M20-Jn19818	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Silver	M20-Jn19818	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Tin	M20-Jn19818	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	M20-Jn19818	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	S20-Jn21408	CP	mg/L	340	360	5.0	30%	Pass	
Sulphate (as SO4)	S20-Jn21408	CP	mg/L	230	240	5.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Total Dissolved Solids Dried at 180°C ± 2°C	S20-Jn21409	CP	mg/L	270	280	4.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	S20-Jn21410	CP	mg/L	22	22	<1	30%	Pass	
Magnesium	S20-Jn21410	CP	mg/L	6.0	6.0	<1	30%	Pass	
Potassium	S20-Jn21410	CP	mg/L	1.3	1.3	1.0	30%	Pass	
Sodium	S20-Jn21410	CP	mg/L	22	22	<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
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
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 Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Alena Bounkeua	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Scott Beddoes	Senior Analyst-Inorganic (VIC)

Glenn Jackson

General 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 NSW**
Contact name:	Anna Montgomery
Project name:	BREEN RESOURCES - EIS
Project ID:	12529041
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Jun 11, 2020 6:50 PM
Eurofins reference:	**725302**

Sample information

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

☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 9.2 degrees Celsius.

☑ 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:

Alena Bounkeua on Phone : or by e.mail: AlenaBounkeua@eurofins.com

Results will be delivered electronically via e.mail to Anna Montgomery - anna.montgomery@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.

eurofins | Environment Testing

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Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: BREEN RESOURCES - EIS
Project ID: 12529041

Order No.: 12529041
Report #: 725302
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Jun 11, 2020 6:50 PM
Due: Jun 18, 2020
Priority: 5 Day
Contact Name: Anna Montgomery

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	Chloride	Cyanide (total)	Fluoride (Total)	Molybdenum	pH (at 25°C)	Selenium	Silver	Sulphate (as SO4)	Tin	Total Suspended Solids Dried at 103–105°C	Suite B13: OCP/PCB	Eurofins | mgt Suite B7	Eurofins | mgt Suite B6	BTEXN and Volatile TRH	Eurofins | mgt Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins | mgt Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P	BTEXN and Volatile TRH	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	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	SW1	Jun 11, 2020		Water	S20-Jn21405	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X
2	SW2	Jun 11, 2020		Water	S20-Jn21406	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X
3	SW3	Jun 11, 2020		Water	S20-Jn21407	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X
4	SW4	Jun 11, 2020		Water	S20-Jn21408	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X
5	SW5	Jun 11, 2020		Water	S20-Jn21409	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X
6	FD01	Jun 11, 2020		Water	S20-Jn21410	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X		X
7	RB01	Jun 11, 2020		Water	S20-Jn21411															X					
8	TS	Jun 11, 2020		Water	S20-Jn21412																			X	
9	TB	Jun 11, 2020		Water	S20-Jn21413																X				
Test Counts						6	6	6	6	6	6	6	6	6	6	6	6	6	6	1	1	6	6	1	6

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd, Sydney	**Contact Name :** Sarah Eccleshall 0459546332		**COC Number :**
Office Address : Level 15, 133 Castlereagh Street, Sydney NSW 2000	**Project Manager:** Anna Montgomery anna.montgomery@ghd.com	**PROJECT Number :** 12529041	**Eurofins | mgt quote ID :**
	Email for results : sarah.eccleshall@ghd.com; andre.smit@ghd.com; labreports@ghd.com	**PROJECT Name :** Breen Resources - EIS	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	TRH/TPH	PAH	Phenols	OCP	PCB	BTEX	Total Metals (As, Cd, Cr, Cu, Pb, Hg, Mo, Ni, Se, Ag, Sn, Zn)	Total Cyanide	Total Flouride	Hardness	Ammonia	Nitrate	BOD	COD	pH	TDS	Cl	Sulphate	Ca, Mg, Na, K	TSS	Nitrite	Phosphate	8 metals (total)	BTEXN	TRH/TPH	vTRH
1	SW1	11/6/20	W	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
2	SW2	11/6/20	W	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
3	SW3	11/6/20	W	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
4	SW4	11/6/20	W	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
5	SW5	11/6/20	W	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
6	FD01	11/6/20	W	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
7																													
8																													
9																													
10	RB01	11/6/20	W																										
11	TS	11/6/20	W																							x	x	x	
12	TB	11/6/20	W																								x		x
13																											x		x
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:

500P	250P	60P	1LA	40mL vial	200mL A	Jar	Bag

Sample comments:

Relinquished By: Sarah Eccleshall (GHD)
Date & Time : 18:45 11/6/20
Signature:

Laboratory Staff
Received By:
Date & Time: 11/6/2020 6:50PM
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: 9.16°C

Report number: 725302

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000

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: **Nicole Rosen**

Report **740259-W**
Project name KURNELL
Project ID 12529041
Received Date Aug 26, 2020

Client Sample ID			**SW6**	**QC01**	**TRIP BLANK**	**TRIP SPIKE**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**S20-Au42440**	**S20-Au42441**	**S20-Au42442**	**S20-Au42443**
Date Sampled			**Aug 26, 2020**	**Aug 26, 2020**	**Aug 26, 2020**	**Aug 26, 2020**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	-	< 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-C36 (Total)	0.1	mg/L	< 0.1	-	-	-
BTEX						
Benzene	0.001	mg/L	< 0.001	-	< 0.001	-
Toluene	0.001	mg/L	< 0.001	-	< 0.001	-
Ethylbenzene	0.001	mg/L	< 0.001	-	< 0.001	-
m&p-Xylenes	0.002	mg/L	< 0.002	-	< 0.002	-
o-Xylene	0.001	mg/L	< 0.001	-	< 0.001	-
Xylenes - Total*	0.003	mg/L	< 0.003	-	< 0.003	-
4-Bromofluorobenzene (surr.)	1	%	105	-	97	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.01	-	< 0.01	-
TRH C6-C10	0.02	mg/L	< 0.02	-	< 0.02	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	-	< 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	-	-	-
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	-	-	-

Client Sample ID			SW6	QC01	TRIP BLANK	TRIP SPIKE
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Au42440	S20-Au42441	S20-Au42442	S20-Au42443
Date Sampled			Aug 26, 2020	Aug 26, 2020	Aug 26, 2020	Aug 26, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
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	%	107	-	-	-
p-Terphenyl-d14 (surr.)	1	%	75	-	-	-
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	%	68	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	97	-	-	-
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	%	68	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	97	-	-	-

Client Sample ID			SW6	QC01	TRIP BLANK	TRIP SPIKE
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Au42440	S20-Au42441	S20-Au42442	S20-Au42443
Date Sampled			Aug 26, 2020	Aug 26, 2020	Aug 26, 2020	Aug 26, 2020
Test/Reference	LOR	Unit				
Phenols (Halogenated)						
2-Chlorophenol	0.003	mg/L	< 0.003	-	-	-
2.4-Dichlorophenol	0.003	mg/L	< 0.003	-	-	-
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01	-	-	-
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01	-	-	-
2.6-Dichlorophenol	0.003	mg/L	< 0.003	-	-	-
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	-	-	-
Pentachlorophenol	0.01	mg/L	< 0.01	-	-	-
Tetrachlorophenols - Total	0.03	mg/L	< 0.03	-	-	-
Total Halogenated Phenol*	0.01	mg/L	< 0.01	-	-	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	0.1	mg/L	< 0.1	-	-	-
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03	-	-	-
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	-	-	-
2-Nitrophenol	0.01	mg/L	< 0.01	-	-	-
2.4-Dimethylphenol	0.003	mg/L	< 0.003	-	-	-
2.4-Dinitrophenol	0.03	mg/L	< 0.03	-	-	-
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	-	-	-
4-Nitrophenol	0.03	mg/L	< 0.03	-	-	-
Dinoseb	0.1	mg/L	< 0.1	-	-	-
Phenol	0.003	mg/L	< 0.003	-	-	-
Total Non-Halogenated Phenol*	0.1	mg/L	< 0.1	-	-	-
Phenol-d6 (surr.)	1	%	64	-	-	-
Ammonia (as N)	0.01	mg/L	< 0.01	< 0.01	-	-
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	< 5	-	-	-
Chemical Oxygen Demand (COD)	25	mg/L	< 25	-	-	-
Chloride	1	mg/L	57	-	-	-
Cyanide (total)	0.005	mg/L	< 0.005	-	-	-
Fluoride (Total)	0.5	mg/L	< 0.5	-	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	-	-
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
pH (at 25 °C)	0.1	pH Units	8.0	-	-	-
Phosphate total (as P)	0.01	mg/L	0.01	0.01	-	-
Sulphate (as SO4)	5	mg/L	13	-	-	-
Total Dissolved Solids Dried at 180°C ± 2°C	10	mg/L	270	-	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.5	0.5	-	-
Total Nitrogen (as N)*	0.2	mg/L	0.5	0.5	-	-
Total Suspended Solids Dried at 103–105°C	1	mg/L	< 1	-	-	-
Hardness mg equivalent CaCO3/L	5	mg/L	140	-	-	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	220	-	-	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	-	-	-
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20	-	-	-
Total Alkalinity (as CaCO3)	20	mg/L	220	-	-	-
Alkali Metals						
Calcium	0.5	mg/L	30	-	-	-
Magnesium	0.5	mg/L	16	-	-	-
Potassium	0.5	mg/L	< 5	-	-	-
Sodium	0.5	mg/L	28	-	-	-

Client Sample ID			SW6	QC01	TRIP BLANK	TRIP SPIKE
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Au42440	S20-Au42441	S20-Au42442	S20-Au42443
Date Sampled			Aug 26, 2020	Aug 26, 2020	Aug 26, 2020	Aug 26, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	0.001	mg/L	0.008	-	-	-
Cadmium	0.0002	mg/L	< 0.0002	-	-	-
Chromium	0.001	mg/L	< 0.001	-	-	-
Copper	0.001	mg/L	< 0.001	-	-	-
Lead	0.001	mg/L	< 0.001	-	-	-
Mercury	0.0001	mg/L	< 0.0001	-	-	-
Molybdenum	0.005	mg/L	< 0.005	-	-	-
Nickel	0.001	mg/L	< 0.001	-	-	-
Selenium	0.001	mg/L	< 0.001	-	-	-
Silver	0.005	mg/L	< 0.005	-	-	-
Tin	0.005	mg/L	< 0.005	-	-	-
Zinc	0.005	mg/L	< 0.005	-	-	-
Total Recoverable Hydrocarbons						
Naphthalene	1	%	-	-	-	94
TRH C6-C10	1	%	-	-	-	83
TRH C6-C9	1	%	-	-	-	75
BTEX						
Benzene	1	%	-	-	-	92
Ethylbenzene	1	%	-	-	-	90
m&p-Xylenes	1	%	-	-	-	89
o-Xylene	1	%	-	-	-	83
Toluene	1	%	-	-	-	100
Xylenes - Total	1	%	-	-	-	85
4-Bromofluorobenzene (surr.)	1	%	-	-	-	102

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.

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 28, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Aug 28, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 28, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons	Melbourne	Aug 28, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Aug 28, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Melbourne	Aug 28, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	Aug 28, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)			
Polychlorinated Biphenyls	Melbourne	Aug 28, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8082)			
Phenols (Halogenated)	Melbourne	Aug 28, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Aug 28, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Cyanide (total)	Melbourne	Aug 28, 2020	14 Days
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride (Total)	Melbourne	Aug 28, 2020	28 Days
- Method: APHA 4500 F-C Fluoride by Ion Selective Electrode			
Metals IWRG 621 : Metals M12	Melbourne	Aug 28, 2020	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P			
Ammonia (as N)	Melbourne	Aug 28, 2020	28 Days
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Nitrate & Nitrite (as N)	Melbourne	Aug 28, 2020	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrate (as N)	Melbourne	Aug 28, 2020	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrite (as N)	Melbourne	Aug 28, 2020	2 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Phosphate total (as P)	Melbourne	Aug 28, 2020	28 Days
- Method: APHA 4500-P E. Phosphorus			
Total Kjeldahl Nitrogen (as N)	Melbourne	Aug 28, 2020	7 Days
- Method: LTM-INO-4310 TKN in Waters & Soils by FIA			
Biochemical Oxygen Demand (BOD-5 Day)	Melbourne	Aug 28, 2020	2 Days
- Method: LTM-INO-4010 Biochemical Oxygen Demand (BOD5) in Water			
Chemical Oxygen Demand (COD)	Melbourne	Aug 28, 2020	28 Days
- Method: LTM-INO-4220 Determination of COD in Water			
pH (at 25 °C)	Melbourne	Aug 28, 2020	0 Hours
- Method: LTM-GEN-7090 pH in water by ISE			
Total Suspended Solids Dried at 103–105°C	Melbourne	Aug 28, 2020	7 Days
- Method: LTM-INO-4070 Analysis of Suspended Solids in Water by Gravimetry			
Eurofins Suite B11E: Cl/SO4/Alkalinity			
Chloride	Melbourne	Aug 28, 2020	28 Days
- Method: LTM-INO-4090 Chloride by Discrete Analyser			

Description	Testing Site	Extracted	Holding Time
Sulphate (as SO4)	Melbourne	Aug 28, 2020	28 Days
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Alkalinity (speciated)	Melbourne	Aug 28, 2020	14 Days
- Method: LTM-INO-4250 Alkalinity by Electrometric Titration			
Total Dissolved Solids Dried at 180°C ± 2°C	Melbourne	Aug 28, 2020	7 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			
Eurofins Suite B11D: Na/K/Ca/Mg and Hardness			
Hardness mg equivalent CaCO3/L	Melbourne	Aug 28, 2020	28 Days
- Method: APHA 2340B Hardness by Calculation			
Alkali Metals	Melbourne	Aug 28, 2020	180 Days
- Method: LTM-MET-3010 Alkali Metals Sulfur Silicon Phosphorus by ICP-AES			

eurofins | Environment Testing

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

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Phone : 0800 856 450
IANZ # 1290

Company Name:	GHD Pty Ltd NSW	**Order No.:**	12529041	**Received:**	Aug 26, 2020 2:25 PM
Address:	Level 15, 133 Castlereagh Street Sydney NSW 2000	**Report #:**	740259	**Due:**	Sep 2, 2020
		Phone:	02 9239 7100	**Priority:**	5 Day
		Fax:	02 9239 7199	**Contact Name:**	Nicole Rosen
Project Name:	KURNELL				
Project ID:	12529041				

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Vic EPA Short Screen	BTEXN and Volatile TRH	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P	Eurofins Suite B11E: Cl/SO4/Alkalinity	BTEXN and Volatile TRH	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
Newcastle Laboratory																
External Laboratory																
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**											
1	SW6	Aug 26, 2020		Water	S20-Au42440	X	X	X	X	X		X	X	X		X
2	QC01	Aug 26, 2020		Water	S20-Au42441								X			
3	TRIP BLANK	Aug 26, 2020		Water	S20-Au42442						X					
4	TRIP SPIKE	Aug 26, 2020		Water	S20-Au42443										X	
Test Counts						1	1	1	1	1	1	1	2	1	1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid 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. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. 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	US Department of Defense Quality Systems Manual Version 5.3
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 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 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							
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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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	
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							
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							
Phenols (Halogenated)							
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2.4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.4.5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.4.6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Tetrachlorophenols - Total	mg/L	< 0.03			0.03	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/L	< 0.1			0.1	Pass	
2-Methyl-4.6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2.4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2.4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
Dinoseb	mg/L	< 0.1			0.1	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	mg/L	< 5			5	Pass	
Chemical Oxygen Demand (COD)	mg/L	< 25			25	Pass	
Chloride	mg/L	< 1			1	Pass	
Fluoride (Total)	mg/L	< 0.5			0.5	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as SO4)	mg/L	< 5			5	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 10			10	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Suspended Solids Dried at 103–105°C	mg/L	< 1			1	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO3)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Total Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	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	
Molybdenum	mg/L	< 0.005			0.005	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Silver	mg/L	< 0.005			0.005	Pass	
Tin	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	90			70-130	Pass	
TRH C10-C14	%	87			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	91			70-130	Pass	
Toluene	%	101			70-130	Pass	
Ethylbenzene	%	84			70-130	Pass	
m&p-Xylenes	%	80			70-130	Pass	
Xylenes - Total*	%	82			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	71			70-130	Pass	
TRH C6-C10	%	88			70-130	Pass	
TRH >C10-C16	%	86			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	84			70-130	Pass	
Acenaphthylene	%	79			70-130	Pass	
Anthracene	%	78			70-130	Pass	
Benz(a)anthracene	%	73			70-130	Pass	
Benzo(a)pyrene	%	77			70-130	Pass	
Benzo(b&j)fluoranthene	%	88			70-130	Pass	
Benzo(g.h.i)perylene	%	88			70-130	Pass	
Benzo(k)fluoranthene	%	120			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chrysene	%	101			70-130	Pass	
Dibenz(a.h)anthracene	%	95			70-130	Pass	
Fluoranthene	%	110			70-130	Pass	
Fluorene	%	80			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	87			70-130	Pass	
Naphthalene	%	76			70-130	Pass	
Phenanthrene	%	83			70-130	Pass	
Pyrene	%	91			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	102			70-130	Pass	
4.4'-DDD	%	80			70-130	Pass	
4.4'-DDE	%	80			70-130	Pass	
4.4'-DDT	%	80			70-130	Pass	
a-BHC	%	92			70-130	Pass	
Aldrin	%	86			70-130	Pass	
b-BHC	%	100			70-130	Pass	
d-BHC	%	103			70-130	Pass	
Dieldrin	%	95			70-130	Pass	
Endosulfan I	%	86			70-130	Pass	
Endosulfan II	%	80			70-130	Pass	
Endosulfan sulphate	%	77			70-130	Pass	
Endrin	%	87			70-130	Pass	
Endrin aldehyde	%	100			70-130	Pass	
Endrin ketone	%	123			70-130	Pass	
g-BHC (Lindane)	%	85			70-130	Pass	
Heptachlor	%	85			70-130	Pass	
Heptachlor epoxide	%	74			70-130	Pass	
Hexachlorobenzene	%	97			70-130	Pass	
Methoxychlor	%	79			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	91			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	71			30-130	Pass	
2.4-Dichlorophenol	%	63			30-130	Pass	
2.4.5-Trichlorophenol	%	73			30-130	Pass	
2.4.6-Trichlorophenol	%	76			30-130	Pass	
2.6-Dichlorophenol	%	73			30-130	Pass	
4-Chloro-3-methylphenol	%	50			30-130	Pass	
Pentachlorophenol	%	78			30-130	Pass	
Tetrachlorophenols - Total	%	70			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	43			30-130	Pass	
2-Methyl-4.6-dinitrophenol	%	51			30-130	Pass	
2-Methylphenol (o-Cresol)	%	57			30-130	Pass	
2-Nitrophenol	%	70			30-130	Pass	
2.4-Dimethylphenol	%	60			30-130	Pass	
2.4-Dinitrophenol	%	41			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	65			30-130	Pass	
4-Nitrophenol	%	122			30-130	Pass	
Dinoseb	%	82			30-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phenol	%	61			30-130	Pass	
LCS - % Recovery							
Ammonia (as N)	%	94			70-130	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	%	90			70-130	Pass	
Chloride	%	115			70-130	Pass	
Fluoride (Total)	%	100			70-130	Pass	
Nitrate & Nitrite (as N)	%	96			70-130	Pass	
Nitrate (as N)	%	96			70-130	Pass	
Nitrite (as N)	%	103			70-130	Pass	
Phosphate total (as P)	%	92			70-130	Pass	
Sulphate (as SO4)	%	105			70-130	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	%	97			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	87			70-130	Pass	
Total Suspended Solids Dried at 103–105°C	%	95			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO3)	%	113			70-130	Pass	
Total Alkalinity (as CaCO3)	%	118			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	96			80-120	Pass	
Magnesium	%	102			80-120	Pass	
Potassium	%	88			80-120	Pass	
Sodium	%	98			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	101			80-120	Pass	
Cadmium	%	101			80-120	Pass	
Chromium	%	101			80-120	Pass	
Copper	%	101			80-120	Pass	
Lead	%	100			80-120	Pass	
Mercury	%	104			80-120	Pass	
Molybdenum	%	100			80-120	Pass	
Nickel	%	101			80-120	Pass	
Selenium	%	103			80-120	Pass	
Silver	%	100			80-120	Pass	
Tin	%	103			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 C6-C9	M20-Au48760	NCP	%	107			70-130	Pass	
TRH C10-C14	M20-Au48728	NCP	%	79			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M20-Au48760	NCP	%	99			70-130	Pass	
Toluene	M20-Au48760	NCP	%	109			70-130	Pass	
Ethylbenzene	M20-Au48760	NCP	%	92			70-130	Pass	
m&p-Xylenes	M20-Au48760	NCP	%	88			70-130	Pass	
o-Xylene	M20-Au48760	NCP	%	95			70-130	Pass	
Xylenes - Total*	M20-Au48760	NCP	%	90			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M20-Au48760	NCP	%	89			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C6-C10	M20-Au48760	NCP	%	99			70-130	Pass	
TRH >C10-C16	M20-Au48728	NCP	%	79			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S20-Au42528	NCP	%	93			70-130	Pass	
Acenaphthylene	S20-Au42528	NCP	%	91			70-130	Pass	
Anthracene	S20-Au42528	NCP	%	90			70-130	Pass	
Benz(a)anthracene	S20-Au42528	NCP	%	114			70-130	Pass	
Benzo(a)pyrene	S20-Au42528	NCP	%	82			70-130	Pass	
Benzo(b&j)fluoranthene	S20-Au42528	NCP	%	82			70-130	Pass	
Benzo(g.h.i)perylene	S20-Au42528	NCP	%	117			70-130	Pass	
Benzo(k)fluoranthene	S20-Au42528	NCP	%	106			70-130	Pass	
Chrysene	S20-Au42528	NCP	%	107			70-130	Pass	
Dibenz(a.h)anthracene	S20-Au42528	NCP	%	93			70-130	Pass	
Fluoranthene	S20-Au42528	NCP	%	90			70-130	Pass	
Fluorene	S20-Au42528	NCP	%	117			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Au42528	NCP	%	92			70-130	Pass	
Naphthalene	S20-Au42528	NCP	%	87			70-130	Pass	
Phenanthrene	S20-Au42528	NCP	%	113			70-130	Pass	
Pyrene	S20-Au42528	NCP	%	86			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S20-Au31965	NCP	%	109			70-130	Pass	
4.4'-DDD	S20-Au31965	NCP	%	81			70-130	Pass	
4.4'-DDE	S20-Au31965	NCP	%	79			70-130	Pass	
4.4'-DDT	S20-Au31965	NCP	%	93			70-130	Pass	
a-BHC	S20-Au31965	NCP	%	79			70-130	Pass	
Aldrin	S20-Au31965	NCP	%	112			70-130	Pass	
b-BHC	S20-Au31965	NCP	%	103			70-130	Pass	
d-BHC	S20-Au31965	NCP	%	103			70-130	Pass	
Dieldrin	S20-Au31965	NCP	%	110			70-130	Pass	
Endosulfan I	S20-Au31965	NCP	%	79			70-130	Pass	
Endosulfan II	S20-Au31965	NCP	%	95			70-130	Pass	
Endosulfan sulphate	S20-Au31965	NCP	%	103			70-130	Pass	
Endrin	S20-Au31965	NCP	%	71			70-130	Pass	
Endrin aldehyde	S20-Au31965	NCP	%	82			70-130	Pass	
Endrin ketone	S20-Au31965	NCP	%	88			70-130	Pass	
g-BHC (Lindane)	S20-Au31965	NCP	%	83			70-130	Pass	
Heptachlor	S20-Au31965	NCP	%	80			70-130	Pass	
Heptachlor epoxide	S20-Au31965	NCP	%	78			70-130	Pass	
Hexachlorobenzene	S20-Au31965	NCP	%	72			70-130	Pass	
Methoxychlor	S20-Au31965	NCP	%	86			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	S20-Au42528	NCP	%	119			30-130	Pass	
2.4-Dichlorophenol	S20-Au42528	NCP	%	110			30-130	Pass	
2.4.5-Trichlorophenol	S20-Au42528	NCP	%	106			30-130	Pass	
2.4.6-Trichlorophenol	S20-Au42528	NCP	%	83			30-130	Pass	
2.6-Dichlorophenol	S20-Au42528	NCP	%	125			30-130	Pass	
4-Chloro-3-methylphenol	S20-Au42528	NCP	%	82			30-130	Pass	
Pentachlorophenol	S20-Au42528	NCP	%	112			30-130	Pass	
Tetrachlorophenols - Total	S20-Au42528	NCP	%	98			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-Cyclohexyl-4.6-dinitrophenol	S20-Au42528	NCP	%	47			30-130	Pass	
2-Methyl-4.6-dinitrophenol	S20-Au42528	NCP	%	97			30-130	Pass	
2-Methylphenol (o-Cresol)	S20-Au42528	NCP	%	99			30-130	Pass	
2-Nitrophenol	S20-Au42528	NCP	%	116			30-130	Pass	
2.4-Dimethylphenol	S20-Au42528	NCP	%	66			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	S20-Au42528	NCP	%	121			30-130	Pass	
4-Nitrophenol	S20-Au42528	NCP	%	103			30-130	Pass	
Dinoseb	S20-Au42528	NCP	%	84			30-130	Pass	
Phenol	S20-Au42528	NCP	%	112			30-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	S20-Au37577	NCP	%	85			70-130	Pass	
Chloride	B20-Au43423	NCP	%	106			70-130	Pass	
Nitrate & Nitrite (as N)	S20-Au37577	NCP	%	89			70-130	Pass	
Nitrate (as N)	S20-Au37577	NCP	%	89			70-130	Pass	
Nitrite (as N)	S20-Au37577	NCP	%	94			70-130	Pass	
Phosphate total (as P)	M20-Au42695	NCP	%	88			70-130	Pass	
Sulphate (as SO4)	B20-Au43423	NCP	%	102			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	S20-Au42002	NCP	%	73			70-130	Pass	
Total Suspended Solids Dried at 103–105°C	S20-Au41864	NCP	%	90			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	B20-Au42274	NCP	%	102			75-125	Pass	
Magnesium	P20-Au44000	NCP	%	104			75-125	Pass	
Potassium	B20-Au42274	NCP	%	90			75-125	Pass	
Sodium	P20-Au44000	NCP	%	97			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M20-Au45846	NCP	%	99			75-125	Pass	
Cadmium	M20-Au45846	NCP	%	99			75-125	Pass	
Chromium	M20-Au45846	NCP	%	96			75-125	Pass	
Copper	M20-Au45846	NCP	%	94			75-125	Pass	
Lead	M20-Au45846	NCP	%	96			75-125	Pass	
Mercury	M20-Au45846	NCP	%	91			75-125	Pass	
Molybdenum	M20-Au45846	NCP	%	97			75-125	Pass	
Nickel	M20-Au45846	NCP	%	94			75-125	Pass	
Selenium	M20-Au45846	NCP	%	99			75-125	Pass	
Silver	M20-Au45846	NCP	%	95			75-125	Pass	
Tin	M20-Au45846	NCP	%	98			75-125	Pass	
Zinc	M20-Au45846	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 C6-C9	M20-Au48718	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M20-Au49340	NCP	mg/L	0.11	< 0.05	200	30%	Fail	Q15
TRH C15-C28	M20-Au49340	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	M20-Au49340	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M20-Au48718	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M20-Au48718	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M20-Au48718	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M20-Au48718	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
o-Xylene	M20-Au48718	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	M20-Au48718	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M20-Au48718	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M20-Au48718	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	M20-Au49340	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	M20-Au49340	NCP	mg/L	0.1	< 0.1	200	30%	Fail	Q15
TRH >C34-C40	M20-Au49340	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	S20-Au42527	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S20-Au31973	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
4.4'-DDD	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
4.4'-DDE	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
4.4'-DDT	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
a-BHC	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Aldrin	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
b-BHC	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
d-BHC	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Dieldrin	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan I	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan II	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endosulfan sulphate	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin aldehyde	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Endrin ketone	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
g-BHC (Lindane)	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Heptachlor	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Heptachlor epoxide	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Hexachlorobenzene	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Methoxychlor	S20-Au31973	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	

Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	S20-Au42527	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2.4-Dichlorophenol	S20-Au42527	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2.4.5-Trichlorophenol	S20-Au42527	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
2.4.6-Trichlorophenol	S20-Au42527	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
2.6-Dichlorophenol	S20-Au42527	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
4-Chloro-3-methylphenol	S20-Au42527	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Pentachlorophenol	S20-Au42527	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Tetrachlorophenols - Total	S20-Au42527	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	S20-Au42527	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	S20-Au42527	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
2-Methylphenol (o-Cresol)	S20-Au42527	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2-Nitrophenol	S20-Au42527	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
2.4-Dimethylphenol	S20-Au42527	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2.4-Dinitrophenol	S20-Au42527	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	S20-Au42527	NCP	mg/L	< 0.006	< 0.006	<1	30%	Pass	
4-Nitrophenol	S20-Au42527	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
Dinoseb	S20-Au42527	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Phenol	S20-Au42527	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	S20-Au37577	NCP	mg/L	1.9	1.9	1.0	30%	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	M20-Au45848	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Chemical Oxygen Demand (COD)	M20-Au47035	NCP	mg/L	3600	3700	1.0	30%	Pass	
Chloride	S20-Au42440	CP	mg/L	57	56	1.0	30%	Pass	
Fluoride (Total)	M20-Au42275	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass	
Nitrate & Nitrite (as N)	S20-Au37577	NCP	mg/L	0.62	0.62	1.0	30%	Pass	
Nitrate (as N)	S20-Au37577	NCP	mg/L	0.15	0.15	2.0	30%	Pass	
Nitrite (as N)	S20-Au37577	NCP	mg/L	0.47	0.47	1.0	30%	Pass	
pH (at 25 °C)	S20-Au42440	CP	pH Units	8.0	8.0	pass	30%	Pass	
Phosphate total (as P)	B20-Au42269	NCP	mg/L	0.99	1.0	2.0	30%	Pass	
Sulphate (as SO4)	S20-Au42440	CP	mg/L	13	13	1.0	30%	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	S20-Au41612	NCP	mg/L	1600	1700	8.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	S20-Au42553	NCP	mg/L	1.0	1.0	2.4	30%	Pass	
Total Suspended Solids Dried at 103–105°C	M20-Au41031	NCP	mg/L	280	260	6.0	30%	Pass	
Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	S20-Au42440	CP	mg/L	220	210	7.0	30%	Pass	
Carbonate Alkalinity (as CaCO3)	S20-Au42440	CP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	S20-Au42440	CP	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO3)	S20-Au42440	CP	mg/L	220	210	7.0	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	B20-Au42274	NCP	mg/L	10	11	8.0	30%	Pass	
Magnesium	B20-Au42274	NCP	mg/L	< 5	< 5	<1	30%	Pass	
Potassium	B20-Au42274	NCP	mg/L	60	63	5.0	30%	Pass	
Sodium	P20-Au44000	NCP	mg/L	15	16	2.0	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M20-Au45846	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	M20-Au45846	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M20-Au45846	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	M20-Au45846	NCP	mg/L	0.003	0.003	<1	30%	Pass	
Lead	M20-Au45846	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	M20-Au45846	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Molybdenum	M20-Au45846	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Nickel	M20-Au45846	NCP	mg/L	0.002	0.002	6.0	30%	Pass	
Selenium	M20-Au45846	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Silver	M20-Au45846	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Tin	M20-Au45846	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	M20-Au45846	NCP	mg/L	0.011	0.011	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.
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 Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Alena Bounkeua	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Scott Beddoes	Senior Analyst-Inorganic (VIC)

Glenn Jackson
General 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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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd, Sydney	**Contact Name :** Terry Nham / Christie Allen	**Purchase Order :** 12529041	**COC Number :**
Office Address : Level 15, 133 Castlereagh Street, Sydney NSW 2000	**Project Manager :** Nicole Rosen / Stefan Charteris	**PROJECT Number :** 12529041	**Eurofins | mgt quote ID :** GHD Rates 2020/2021
Email for results : terry.nham@ghd.com christie.allen@ghd.com nicole.rosen@ghd.com stefan.charteris@ghd.com		**PROJECT Name :** Kurnell	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Suite R6: Vic EPA Short Screen	Suite B11D: Cation Suite	Suite B11E: Anion Suite	Suite 19D: Nutrients	BOD	COD	pH	TDS	TSS	TRH C6-C10 / BTEXN
1	SW6	26/08/20	Water	X	X	X	X	X	X	X	X	X	
2	QC01	26/08/20	Water	X			X						X
3	Trip Blank	26/08/20	Water										X
4	Trip Spike	26/08/20	Water										
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:

1LP	500P	60P	200mL A	40mL vial	125mL A	Jar	Bag	Sample comments:
	2	3	2	2	1			
	2	3	2	2	1			
				2				
				2				

Laboratory Staff

Relinquished By: Terry Nham - GHD

Date & Time : 26 / 08 / 2020

Signature: TN

Received By:

Date & Time : 26/8/2020 2:25PM

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: 4.86°C

Report number: 740259

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New Zealand

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Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Sample Receipt Advice

Company name:	GHD Pty Ltd NSW
Contact name:	Nicole Rosen
Project name:	KURNELL
Project ID:	12529041
Turnaround time:	5 Day
Date/Time received	Aug 26, 2020 2:25 PM
Eurofins reference	740259

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 4.9 degrees Celsius.
✓	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.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Alena Bounkeua on phone : or by email: AlenaBounkeua@eurofins.com

Results will be delivered electronically via email to Nicole Rosen - nicole.rosen@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.

eurofins | Environment Testing

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

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NATA # 1261 Site # 18217

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IANZ # 1290

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: KURNELL
Project ID: 12529041

Order No.: 12529041
Report #: 740259
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Aug 26, 2020 2:25 PM
Due: Sep 2, 2020
Priority: 5 Day
Contact Name: Nicole Rosen

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Vic EPA Short Screen	BTEXN and Volatile TRH	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P	Eurofins Suite B11E: Cl/SO4/Alkalinity	BTEXN and Volatile TRH	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
Newcastle Laboratory																
External Laboratory																
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**											
1	SW6	Aug 26, 2020		Water	S20-Au42440	X	X	X	X	X		X	X	X		X
2	QC01	Aug 26, 2020		Water	S20-Au42441								X			
3	TRIP BLANK	Aug 26, 2020		Water	S20-Au42442						X					
4	TRIP SPIKE	Aug 26, 2020		Water	S20-Au42443										X	
Test Counts						1	1	1	1	1	1	1	2	1	1	1

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000

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: **Terry Nham**

Report **741800-W**
Project name KURNELL
Project ID 12529041
Received Date Sep 03, 2020

Client Sample ID			**QC01**
Sample Matrix			**Water**
Eurofins Sample No.			**M20-Se04874**
Date Sampled			**Aug 26, 2020**
Test/Reference	LOR	Unit	
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	%	105
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
Total Recoverable Hydrocarbons			
TRH C6-C9	0.02	mg/L	< 0.02
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
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-C36 (Total)	0.1	mg/L	< 0.1
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

Client Sample ID			QC01
Sample Matrix			Water
Eurofins Sample No.			M20-Se04874
Date Sampled			Aug 26, 2020
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
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	%	89
p-Terphenyl-d14 (surr.)	1	%	88
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	%	80
Tetrachloro-m-xylene (surr.)	1	%	97
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	%	80
Tetrachloro-m-xylene (surr.)	1	%	97

Client Sample ID			QC01
Sample Matrix			Water
Eurofins Sample No.			M20-Se04874
Date Sampled			Aug 26, 2020
Test/Reference	LOR	Unit	
Phenols (Halogenated)			
2-Chlorophenol	0.003	mg/L	< 0.003
2.4-Dichlorophenol	0.003	mg/L	< 0.003
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01
2.6-Dichlorophenol	0.003	mg/L	< 0.003
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01
Pentachlorophenol	0.01	mg/L	< 0.01
Tetrachlorophenols - Total	0.03	mg/L	< 0.03
Total Halogenated Phenol*	0.01	mg/L	< 0.01
Phenols (non-Halogenated)			
2-Cyclohexyl-4.6-dinitrophenol	0.1	mg/L	< 0.1
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003
2-Nitrophenol	0.01	mg/L	< 0.01
2.4-Dimethylphenol	0.003	mg/L	< 0.003
2.4-Dinitrophenol	0.03	mg/L	< 0.03
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006
4-Nitrophenol	0.03	mg/L	< 0.03
Dinoseb	0.1	mg/L	< 0.1
Phenol	0.003	mg/L	< 0.003
Total Non-Halogenated Phenol*	0.1	mg/L	< 0.1
Phenol-d6 (surr.)	1	%	77
Cyanide (total)	0.005	mg/L	< 0.005
Fluoride (Total)	0.5	mg/L	< 0.5
Heavy Metals			
Arsenic (filtered)	0.001	mg/L	0.007
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	0.013
Lead (filtered)	0.001	mg/L	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001
Molybdenum (filtered)	0.005	mg/L	< 0.005
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Silver (filtered)	0.005	mg/L	< 0.005
Tin (filtered)	0.005	mg/L	< 0.005
Zinc (filtered)	0.005	mg/L	0.007

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.

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
BTEX	Melbourne	Sep 03, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 03, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 03, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons	Melbourne	Sep 03, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Sep 03, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Melbourne	Sep 03, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	Sep 03, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)			
Polychlorinated Biphenyls	Melbourne	Sep 03, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8082)			
Phenols (Halogenated)	Melbourne	Sep 03, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Sep 03, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Cyanide (total)	Melbourne	Sep 03, 2020	14 Days
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
Fluoride (Total)	Melbourne	Sep 03, 2020	28 Days
- Method: APHA 4500 F-C Fluoride by Ion Selective Electrode			
Metals IWRG 621 : Metals M12 filtered	Melbourne	Sep 03, 2020	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

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Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: KURNELL
Project ID: 12529041

Order No.:
Report #: 741800
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Sep 3, 2020 2:05 PM
Due: Sep 4, 2020
Priority: 1 Day
Contact Name: Terry Nham

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Vic EPA Short Screen (filtered metals)
Melbourne Laboratory - NATA Site # 1254 & 14271						X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
Newcastle Laboratory						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC01	Aug 26, 2020		Water	M20-Se04874	X
Test Counts						1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid 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. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. 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	US Department of Defense Quality Systems Manual Version 5.3
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 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 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							
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							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
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							
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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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	
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							
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							
Phenols (Halogenated)							
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2.4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.4.5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.4.6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Tetrachlorophenols - Total	mg/L	< 0.03			0.03	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/L	< 0.1			0.1	Pass	
2-Methyl-4.6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2.4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2.4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
Dinoseb	mg/L	< 0.1			0.1	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Method Blank							
Cyanide (total)	mg/L	< 0.005			0.005	Pass	
Fluoride (Total)	mg/L	< 0.5			0.5	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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Molybdenum (filtered)	mg/L	< 0.005			0.005	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Silver (filtered)	mg/L	< 0.005			0.005	Pass	
Tin (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	86			70-130	Pass	
Toluene	%	93			70-130	Pass	
Ethylbenzene	%	89			70-130	Pass	
m&p-Xylenes	%	92			70-130	Pass	
Xylenes - Total*	%	90			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	85			70-130	Pass	
TRH C6-C10	%	83			70-130	Pass	
TRH >C10-C16	%	120			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	85			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	%	119			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	85			70-130	Pass	
Acenaphthylene	%	79			70-130	Pass	
Anthracene	%	77			70-130	Pass	
Benz(a)anthracene	%	75			70-130	Pass	
Benzo(a)pyrene	%	71			70-130	Pass	
Benzo(b&j)fluoranthene	%	91			70-130	Pass	
Benzo(g.h.i)perylene	%	116			70-130	Pass	
Benzo(k)fluoranthene	%	90			70-130	Pass	
Chrysene	%	97			70-130	Pass	
Dibenz(a.h)anthracene	%	75			70-130	Pass	
Fluoranthene	%	91			70-130	Pass	
Fluorene	%	86			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	78			70-130	Pass	
Naphthalene	%	75			70-130	Pass	
Phenanthrene	%	88			70-130	Pass	
Pyrene	%	99			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	80			70-130	Pass	
4.4'-DDD	%	83			70-130	Pass	
4.4'-DDE	%	122			70-130	Pass	
4.4'-DDT	%	96			70-130	Pass	
a-BHC	%	96			70-130	Pass	
Aldrin	%	91			70-130	Pass	
b-BHC	%	101			70-130	Pass	
d-BHC	%	74			70-130	Pass	
Dieldrin	%	118			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan I	%	97			70-130	Pass	
Endosulfan II	%	80			70-130	Pass	
Endosulfan sulphate	%	81			70-130	Pass	
Endrin	%	99			70-130	Pass	
Endrin aldehyde	%	94			70-130	Pass	
Endrin ketone	%	123			70-130	Pass	
g-BHC (Lindane)	%	101			70-130	Pass	
Heptachlor	%	108			70-130	Pass	
Heptachlor epoxide	%	83			70-130	Pass	
Hexachlorobenzene	%	79			70-130	Pass	
Methoxychlor	%	82			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	102			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	63			30-130	Pass	
2.4-Dichlorophenol	%	60			30-130	Pass	
2.4.5-Trichlorophenol	%	58			30-130	Pass	
2.4.6-Trichlorophenol	%	63			30-130	Pass	
2.6-Dichlorophenol	%	65			30-130	Pass	
4-Chloro-3-methylphenol	%	65			30-130	Pass	
Pentachlorophenol	%	56			30-130	Pass	
Tetrachlorophenols - Total	%	108			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	42			30-130	Pass	
2-Methyl-4.6-dinitrophenol	%	69			30-130	Pass	
2-Methylphenol (o-Cresol)	%	55			30-130	Pass	
2-Nitrophenol	%	55			30-130	Pass	
2.4-Dimethylphenol	%	44			30-130	Pass	
2.4-Dinitrophenol	%	59			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	63			30-130	Pass	
4-Nitrophenol	%	91			30-130	Pass	
Dinoseb	%	109			30-130	Pass	
Phenol	%	58			30-130	Pass	
LCS - % Recovery							
Cyanide (total)	%	96			70-130	Pass	
Fluoride (Total)	%	115			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
BTEX				Result 1					
Benzene	M20-Se02182	NCP	%	93			70-130	Pass	
Toluene	M20-Se02182	NCP	%	111			70-130	Pass	
Ethylbenzene	M20-Se02182	NCP	%	101			70-130	Pass	
m&p-Xylenes	M20-Se02182	NCP	%	101			70-130	Pass	
o-Xylene	M20-Se02182	NCP	%	100			70-130	Pass	
Xylenes - Total*	M20-Se02182	NCP	%	101			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M20-Se02182	NCP	%	95			70-130	Pass	
TRH C6-C10	M20-Se02182	NCP	%	83			70-130	Pass	
TRH >C10-C16	M20-Se02509	NCP	%	107			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	M20-Se02182	NCP	%	86			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M20-Se02509	NCP	%	108			70-130	Pass	
Spike - % Recovery									
				Result 1					
Cyanide (total)	M20-Se05466	NCP	%	113			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M20-Se02450	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M20-Se02450	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M20-Se02450	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M20-Se02450	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M20-Se02450	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	M20-Se02450	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M20-Se02450	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	M20-Se02450	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	S20-Au48456	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S20-Au48456	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S20-Au48456	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	M20-Se02450	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S20-Au48456	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S20-Au48456	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S20-Au48456	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Cyanide (total)	M20-Se05676	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Fluoride (Total)	M20-Se04649	NCP	mg/L	0.8	0.8	<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	N/A
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
I12	Where sampling date has not been provided, Eurofins | Environment Testing is not able to determine whether analysis has been performed within recommended holding times.
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

Alena Bounkeua	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Scott Beddoes	Senior Analyst-Inorganic (VIC)

Glenn Jackson

General 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.

#AU_CAU001_EnviroSampleVic

From: Alena Bounkeua
Sent: Thursday, 3 September 2020 2:10 PM
To: #AU_CAU001_EnviroSampleVic
Subject: FW: *additional* - Report 740259 : Site KURNELL (12529041)

Hi guys,

Additional analysis please – 1 day TAT

Sample QC01- Suite R6

Thanks!

Kind Regards,

Alena Bounkeua
Eurofins|Environment Testing
Phone: +61 2 9900 8414
Mobile: +61 429 365 410
Email: AlenaBounkeua@eurofins.com

From: Terry Nham <Terry.Nham@ghd.com>
Sent: Thursday, 3 September 2020 2:05 PM
To: Alena Bounkeua <AlenaBounkeua@eurofins.com>
Cc: Christie Allen <Christie.Allen@ghd.com>; Nicole Rosen <Nicole.Rosen@ghd.com>
Subject: RE: Eurofins FINAL Test Results, Invoice - Report 740259 : Site KURNELL (12529041)

EXTERNAL EMAIL*

Hi Alena,
Thanks for sending through the results.
Just checking, for sample "QC01" was that analysed for the R6 suite as per the COC?

Regards,

AU42441 - 500ml Plas
250ml Amb
50ml met
50ml Cyanide
vial.

Terry

Terry Nham
Environmental Scientist
Contamination Assessment and Remediation

GHD
T: 61 2 9239 7393 | F: 61 2 9239 7199 | V: 217393 | M: 0403 251 883 | E: terry.nham@ghd.com
Level 15, 133 Castlereagh St Sydney NSW 2000 Australia | http://www.ghd.com/
Water | Energy & Resources | Environment | Property & Buildings | Transportation

From: AlenaBounkeua@eurofins.com <AlenaBounkeua@eurofins.com>
Sent: Thursday, 3 September 2020 1:45 PM
To: Nicole Rosen <Nicole.Rosen@ghd.com>

741800

eurofins | Environment Testing

ABN: 50 005 085 521 www.eurofins.com.au EnviroSales@eurofins.com

Australia

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Site # 1254 & 14271

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Lane Cove West NSW 2066
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

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NATA # 1261
Site # 23736

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PO Box 60 Wickham 2293
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Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Sample Receipt Advice

Company name:	GHD Pty Ltd NSW
Contact name:	Terry Nham
Project name:	KURNELL
Project ID:	12529041
Turnaround time:	1 Day
Date/Time received	Sep 3, 2020 2:05 PM
Eurofins reference	741800

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

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Alena Bounkeua on phone : or by email: AlenaBounkeua@eurofins.com

Results will be delivered electronically via email to Terry Nham - Terry.Nham@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.

eurofins | Environment Testing

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

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Site # 23736

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Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: KURNELL
Project ID: 12529041

Order No.:
Report #: 741800
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Sep 3, 2020 2:05 PM
Due: Sep 4, 2020
Priority: 1 Day
Contact Name: Terry Nham

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Vic EPA Short Screen (filtered metals)
Melbourne Laboratory - NATA Site # 1254 & 14271						X
Sydney Laboratory - NATA Site # 18217						
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
Newcastle Laboratory						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	QC01	Aug 26, 2020		Water	M20-Se04874	X
Test Counts						1

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Attention: **Andre Smit**

Report **743790-W**
Project name KURNELL
Project ID 12529041
Received Date Sep 11, 2020

Client Sample ID			PW01	PW02	PW03	PW04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22519	S20-Se22520	S20-Se22521	S20-Se22522
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
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	0.07	< 0.05	< 0.05	0.05
TRH C15-C28	0.1	mg/L	< 0.1	0.4	0.5	2.1
TRH C29-C36	0.1	mg/L	< 0.1	0.4	0.4	1.5
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	0.8	0.9	3.65
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	%	98	105	104	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	0.06	< 0.05	0.08	0.17
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	0.06	< 0.05	0.08	0.17
TRH >C16-C34	0.1	mg/L	0.2	0.7	0.8	3.0
TRH >C34-C40	0.1	mg/L	< 0.1	0.3	0.2	1.0
TRH >C10-C40 (total)*	0.1	mg/L	0.26	1	1.08	4.17
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	0.002	0.001	0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			PW01	PW02	PW03	PW04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22519	S20-Se22520	S20-Se22521	S20-Se22522
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
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	0.002	0.001	0.001
Total PAH*	0.001	mg/L	0.002	0.009	0.002	0.002
2-Fluorobiphenyl (surr.)	1	%	74	71	71	62
p-Terphenyl-d14 (surr.)	1	%	118	118	125	72
Organochlorine Pesticides						
Chlordanes - Total	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
4.4'-DDD	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
4.4'-DDE	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
4.4'-DDT	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
a-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
b-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
d-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0002	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endosulfan II	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Methoxychlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Toxaphene	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Aldrin and Dieldrin (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0002	< 0.0001
DDT + DDE + DDD (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Vic EPA IWRG 621 OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vic EPA IWRG 621 Other OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibutylchlorendate (surr.)	1	%	147	INT	INT	109
Tetrachloro-m-xylene (surr.)	1	%	90	91	93	86
Polychlorinated Biphenyls						
Aroclor-1016	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1221	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Aroclor-1232	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1242	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1248	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1254	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1260	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Total PCB*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibutylchlorendate (surr.)	1	%	147	INT	INT	109
Tetrachloro-m-xylene (surr.)	1	%	90	91	93	86

Client Sample ID			PW01	PW02	PW03	PW04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22519	S20-Se22520	S20-Se22521	S20-Se22522
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit				
Phenols (Halogenated)						
2-Chlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.6-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Pentachlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachlorophenols - Total	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
Total Halogenated Phenol*	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2-Nitrophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.4-Dimethylphenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4-Dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	< 0.006	< 0.006	< 0.006
4-Nitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
Dinoseb	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
Total Non-Halogenated Phenol*	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Phenol-d6 (surr.)	1	%	45	45	44	40
Ammonia (as N)	0.01	mg/L	0.06	< 0.01	14	< 0.01
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L				
Chemical Oxygen Demand (COD)	25	mg/L	450	4000	200	620
Chloride	1	mg/L	25000	24000	9000	16000
Cyanide (total)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Fluoride (Total)	0.5	mg/L	1.7	2.1	2.9	2.1
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH (at 25 °C)	0.1	pH Units	7.2	6.6	7.0	6.6
Phosphate total (as P)	0.01	mg/L	0.25	1.5	0.03	0.33
Sulphate (as SO4)	2	mg/L	3500	3600	1500	2400
Total Dissolved Solids Dried at 180°C ± 2°C	5	mg/L	47000	50000	25000	31000
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.0	72	15	16
Total Nitrogen (as N)*	0.2	mg/L	1	72	15	16
Total Suspended Solids Dried at 103–105°C	5	mg/L	40	2400	590	380
Hardness mg equivalent CaCO3/L	1	mg/L	7000	5700	2800	4300
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	180	360	970	200
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Total Alkalinity (as CaCO3)	20	mg/L	180	360	970	200
Alkali Metals						
Calcium	0.5	mg/L	490	420	290	300
Magnesium	0.5	mg/L	1400	1100	510	870
Potassium	0.5	mg/L	420	360	200	290
Sodium	0.5	mg/L	12000	9600	4000	7500

Client Sample ID			PW01	PW02	PW03	PW04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22519	S20-Se22520	S20-Se22521	S20-Se22522
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.05
Arsenic	0.001	mg/L	0.003	0.082	0.013	0.030
Cadmium	0.0002	mg/L	< 0.0002	0.0029	0.0005	0.0007
Chromium	0.001	mg/L	< 0.001	0.12	0.020	0.022
Copper	0.001	mg/L	< 0.001	0.087	0.012	0.011
Iron (filtered)	0.05	mg/L	0.22	0.11	< 0.05	0.32
Lead	0.001	mg/L	< 0.001	0.19	0.030	0.020
Manganese (filtered)	0.005	mg/L	0.024	0.057	0.063	0.016
Mercury	0.0001	mg/L	< 0.0001	0.0012	0.0002	0.0002
Molybdenum	0.005	mg/L	0.012	0.087	0.033	0.047
Nickel	0.001	mg/L	< 0.001	0.032	0.009	0.011
Selenium	0.001	mg/L	< 0.001	0.004	0.001	0.001
Silver	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Tin	0.005	mg/L	< 0.005	0.015	0.034	< 0.005
Zinc	0.005	mg/L	< 0.005	0.48	0.056	0.061

Client Sample ID			PW07	SW7	SW8	QC04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22523	S20-Se22524	S20-Se22525	S20-Se22526
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
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	0.3	0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	0.4	0.3	0.1	0.2
TRH C10-C36 (Total)	0.1	mg/L	0.7	0.4	0.1	0.2
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	%	105	102	105	104
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	0.06	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	0.06	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	0.6	0.4	0.1	0.2
TRH >C34-C40	0.1	mg/L	0.2	0.2	< 0.1	0.1
TRH >C10-C40 (total)*	0.1	mg/L	0.86	0.6	0.1	0.3

Client Sample ID			PW07	SW7	SW8	QC04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22523	S20-Se22524	S20-Se22525	S20-Se22526
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
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	0.002	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	56	72	68	69
p-Terphenyl-d14 (surr.)	1	%	72	90	90	91
Organochlorine Pesticides						
Chlordanes - Total	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
4.4'-DDD	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
4.4'-DDE	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
4.4'-DDT	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
a-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
b-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
d-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	0.0001
Endosulfan II	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	< 0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Methoxychlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Toxaphene	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Aldrin and Dieldrin (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
DDT + DDE + DDD (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Vic EPA IWRG 621 OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vic EPA IWRG 621 Other OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibutylchlorendate (surr.)	1	%	91	111	112	127
Tetrachloro-m-xylene (surr.)	1	%	77	95	96	98

Client Sample ID			PW07	SW7	SW8	QC04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22523	S20-Se22524	S20-Se22525	S20-Se22526
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1221	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Aroclor-1232	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1242	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1248	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1254	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1260	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Total PCB*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibutylchlorendate (surr.)	1	%	91	111	112	127
Tetrachloro-m-xylene (surr.)	1	%	77	95	96	98
Phenols (Halogenated)						
2-Chlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.6-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Pentachlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachlorophenols - Total	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
Total Halogenated Phenol*	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2-Nitrophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.4-Dimethylphenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4-Dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	< 0.006	< 0.006	< 0.006
4-Nitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
Dinoseb	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
Total Non-Halogenated Phenol*	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Phenol-d6 (surr.)	1	%	44	51	55	46
Ammonia (as N)	0.01	mg/L	0.23	0.76	0.05	0.05
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L				-
Chemical Oxygen Demand (COD)	25	mg/L	340	350	400	-
Chloride	1	mg/L	11000	23000	26000	-
Cyanide (total)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Fluoride (Total)	0.5	mg/L	2.1	1.9	1.9	1.9
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.69	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.40	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.29	< 0.02	< 0.02
pH (at 25 °C)	0.1	pH Units	6.9	7.4	7.8	-
Phosphate total (as P)	0.01	mg/L	0.11	0.14	0.02	0.02
Sulphate (as SO4)	2	mg/L	1400	3200	3600	-
Total Dissolved Solids Dried at 180°C ± 2°C	5	mg/L	23000	50000	48000	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	5.1	5.2	0.3	< 0.2
Total Nitrogen (as N)*	0.2	mg/L	5.1	5.89	0.3	< 0.2

Client Sample ID			PW07	SW7	SW8	QC04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22523	S20-Se22524	S20-Se22525	S20-Se22526
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit				
Total Suspended Solids Dried at 103–105°C	5	mg/L	440	460	68	-
Hardness mg equivalent CaCO3/L	1	mg/L	2900	6500	7600	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	360	190	140	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-
Total Alkalinity (as CaCO3)	20	mg/L	360	190	140	-
Alkali Metals						
Calcium	0.5	mg/L	210	450	500	-
Magnesium	0.5	mg/L	570	1300	1500	-
Potassium	0.5	mg/L	190	400	460	-
Sodium	0.5	mg/L	4900	11000	13000	-
Heavy Metals						
Aluminium (filtered)	0.05	mg/L	0.06	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.016	0.011	0.003	0.003
Cadmium	0.0002	mg/L	0.0005	0.0004	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.019	0.020	0.002	< 0.001
Copper	0.001	mg/L	0.011	0.016	0.005	0.001
Iron (filtered)	0.05	mg/L	0.68	0.06	0.06	< 0.05
Lead	0.001	mg/L	0.023	0.025	0.003	0.001
Manganese (filtered)	0.005	mg/L	0.027	0.024	0.010	0.006
Mercury	0.0001	mg/L	0.0002	0.0002	< 0.0001	< 0.0001
Molybdenum	0.005	mg/L	0.017	0.019	0.013	0.014
Nickel	0.001	mg/L	0.008	0.005	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Silver	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Tin	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	0.005	mg/L	0.046	0.057	0.009	0.005

Client Sample ID			TRIP BLANK	TRIP SPIKE
Sample Matrix			Water	Water
Eurofins Sample No.			S20-Se22527	S20-Se22528
Date Sampled			Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	0.02	mg/L	< 0.02	-
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	%	102	-
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	-

Client Sample ID			TRIP BLANK	TRIP SPIKE
Sample Matrix			Water	Water
Eurofins Sample No.			S20-Se22527	S20-Se22528
Date Sampled			Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit		
TRH C6-C10	1	%	-	74
Total Recoverable Hydrocarbons				
Naphthalene	1	%	-	130
TRH C6-C9	1	%	-	77
BTEX				
Benzene	1	%	-	100
Ethylbenzene	1	%	-	98
m&p-Xylenes	1	%	-	99
o-Xylene	1	%	-	96
Toluene	1	%	-	100
Xylenes - Total	1	%	-	97
4-Bromofluorobenzene (surr.)	1	%	-	99

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.

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 14, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Sep 14, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 14, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Phenols (Halogenated)	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Cyanide (total)	Sydney	Sep 14, 2020	14 Days
- Method: E054 Total Cyanide			
Fluoride (Total)	Melbourne	Sep 15, 2020	28 Days
- Method: APHA 4500 F-C Fluoride by Ion Selective Electrode			
Metals IWRG 621 : Metals M12	Sydney	Sep 15, 2020	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P			
Ammonia (as N)	Melbourne	Sep 15, 2020	28 Days
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Nitrate & Nitrite (as N)	Melbourne	Sep 15, 2020	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrate (as N)	Melbourne	Sep 15, 2020	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrite (as N)	Melbourne	Sep 15, 2020	2 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Phosphate total (as P)	Melbourne	Sep 15, 2020	28 Days
- Method: APHA 4500-P E. Phosphorus			
Total Kjeldahl Nitrogen (as N)	Melbourne	Sep 15, 2020	7 Days
- Method: LTM-INO-4310 TKN in Waters & Soils by FIA			
Biochemical Oxygen Demand (BOD-5 Day)	Melbourne	Sep 15, 2020	2 Days
- Method: LTM-INO-4010 Biochemical Oxygen Demand (BOD5) in Water			
Chemical Oxygen Demand (COD)	Melbourne	Sep 15, 2020	28 Days
- Method: LTM-INO-4220 Determination of COD in Water			
pH (at 25 °C)	Sydney	Sep 14, 2020	1 Days
- Method: LTM-GEN-7090 pH in water by ISE			
Total Suspended Solids Dried at 103–105°C	Sydney	Sep 14, 2020	7 Days
- Method: LTM-INO-4070 Analysis of Suspended Solids in Water by Gravimetry			
Heavy Metals (filtered)	Sydney	Sep 14, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B11E: Cl/SO4/Alkalinity			

Description	Testing Site	Extracted	Holding Time
Chloride	Sydney	Sep 14, 2020	28 Days
- Method: E045 /E047 Chloride			
Sulphate (as SO4)	Sydney	Sep 14, 2020	28 Days
- Method: E045 Anions by Ion Chromatography			
Alkalinity (speciated)	Melbourne	Sep 15, 2020	14 Days
- Method: LTM-INO-4250 Alkalinity by Electrometric Titration			
Total Dissolved Solids Dried at 180°C ± 2°C	Sydney	Sep 14, 2020	7 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			
Eurofins Suite B11D: Na/K/Ca/Mg and Hardness			
Hardness mg equivalent CaCO3/L	Sydney	Sep 15, 2020	28 Days
- Method: E020.1 Hardness in water			
Alkali Metals	Sydney	Sep 15, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

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Project Name: KURNELL
Project ID: 12529041

Order No.: 12529041
Report #: 743790
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Sep 11, 2020 10:58 PM
Due: Sep 16, 2020
Priority: 2 Day
Contact Name: Andre Smit

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Aluminium (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	Iron (filtered)	Manganese (filtered)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Vic EPA Short Screen	BTEXN and Volatile TRH	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P	Eurofins Suite B11E: Cl/SO4/Alkalinity	BTEXN and Volatile TRH	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X					X			X	X		X
Sydney Laboratory - NATA Site # 18217						X			X	X	X	X	X	X	X		X	X	X
Brisbane Laboratory - NATA Site # 20794																			
Perth Laboratory - NATA Site # 23736																			
Newcastle Laboratory																			
External Laboratory																			
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**														
1	PW01	Sep 11, 2020		Water	S20-Se22519	X	X	X	X	X	X	X	X		X	X	X		X
2	PW02	Sep 11, 2020		Water	S20-Se22520	X	X	X	X	X	X	X	X		X	X	X		X
3	PW03	Sep 11, 2020		Water	S20-Se22521	X	X	X	X	X	X	X	X		X	X	X		X
4	PW04	Sep 11, 2020		Water	S20-Se22522	X	X	X	X	X	X	X	X		X	X	X		X
5	PW07	Sep 11, 2020		Water	S20-Se22523	X	X	X	X	X	X	X	X		X	X	X		X
6	SW7	Sep 11, 2020		Water	S20-Se22524	X	X	X	X	X	X	X	X		X	X	X		X
7	SW8	Sep 11, 2020		Water	S20-Se22525	X	X	X	X	X	X	X	X		X	X	X		X
8	QC04	Sep 11, 2020		Water	S20-Se22526	X			X	X			X			X			
9	TRIP BLANK	Sep 11, 2020		Water	S20-Se22527									X					

eurofins | Environment Testing

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Order No.: 12529041
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Received: Sep 11, 2020 10:58 PM
Due: Sep 16, 2020
Priority: 2 Day
Contact Name: Andre Smit

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Aluminium (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	Iron (filtered)	Manganese (filtered)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Vic EPA Short Screen	BTEXN and Volatile TRH	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P	Eurofins Suite B11E: Cl/SO4/Alkalinity	BTEXN and Volatile TRH	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X					X			X	X		X
Sydney Laboratory - NATA Site # 18217						X			X	X	X	X	X	X	X		X	X	X
Brisbane Laboratory - NATA Site # 20794																			
Perth Laboratory - NATA Site # 23736																			
10	TRIP SPIKE	Sep 11, 2020		Water	S20-Se22528													X	
Test Counts						8	7	7	8	8	7	7	8	1	7	8	7	1	7

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid 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. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. 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	US Department of Defense Quality Systems Manual Version 5.3
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 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 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							
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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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	
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							
Polychlorinated Biphenyls							
Aroclor-1016	mg/L	< 0.005			0.005	Pass	
Aroclor-1221	mg/L	< 0.001			0.001	Pass	
Aroclor-1232	mg/L	< 0.005			0.005	Pass	
Aroclor-1242	mg/L	< 0.005			0.005	Pass	
Aroclor-1248	mg/L	< 0.005			0.005	Pass	
Aroclor-1254	mg/L	< 0.005			0.005	Pass	
Aroclor-1260	mg/L	< 0.005			0.005	Pass	
Total PCB*	mg/L	< 0.001			0.001	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2.4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.4.5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.4.6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Tetrachlorophenols - Total	mg/L	< 0.03			0.03	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/L	< 0.1			0.1	Pass	
2-Methyl-4.6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2.4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2.4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
Dinoseb	mg/L	< 0.1			0.1	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Method Blank							
Chloride	mg/L	< 1			1	Pass	
Fluoride (Total)	mg/L	< 0.5			0.5	Pass	
Sulphate (as SO4)	mg/L	< 2			2	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
Method Blank							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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	
Molybdenum	mg/L	< 0.005			0.005	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Silver	mg/L	< 0.005			0.005	Pass	
Tin	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	89			70-130	Pass	
TRH C10-C14	%	75			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	95			70-130	Pass	
Toluene	%	100			70-130	Pass	
Ethylbenzene	%	100			70-130	Pass	
m&p-Xylenes	%	101			70-130	Pass	
o-Xylene	%	97			70-130	Pass	
Xylenes - Total*	%	99			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	110			70-130	Pass	
TRH C6-C10	%	88			70-130	Pass	
TRH >C10-C16	%	74			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	104			70-130	Pass	
Acenaphthylene	%	91			70-130	Pass	
Anthracene	%	96			70-130	Pass	
Benz(a)anthracene	%	103			70-130	Pass	
Benzo(a)pyrene	%	107			70-130	Pass	
Benzo(b&j)fluoranthene	%	111			70-130	Pass	
Benzo(g.h.i)perylene	%	126			70-130	Pass	
Benzo(k)fluoranthene	%	114			70-130	Pass	
Chrysene	%	120			70-130	Pass	
Dibenz(a.h)anthracene	%	107			70-130	Pass	
Fluoranthene	%	103			70-130	Pass	
Fluorene	%	98			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	111			70-130	Pass	
Naphthalene	%	85			70-130	Pass	
Phenanthrene	%	102			70-130	Pass	
Pyrene	%	106			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	89			70-130	Pass	
4.4'-DDD	%	80			70-130	Pass	
4.4'-DDE	%	87			70-130	Pass	
4.4'-DDT	%	79			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
a-BHC	%	77			70-130	Pass	
Aldrin	%	77			70-130	Pass	
b-BHC	%	74			70-130	Pass	
d-BHC	%	88			70-130	Pass	
Dieldrin	%	115			70-130	Pass	
Endosulfan I	%	100			70-130	Pass	
Endosulfan II	%	104			70-130	Pass	
Endosulfan sulphate	%	75			70-130	Pass	
Endrin	%	95			70-130	Pass	
Endrin aldehyde	%	107			70-130	Pass	
Endrin ketone	%	104			70-130	Pass	
g-BHC (Lindane)	%	88			70-130	Pass	
Heptachlor	%	72			70-130	Pass	
Heptachlor epoxide	%	82			70-130	Pass	
Hexachlorobenzene	%	86			70-130	Pass	
Methoxychlor	%	73			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	86			70-130	Pass	
Aroclor-1260	%	92			70-130	Pass	
LCS - % Recovery							
Chloride	%	110			70-130	Pass	
Fluoride (Total)	%	95			70-130	Pass	
Sulphate (as SO4)	%	114			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	104			80-120	Pass	
Magnesium	%	103			80-120	Pass	
Potassium	%	102			80-120	Pass	
Sodium	%	105			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	98			80-120	Pass	
Cadmium	%	99			80-120	Pass	
Chromium	%	102			80-120	Pass	
Copper	%	101			80-120	Pass	
Lead	%	106			80-120	Pass	
Mercury	%	101			80-120	Pass	
Molybdenum	%	106			80-120	Pass	
Nickel	%	102			80-120	Pass	
Selenium	%	92			80-120	Pass	
Silver	%	101			80-120	Pass	
Tin	%	100			80-120	Pass	
Zinc	%	100			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	S20-Se23673	NCP	%	87			70-130	Pass	
TRH C10-C14	S20-Se17671	NCP	%	85			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-Se23673	NCP	%	99			70-130	Pass	
TRH C6-C10	S20-Se23673	NCP	%	86			70-130	Pass	
TRH >C10-C16	S20-Se17671	NCP	%	78			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)	S20-Se22539	NCP	%	101			70-130	Pass	
Chemical Oxygen Demand (COD)	B20-Se20296	NCP	%	83			70-130	Pass	
Cyanide (total)	S20-Se17541	NCP	%	80			70-130	Pass	
Nitrate & Nitrite (as N)	S20-Se22539	NCP	%	102			70-130	Pass	
Nitrate (as N)	S20-Se22539	NCP	%	102			70-130	Pass	
Nitrite (as N)	S20-Se22539	NCP	%	106			70-130	Pass	
Phosphate total (as P)	P20-Se23985	NCP	%	115			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M20-Se23329	NCP	%	108			70-130	Pass	
Total Suspended Solids Dried at 103–105°C	S20-Se26085	NCP	%	88			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium (filtered)	S20-Se22540	NCP	%	91			75-125	Pass	
Iron (filtered)	S20-Se22609	NCP	%	103			75-125	Pass	
Manganese (filtered)	S20-Se22609	NCP	%	97			75-125	Pass	
Spike - % Recovery									
BTEX				Result 1					
m&p-Xylenes	S20-Se23673	NCP	%	96			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	S20-Se16447	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S20-Se17602	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S20-Se17602	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S20-Se17602	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Se16447	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S20-Se16447	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S20-Se16447	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S20-Se16447	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S20-Se16447	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	S20-Se16447	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Se16447	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S20-Se16447	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	S20-Se17602	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S20-Se17602	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S20-Se17602	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	S20-Se22539	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Chemical Oxygen Demand (COD)	S20-Se22519	CP	mg/L	450	370	18	30%	Pass	
Cyanide (total)	S20-Se17542	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Fluoride (Total)	S20-Se22519	CP	mg/L	1.7	1.8	6.6	30%	Pass	
Nitrate & Nitrite (as N)	S20-Se22539	NCP	mg/L	1.9	1.9	3.0	30%	Pass	
Nitrate (as N)	S20-Se22539	NCP	mg/L	1.9	1.9	3.0	30%	Pass	
Nitrite (as N)	S20-Se22539	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	S20-Se25419	NCP	mg/L	930	960	3.0	30%	Pass	

Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	P20-Se23985	NCP	mg/L	100	130	23	30%	Pass	
Carbonate Alkalinity (as CaCO3)	P20-Se23985	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	P20-Se23985	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO3)	P20-Se23985	NCP	mg/L	100	130	23	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	S20-Se22519	CP	mg/L	490	460	5.0	30%	Pass	
Magnesium	S20-Se22519	CP	mg/L	1400	1300	5.0	30%	Pass	
Potassium	S20-Se22519	CP	mg/L	420	400	6.0	30%	Pass	
Sodium	S20-Se22519	CP	mg/L	12000	11000	6.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	S20-Se22519	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	S20-Se22519	CP	mg/L	0.003	0.003	6.0	30%	Pass	
Cadmium	S20-Se22519	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S20-Se22519	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	S20-Se22519	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	S20-Se22519	CP	mg/L	0.22	0.19	18	30%	Pass	
Lead	S20-Se22519	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	S20-Se22519	CP	mg/L	0.024	0.024	1.0	30%	Pass	
Mercury	S20-Se22519	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Molybdenum	S20-Se22519	CP	mg/L	0.012	0.010	18	30%	Pass	
Nickel	S20-Se22519	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	S20-Se22519	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Silver	S20-Se22519	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Tin	S20-Se22519	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	S20-Se22519	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chemical Oxygen Demand (COD)	S20-Se22520	CP	mg/L	4000	3100	25	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	S20-Se22522	CP	mg/L	0.33	0.32	2.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	S20-Se22522	CP	mg/L	16	16	4.4	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	S20-Se22525	CP	mg/L	26000	25000	4.0	30%	Pass	
Sulphate (as SO4)	S20-Se22525	CP	mg/L	3600	3500	3.0	30%	Pass	
Total Suspended Solids Dried at 103–105°C	S20-Se22525	CP	mg/L	68	78	14	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

Authorised By

Alena Bounkeua	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Inorganic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Scott Beddoes	Senior Analyst-Inorganic (VIC)

Glenn Jackson
General Manager

- 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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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd, Sydney	**Contact Name :** Terry Nham / Nicole Rosen	**Purchase Order :** 12529041	**COC Number :**
Office Address : Level 15, 133 Castlereagh Street, Sydney NSW 2000	**Project Manager :** Andre Smit / Stefan Charteris	**PROJECT Number :** 12529041	**Eurofins | mgt quote ID :** GHD Rates 2020/2021
Email for results : terry.nham@ghd.com nicole.rosen@ghd.com stefan.charteris@ghd.com andre.smit@ghd.com		**PROJECT Name :** Kurnell	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Suite R6: Vic EPA Short Screen (Dissolved Metals)	Suite B11D: Cation Suite	Suite B11E: Anion Suite	Suite 19D: Nutrients	BOD	COD	pH	TDS	TSS		Iron (Dissolved)	Manganese (Dissolved)	Aluminium (Dissolved)		TRH C6-C10 / BTEXN							
1	PW01	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
2	PW02	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
3	PW03	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
4	PW04	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
5	PW07	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
6	SW7	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
7	SW8	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
8	QC04	11/09/20	Water	X			X							X	X	X									
9	Trip Blank	11/09/20	Water															X							
10	Trip Spike	11/09/20	Water															X							
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:

1LP	500P	60P	200mL A	40mL vial	125mL A	Jar	Bag	Sample comments:
	2	3	2	2	1			
	2	3	2	2	1			
	2	3	2	2	1			
	2	3	2	2	1			
	2	3	2	2	1			
	2	3	2	2	1			
	2	3	2	2	1			
	2	3	2	2	1			
				2				
				2				

Relinquished By: Terry Nham - GHD
Date & Time : 11/09/2020
Signature: TN

Laboratory Staff
Received By: Kathy A
Date & Time : 11/9/20
Signature:

Turn around time
1 DAY ☐ 2 DAY ☑ 3 DAY ☐
5 DAY ☐ 10 DAY ☐
2 DAY TAT

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

Temperature on arrival: 2-8?
Report number: # 743790

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New Zealand

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IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Sample Receipt Advice

Company name:	GHD Pty Ltd NSW
Contact name:	Andre Smit
Project name:	KURNELL
Project ID:	12529041
Turnaround time:	2 Day
Date/Time received	Sep 11, 2020 10:58 PM
Eurofins reference	743790

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 2.9 degrees Celsius.
✓	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.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Samples received by the laboratory after 5.30pm are deemed to have been received the following working day.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Alena Bounkeua on phone : or by email: AlenaBounkeua@eurofins.com

Results will be delivered electronically via email to Andre Smit - andre.smit@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.

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ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

Australia

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Site # 1254 & 14271

Sydney
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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

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Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: KURNELL
Project ID: 12529041

Order No.: 12529041
Report #: 743790
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Sep 11, 2020 10:58 PM
Due: Sep 16, 2020
Priority: 2 Day
Contact Name: Andre Smit

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Aluminium (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	Iron (filtered)	Manganese (filtered)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Vic EPA Short Screen	BTEXN and Volatile TRH	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P	Eurofins Suite B11E: Cl/SO4/Alkalinity	BTEXN and Volatile TRH	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X					X			X	X		X
Sydney Laboratory - NATA Site # 18217						X			X	X	X	X	X	X	X		X	X	X
Brisbane Laboratory - NATA Site # 20794																			
Perth Laboratory - NATA Site # 23736																			
Newcastle Laboratory																			
External Laboratory																			
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**														
1	PW01	Sep 11, 2020		Water	S20-Se22519	X	X	X	X	X	X	X	X		X	X	X		X
2	PW02	Sep 11, 2020		Water	S20-Se22520	X	X	X	X	X	X	X	X		X	X	X		X
3	PW03	Sep 11, 2020		Water	S20-Se22521	X	X	X	X	X	X	X	X		X	X	X		X
4	PW04	Sep 11, 2020		Water	S20-Se22522	X	X	X	X	X	X	X	X		X	X	X		X
5	PW07	Sep 11, 2020		Water	S20-Se22523	X	X	X	X	X	X	X	X		X	X	X		X
6	SW7	Sep 11, 2020		Water	S20-Se22524	X	X	X	X	X	X	X	X		X	X	X		X
7	SW8	Sep 11, 2020		Water	S20-Se22525	X	X	X	X	X	X	X	X		X	X	X		X
8	QC04	Sep 11, 2020		Water	S20-Se22526	X			X	X			X			X			
9	TRIP BLANK	Sep 11, 2020		Water	S20-Se22527									X					

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Company Name:	GHD Pty Ltd NSW	**Order No.:**	12529041	**Received:**	Sep 11, 2020 10:58 PM
Address:	Level 15, 133 Castlereagh Street Sydney NSW 2000	**Report #:**	743790	**Due:**	Sep 16, 2020
		Phone:	02 9239 7100	**Priority:**	2 Day
		Fax:	02 9239 7199	**Contact Name:**	Andre Smit
Project Name:	KURNELL				
Project ID:	12529041				

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Aluminium (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	Iron (filtered)	Manganese (filtered)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Vic EPA Short Screen	BTEXN and Volatile TRH	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P	Eurofins Suite B11E: Cl/SO4/Alkalinity	BTEXN and Volatile TRH	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X					X			X	X		X
Sydney Laboratory - NATA Site # 18217						X			X	X	X	X	X	X	X		X	X	X
Brisbane Laboratory - NATA Site # 20794																			
Perth Laboratory - NATA Site # 23736																			
10	TRIP SPIKE	Sep 11, 2020		Water	S20-Se22528													X	
Test Counts						8	7	7	8	8	7	7	8	1	7	8	7	1	7

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000

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: **Andre Smit**

Report **745353-W**
Project name ADDITIONAL - KURNELL
Project ID 12529041
Received Date Sep 21, 2020

Client Sample ID			**PW02**	**PW03**	**PW04**
Sample Matrix			**Water**	**Water**	**Water**
Eurofins Sample No.			**S20-Se35249**	**S20-Se35250**	**S20-Se35251**
Date Sampled			**Sep 11, 2020**	**Sep 11, 2020**	**Sep 11, 2020**
Test/Reference	LOR	Unit			
TRH - 2013 NEPM Fractions (after silica gel clean-up)					
TRH >C10-C16 (after silica gel clean-up)	0.05	mg/L	< 0.05	< 0.05	0.10
TRH >C16-C34 (after silica gel clean-up)	0.1	mg/L	< 0.1	< 0.1	1.9
TRH >C34-C40 (after silica gel clean-up)	0.1	mg/L	< 0.1	< 0.1	0.2
TRH - 1999 NEPM Fractions (after silica gel clean-up)					
TRH C10-C36 (Total) (after silica gel clean-up)	0.4	mg/L	< 0.1	< 0.1	2
TRH C10-C14 (after silica gel clean-up)	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH C15-C28 (after silica gel clean-up)	0.1	mg/L	< 0.1	< 0.1	1.4
TRH C29-C36 (after silica gel clean-up)	0.1	mg/L	< 0.1	< 0.1	0.6

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.

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
TRH - 2013 NEPM Fractions (after silica gel clean-up)	Sydney	Sep 21, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
TRH - 1999 NEPM Fractions (after silica gel clean-up)	Sydney	Sep 21, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			

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Company Name:	GHD Pty Ltd NSW	**Order No.:**	12529041	**Received:**	Sep 21, 2020 12:54 PM
Address:	Level 15, 133 Castlereagh Street Sydney NSW 2000	**Report #:**	745353	**Due:**	Sep 23, 2020
		Phone:	02 9239 7100	**Priority:**	2 Day
		Fax:	02 9239 7199	**Contact Name:**	Andre Smit
Project Name:	ADDITIONAL - KURNELL				
Project ID:	12529041				

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						TRH (after Silica Gel cleanup)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						X
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
Newcastle Laboratory						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	PW02	Sep 11, 2020		Water	S20-Se35249	X
2	PW03	Sep 11, 2020		Water	S20-Se35250	X
3	PW04	Sep 11, 2020		Water	S20-Se35251	X
Test Counts						3

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid 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. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. 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	US Department of Defense Quality Systems Manual Version 5.3
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 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 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							
TRH - 2013 NEPM Fractions (after silica gel clean-up)							
TRH >C10-C16 (after silica gel clean-up)	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34 (after silica gel clean-up)	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40 (after silica gel clean-up)	mg/L	< 0.1			0.1	Pass	
Method Blank							
TRH - 1999 NEPM Fractions (after silica gel clean-up)							
TRH C10-C14 (after silica gel clean-up)	mg/L	< 0.05			0.05	Pass	
TRH C15-C28 (after silica gel clean-up)	mg/L	< 0.1			0.1	Pass	
TRH C29-C36 (after silica gel clean-up)	mg/L	< 0.1			0.1	Pass	
LCS - % Recovery							
TRH - 2013 NEPM Fractions (after silica gel clean-up)							
TRH >C10-C16 (after silica gel clean-up)	%	118			70-130	Pass	
LCS - % Recovery							
TRH - 1999 NEPM Fractions (after silica gel clean-up)							
TRH C10-C14 (after silica gel clean-up)	%	113			70-130	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

Authorised By

Alena Bounkeua	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)

Glenn Jackson
General 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.

#AU04_Enviro_Sample_NSW

To: Ursula Long
Subject: RE: Eurofins Draft Test Results - Report 743790 : Site KURNELL (12529041)

From: Nicole Rosen
Sent: Monday, September 21, 2020 11:15:00 AM (UTC+10:00) Canberra, Melbourne, Sydney
To: Alena Bounkeua
Cc: Asim Khan
Subject: FW: Eurofins Draft Test Results - Report 743790 : Site KURNELL (12529041)

Hi Alena,
We would like to schedule additional analysis on three samples.
Sample code: S20-Se22520 – PW02
S20-Se22521 – PW03
S20-Se22522 – PW04
Schedule for TRH - Silica gel clean-up C10-C40.

Also, S20-Se22521 – PW03
Can you please re-check the Ammonia result. It is quite elevated and doesn't seem to match with the rest of the nitrogen suite.

Thanks
Nicole

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Sample Receipt Advice

Company name:	GHD Pty Ltd NSW
Contact name:	Andre Smit
Project name:	ADDITIONAL - KURNELL
Project ID:	12529041
Turnaround time:	2 Day
Date/Time received	Sep 21, 2020 12:54 PM
Eurofins reference	745353

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 2.9 degrees Celsius.
✓	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.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Alena Bounkeua on phone : or by email: AlenaBounkeua@eurofins.com

Results will be delivered electronically via email to Andre Smit - andre.smit@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.

eurofins | Environment Testing

ABN: 50 005 085 521 web: www.eurofins.com.au email: EnviroSales@eurofins.com

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Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
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Project Name: ADDITIONAL - KURNELL
Project ID: 12529041

Order No.: 12529041
Report #: 745353
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Sep 21, 2020 12:54 PM
Due: Sep 23, 2020
Priority: 2 Day
Contact Name: Andre Smit

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						TRH (after Silica Gel cleanup)
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						X
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
Newcastle Laboratory						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	PW02	Sep 11, 2020		Water	S20-Se35249	X
2	PW03	Sep 11, 2020		Water	S20-Se35250	X
3	PW04	Sep 11, 2020		Water	S20-Se35251	X
Test Counts						3

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2032276**	Page	: 1 of 8
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR ANDRE SMIT	Contact	: Angus Harding
Address	: LEVEL 15, 133 CASTLEREAGH STREET SYDNEY NSW, AUSTRALIA 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9239 7100	Telephone	: +61 2 8784 8555
Project	: 12529041	Date Samples Received	: 14-Sep-2020 11:30
Order number	: 12529041	Date Analysis Commenced	: 14-Sep-2020
C-O-C number	: ----	Issue Date	: 16-Sep-2020 15:35
Sampler	: NICOLE ROSEN, TERRY NHAM		
Site	:		
Quote number	: EN/005		
No. of samples received	: 12		
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*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ashesh Patel	Senior Chemist	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 ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) 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.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG020: LOR's have been raised due to matrix interference. (High Total Dissolved Solids)

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC02	----	----	----	----
				Client sampling date / time	11-Sep-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2032276-001	--------	--------	--------	--------
					Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Aluminium	7429-90-5	0.01	mg/L		<0.10	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L		<0.010	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0010	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.010	----	----	----	----
Copper	7440-50-8	0.001	mg/L		**0.015**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.010	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.010	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.050	----	----	----	----
Manganese	7439-96-5	0.001	mg/L		**0.010**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L		**0.016**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L		<0.10	----	----	----	----
Silver	7440-22-4	0.001	mg/L		<0.010	----	----	----	----
Tin	7440-31-5	0.001	mg/L		<0.010	----	----	----	----
Iron	7439-89-6	0.05	mg/L		**0.21**	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	0.004	mg/L		<0.004	----	----	----	----
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L		**1.3**	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		**0.07**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N	14797-65-0	0.01	mg/L		<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser									
Nitrate as N	14797-55-8	0.01	mg/L		**0.02**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		**0.02**	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		**7.9**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ **Total Nitrogen as N**	----	0.1	mg/L		**7.9**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC02	----	----	----	----
				Client sampling date / time	11-Sep-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2032276-001	--------	--------	--------	--------
					Result	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser - Continued									
Total Phosphorus as P	----	0.01	mg/L		**0.55**	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
^ **Total Polychlorinated biphenyls**	----	1	µg/L		<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L		<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L		<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L		<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L		<0.5	----	----	----	----
4.4`-DDT	50-29-3	2.0	µg/L		<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L		<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L		<2.0	----	----	----	----
^ **Total Chlordane (sum)**	----	0.5	µg/L		<0.5	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.5	µg/L		<0.5	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.5	µg/L		<0.5	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	----	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	----	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	----	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC02	----	----	----	----
				Client sampling date / time	11-Sep-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2032276-001	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)A: Phenolic Compounds - Continued									
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	----	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	----	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	----	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	----	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		**900**	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		**670**	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		**1570**	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC02	----	----	----	----
				Client sampling date / time	11-Sep-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2032276-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		**1320**	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		**410**	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		**1730**	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ **Total Xylenes**	----	2	µg/L		<2	----	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		**81.4**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		**76.2**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		**90.8**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		**25.4**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		**60.3**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		**82.4**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		**85.1**	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		**92.8**	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		**97.6**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**92.4**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC02	----	----	----	----
				Client sampling date / time	11-Sep-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2032276-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	2	%		**94.7**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**91.9**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	45	134
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2032276**	Page	: 1 of 8
Client	: **GHD PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR ANDRE SMIT	Telephone	: +61 2 8784 8555
Project	: 12529041	Date Samples Received	: 14-Sep-2020
Site	:	Issue Date	: 16-Sep-2020
Sampler	: NICOLE ROSEN, TERRY NHAM	No. of samples received	: 12
Order number	: 12529041	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.**
- **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

- **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 : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser	ES2032291--001	Anonymous	**Total Kjeldahl Nitrogen as N**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
QC02	----	----	----	14-Sep-2020	13-Sep-2020	**1**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Dissolved Mercury by FIMS	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Dissolved Metals by ICP-MS - Suite A	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	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: **WATER** Evaluation: × = Holding time breach ; ✓ = Within holding time.

Matrix: **WATER**

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
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020B-F)							
QC02	**11-Sep-2020**	**----**	----	----	**14-Sep-2020**	10-Mar-2021	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
QC02	**11-Sep-2020**	**----**	----	----	**15-Sep-2020**	09-Oct-2020	✓
EK026SF: Total CN by Segmented Flow Analyser							
Clear Plastic Bottle - NaOH (EK026SF)							
QC02	**11-Sep-2020**	**----**	----	----	**15-Sep-2020**	25-Sep-2020	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P)							
QC02	**11-Sep-2020**	**----**	----	----	**14-Sep-2020**	09-Oct-2020	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
QC02	**11-Sep-2020**	**----**	----	----	**14-Sep-2020**	09-Oct-2020	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
QC02	**11-Sep-2020**	**----**	----	----	**14-Sep-2020**	13-Sep-2020	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
QC02	**11-Sep-2020**	**----**	----	----	**14-Sep-2020**	09-Oct-2020	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
QC02	**11-Sep-2020**	**14-Sep-2020**	09-Oct-2020	✓	**14-Sep-2020**	09-Oct-2020	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
QC02	**11-Sep-2020**	**14-Sep-2020**	09-Oct-2020	✓	**14-Sep-2020**	09-Oct-2020	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
QC02	**11-Sep-2020**	**15-Sep-2020**	18-Sep-2020	✓	**15-Sep-2020**	25-Oct-2020	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068)							
QC02	**11-Sep-2020**	**15-Sep-2020**	18-Sep-2020	✓	**15-Sep-2020**	25-Oct-2020	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
QC02	**11-Sep-2020**	**15-Sep-2020**	18-Sep-2020	✓	**15-Sep-2020**	25-Oct-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
QC02	**11-Sep-2020**	**15-Sep-2020**	18-Sep-2020	✓	**15-Sep-2020**	25-Oct-2020	✓

Matrix: **WATER**

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							
Amber Glass Bottle - Unpreserved (EP071)							
QC02	**11-Sep-2020**	**15-Sep-2020**	18-Sep-2020	✓	**16-Sep-2020**	25-Oct-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC02	**11-Sep-2020**	**14-Sep-2020**	25-Sep-2020	✓	**14-Sep-2020**	25-Sep-2020	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
QC02	**11-Sep-2020**	**15-Sep-2020**	18-Sep-2020	✓	**16-Sep-2020**	25-Oct-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC02	**11-Sep-2020**	**14-Sep-2020**	25-Sep-2020	✓	**14-Sep-2020**	25-Sep-2020	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
QC02	**11-Sep-2020**	**14-Sep-2020**	25-Sep-2020	✓	**14-Sep-2020**	25-Sep-2020	✓

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: **WATER**

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)							
Ammonia as N by Discrete analyser	EK055G	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	0	1	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	1	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	1	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	1	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	1	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	2	3	**66.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	5	**60.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	4	**75.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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*	
Method Blanks (MB) - Continued							
Fluoride by PC Titrator	EK040P	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	1	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	**20.00**	**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
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The 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 Schedule B(3).
Total Cyanide by Segmented Flow Analyser	EK026SF	WATER	In house: Referenced to APHA 4500-CN C&O / ASTM D7511 / ISO 14403. Sodium hydroxide preserved 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 Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
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☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
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☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: GHD Pty Ltd	**TURNAROUND REQUIREMENT** ☐ Standard TAT (List due date): **2 DAY TAT**	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Sydney	(Standard TAT may be longer for some tests e.g., Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: Kurnell	**ALS QUOTE NO.:** EN-005-19 GHD	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: 12529041		Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Andre Smit / Stefan Chateris	**CONTACT PH:** 0451 955 579	Other comments:
SAMPLER: Terry Nham / Nicole Rosen	**SAMPLER MOBILE:** 0403 251 883	
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):** ESDAT	
Email Reports to: terry.nham@ghd.com nicole.rosen@ghd.com andre.smit@ghd.com stefan.charteris@ghd.com		

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Terry Nham (GHD)	Tom		
DATE/TIME: 14/09/2020	DATE/TIME: 14/9/20 11:30	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: ALL SAMPLES MARKED AS HOLD, PLEASE PLACE INTO LONG TERM STORAGE

ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)
Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	TRH, BTEXN, PAH, Phenols, OCP, PCB (W-17)	Metals (Dissolved) - As, Cd, Cr, Cu, Pb, Hg, Mo, Ni, Se, Ag, Sn, Zn	Cyanide (Total)	Fluoride (Total)	Nutrients Suite (NT-8)	Metals (Dissolved) - Fe, Al, Mn		HOLD
1	QC02	11/09/2020	Water		8	X	X	X	X	X	X		
2	PW01	11/09/2020	Water		2								X
3	PW02	11/09/2020	Water		2								X
4	PW03	11/09/2020	Water		2								X
5	PW04	11/09/2020	Water		2								X
6	PW07	11/09/2020	Water		2								X
7	SW7	11/09/2020	Water		2								X
8	SW8	11/09/2020	Water		2								X
9	QC03	11/09/2020	Water		2								X
10	RB01	11/09/2020	Water		2								X
11	RB02	11/09/2020	Water		4								X
12	Trip Blank	11/09/2020	Water		2								X
				TOTAL									

TAT

Environmental Division
Sydney
Work Order Reference
ES2032276

Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Fadi Soro

From: Angus Harding
Sent: Monday, 14 September 2020 8:59 AM
To: Fadi Soro
Subject: FW: [EXTERNAL] - GHD COC for Samples for Pickup on Monday 14/9/2020
Attachments: Kurnell_ALS_COC_2020-09-11.xls

Hi Fadi,

See attached COC, samples will arrive by ATC this morning.
We will need to log in the 1 sample and put all the hold samples in LTS.

Let me know if you need more details.

Cheers.

Kind Regards,

Angus Harding

Client Services Officer, Environmental
Sydney

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F +61 2 8784 8500
D +61 2 8784 8503
angus.harding@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

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www.alsglobal.com

From: Terry Nham [mailto:Terry.Nham@ghd.com]
Sent: Friday, 11 September 2020 10:56 PM
To: Angus Harding <angus.harding@ALSGlobal.com>
Subject: [EXTERNAL] - GHD COC for Samples for Pickup on Monday 14/9/2020

Hi Angus,
Thanks very much for your help with everything today! And for organising the pickup of this batch of samples from our Artarmon office on Monday morning.

Please find the attached COC for this batch, there is one sample which we would like on 2 day TAT.
The rest of the samples in the batch will need to be put into long term storage as we discussed on the phone the other day.

Please let me know if there is any issues.

Regards,

Terry

Terry Nham
Environmental Scientist
Contamination Assessment and Remediation

GHD

T: 61 2 9239 7393 | F: 61 2 9239 7199 | V: 217393 | M: 0403 251 883 | E: terry.nham@ghd.com
Level 15, 133 Castlereagh St Sydney NSW 2000 Australia | http://www.ghd.com/
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GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
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Attention: **Andre Smit**

Report **743790-W**
Project name KURNELL
Project ID 12529041
Received Date Sep 11, 2020

Client Sample ID			**PW01**	**PW02**	**PW03**	**PW04**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins Sample No.			**S20-Se22519**	**S20-Se22520**	**S20-Se22521**	**S20-Se22522**
Date Sampled			**Sep 11, 2020**	**Sep 11, 2020**	**Sep 11, 2020**	**Sep 11, 2020**
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	0.07	< 0.05	< 0.05	0.05
TRH C15-C28	0.1	mg/L	< 0.1	0.4	0.5	2.1
TRH C29-C36	0.1	mg/L	< 0.1	0.4	0.4	1.5
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	0.8	0.9	3.65
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	%	98	105	104	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	0.06	< 0.05	0.08	0.17
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	0.06	< 0.05	0.08	0.17
TRH >C16-C34	0.1	mg/L	0.2	0.7	0.8	3.0
TRH >C34-C40	0.1	mg/L	< 0.1	0.3	0.2	1.0
TRH >C10-C40 (total)*	0.1	mg/L	0.26	1	1.08	4.17
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	0.002	0.001	0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			PW01	PW02	PW03	PW04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22519	S20-Se22520	S20-Se22521	S20-Se22522
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
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	0.002	0.001	0.001
Total PAH*	0.001	mg/L	0.002	0.009	0.002	0.002
2-Fluorobiphenyl (surr.)	1	%	74	71	71	62
p-Terphenyl-d14 (surr.)	1	%	118	118	125	72
Organochlorine Pesticides						
Chlordanes - Total	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
4.4'-DDD	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
4.4'-DDE	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
4.4'-DDT	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
a-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
b-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
d-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0002	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endosulfan II	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Methoxychlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Toxaphene	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Aldrin and Dieldrin (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0002	< 0.0001
DDT + DDE + DDD (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Vic EPA IWRG 621 OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vic EPA IWRG 621 Other OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibutylchlorendate (surr.)	1	%	147	INT	INT	109
Tetrachloro-m-xylene (surr.)	1	%	90	91	93	86
Polychlorinated Biphenyls						
Aroclor-1016	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1221	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Aroclor-1232	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1242	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1248	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1254	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1260	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Total PCB*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibutylchlorendate (surr.)	1	%	147	INT	INT	109
Tetrachloro-m-xylene (surr.)	1	%	90	91	93	86

Client Sample ID			PW01	PW02	PW03	PW04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22519	S20-Se22520	S20-Se22521	S20-Se22522
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit				
Phenols (Halogenated)						
2-Chlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.6-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Pentachlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachlorophenols - Total	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
Total Halogenated Phenol*	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2-Nitrophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.4-Dimethylphenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4-Dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	< 0.006	< 0.006	< 0.006
4-Nitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
Dinoseb	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
Total Non-Halogenated Phenol*	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Phenol-d6 (surr.)	1	%	45	45	44	40
Ammonia (as N)	0.01	mg/L	0.06	< 0.01	14	< 0.01
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	< 5	42	< 5	< 10
Chemical Oxygen Demand (COD)	25	mg/L	450	4000	200	620
Chloride	1	mg/L	25000	24000	9000	16000
Cyanide (total)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Fluoride (Total)	0.5	mg/L	1.7	2.1	2.9	2.1
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
pH (at 25 °C)	0.1	pH Units	7.2	6.6	7.0	6.6
Phosphate total (as P)	0.01	mg/L	0.25	1.5	0.03	0.33
Sulphate (as SO4)	2	mg/L	3500	3600	1500	2400
Total Dissolved Solids Dried at 180°C ± 2°C	5	mg/L	47000	50000	25000	31000
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	1.0	72	15	16
Total Nitrogen (as N)*	0.2	mg/L	1	72	15	16
Total Suspended Solids Dried at 103–105°C	5	mg/L	40	2400	590	380
Hardness mg equivalent CaCO3/L	1	mg/L	7000	5700	2800	4300
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	180	360	970	200
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	< 10
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	< 20
Total Alkalinity (as CaCO3)	20	mg/L	180	360	970	200
Alkali Metals						
Calcium	0.5	mg/L	490	420	290	300
Magnesium	0.5	mg/L	1400	1100	510	870
Potassium	0.5	mg/L	420	360	200	290
Sodium	0.5	mg/L	12000	9600	4000	7500

Client Sample ID			PW01	PW02	PW03	PW04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22519	S20-Se22520	S20-Se22521	S20-Se22522
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05	< 0.05	0.05
Arsenic	0.001	mg/L	0.003	0.082	0.013	0.030
Cadmium	0.0002	mg/L	< 0.0002	0.0029	0.0005	0.0007
Chromium	0.001	mg/L	< 0.001	0.12	0.020	0.022
Copper	0.001	mg/L	< 0.001	0.087	0.012	0.011
Iron (filtered)	0.05	mg/L	0.22	0.11	< 0.05	0.32
Lead	0.001	mg/L	< 0.001	0.19	0.030	0.020
Manganese (filtered)	0.005	mg/L	0.024	0.057	0.063	0.016
Mercury	0.0001	mg/L	< 0.0001	0.0012	0.0002	0.0002
Molybdenum	0.005	mg/L	0.012	0.087	0.033	0.047
Nickel	0.001	mg/L	< 0.001	0.032	0.009	0.011
Selenium	0.001	mg/L	< 0.001	0.004	0.001	0.001
Silver	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Tin	0.005	mg/L	< 0.005	0.015	0.034	< 0.005
Zinc	0.005	mg/L	< 0.005	0.48	0.056	0.061

Client Sample ID			PW07	SW7	SW8	QC04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22523	S20-Se22524	S20-Se22525	S20-Se22526
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
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	0.3	0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	0.4	0.3	0.1	0.2
TRH C10-C36 (Total)	0.1	mg/L	0.7	0.4	0.1	0.2
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	%	105	102	105	104
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	0.06	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	0.06	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	0.6	0.4	0.1	0.2
TRH >C34-C40	0.1	mg/L	0.2	0.2	< 0.1	0.1
TRH >C10-C40 (total)*	0.1	mg/L	0.86	0.6	0.1	0.3

Client Sample ID			PW07	SW7	SW8	QC04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22523	S20-Se22524	S20-Se22525	S20-Se22526
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
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	0.002	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	56	72	68	69
p-Terphenyl-d14 (surr.)	1	%	72	90	90	91
Organochlorine Pesticides						
Chlordanes - Total	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
4.4'-DDD	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
4.4'-DDE	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
4.4'-DDT	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
a-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
b-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
d-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	0.0001
Endosulfan II	0.0001	mg/L	< 0.0001	0.0001	< 0.0001	< 0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Methoxychlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Toxaphene	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Aldrin and Dieldrin (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
DDT + DDE + DDD (Total)*	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	< 0.0001
Vic EPA IWRG 621 OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vic EPA IWRG 621 Other OCP (Total)*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibutylchlorendate (surr.)	1	%	91	111	112	127
Tetrachloro-m-xylene (surr.)	1	%	77	95	96	98

Client Sample ID			PW07	SW7	SW8	QC04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22523	S20-Se22524	S20-Se22525	S20-Se22526
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1221	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Aroclor-1232	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1242	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1248	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1254	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Aroclor-1260	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Total PCB*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibutylchlorendate (surr.)	1	%	91	111	112	127
Tetrachloro-m-xylene (surr.)	1	%	77	95	96	98
Phenols (Halogenated)						
2-Chlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.6-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Pentachlorophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachlorophenols - Total	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
Total Halogenated Phenol*	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2-Nitrophenol	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
2.4-Dimethylphenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
2.4-Dinitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	< 0.006	< 0.006	< 0.006
4-Nitrophenol	0.03	mg/L	< 0.03	< 0.03	< 0.03	< 0.03
Dinoseb	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
Total Non-Halogenated Phenol*	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
Phenol-d6 (surr.)	1	%	44	51	55	46
Ammonia (as N)	0.01	mg/L	0.23	0.76	0.05	0.05
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	< 5	8.5	< 5	-
Chemical Oxygen Demand (COD)	25	mg/L	340	350	400	-
Chloride	1	mg/L	11000	23000	26000	-
Cyanide (total)	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Fluoride (Total)	0.5	mg/L	2.1	1.9	1.9	1.9
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05	0.69	< 0.05	< 0.05
Nitrate (as N)	0.02	mg/L	< 0.02	0.40	< 0.02	< 0.02
Nitrite (as N)	0.02	mg/L	< 0.02	0.29	< 0.02	< 0.02
pH (at 25 °C)	0.1	pH Units	6.9	7.4	7.8	-
Phosphate total (as P)	0.01	mg/L	0.11	0.14	0.02	0.02
Sulphate (as SO4)	2	mg/L	1400	3200	3600	-
Total Dissolved Solids Dried at 180°C ± 2°C	5	mg/L	23000	50000	48000	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	5.1	5.2	0.3	< 0.2
Total Nitrogen (as N)*	0.2	mg/L	5.1	5.89	0.3	< 0.2

Client Sample ID			PW07	SW7	SW8	QC04
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S20-Se22523	S20-Se22524	S20-Se22525	S20-Se22526
Date Sampled			Sep 11, 2020	Sep 11, 2020	Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit				
Total Suspended Solids Dried at 103–105°C	5	mg/L	440	460	68	-
Hardness mg equivalent CaCO3/L	1	mg/L	2900	6500	7600	-
Alkalinity (speciated)						
Bicarbonate Alkalinity (as CaCO3)	20	mg/L	360	190	140	-
Carbonate Alkalinity (as CaCO3)	10	mg/L	< 10	< 10	< 10	-
Hydroxide Alkalinity (as CaCO3)	20	mg/L	< 20	< 20	< 20	-
Total Alkalinity (as CaCO3)	20	mg/L	360	190	140	-
Alkali Metals						
Calcium	0.5	mg/L	210	450	500	-
Magnesium	0.5	mg/L	570	1300	1500	-
Potassium	0.5	mg/L	190	400	460	-
Sodium	0.5	mg/L	4900	11000	13000	-
Heavy Metals						
Aluminium (filtered)	0.05	mg/L	0.06	< 0.05	< 0.05	< 0.05
Arsenic	0.001	mg/L	0.016	0.011	0.003	0.003
Cadmium	0.0002	mg/L	0.0005	0.0004	< 0.0002	< 0.0002
Chromium	0.001	mg/L	0.019	0.020	0.002	< 0.001
Copper	0.001	mg/L	0.011	0.016	0.005	0.001
Iron (filtered)	0.05	mg/L	0.68	0.06	0.06	< 0.05
Lead	0.001	mg/L	0.023	0.025	0.003	0.001
Manganese (filtered)	0.005	mg/L	0.027	0.024	0.010	0.006
Mercury	0.0001	mg/L	0.0002	0.0002	< 0.0001	< 0.0001
Molybdenum	0.005	mg/L	0.017	0.019	0.013	0.014
Nickel	0.001	mg/L	0.008	0.005	< 0.001	< 0.001
Selenium	0.001	mg/L	0.001	< 0.001	< 0.001	< 0.001
Silver	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Tin	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Zinc	0.005	mg/L	0.046	0.057	0.009	0.005

Client Sample ID			TRIP BLANK	TRIP SPIKE
Sample Matrix			Water	Water
Eurofins Sample No.			S20-Se22527	S20-Se22528
Date Sampled			Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	0.02	mg/L	< 0.02	-
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	%	102	-
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	-

Client Sample ID			TRIP BLANK	TRIP SPIKE
Sample Matrix			Water	Water
Eurofins Sample No.			S20-Se22527	S20-Se22528
Date Sampled			Sep 11, 2020	Sep 11, 2020
Test/Reference	LOR	Unit		
TRH C6-C10	1	%	-	74
Total Recoverable Hydrocarbons				
Naphthalene	1	%	-	130
TRH C6-C9	1	%	-	77
BTEX				
Benzene	1	%	-	100
Ethylbenzene	1	%	-	98
m&p-Xylenes	1	%	-	99
o-Xylene	1	%	-	96
Toluene	1	%	-	100
Xylenes - Total	1	%	-	97
4-Bromofluorobenzene (surr.)	1	%	-	99

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.

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 14, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Sep 14, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 14, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Phenols (Halogenated)	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Sydney	Sep 14, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Cyanide (total)	Sydney	Sep 14, 2020	14 Days
- Method: E054 Total Cyanide			
Fluoride (Total)	Melbourne	Sep 15, 2020	28 Days
- Method: APHA 4500 F-C Fluoride by Ion Selective Electrode			
Metals IWRG 621 : Metals M12	Sydney	Sep 15, 2020	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P			
Ammonia (as N)	Melbourne	Sep 15, 2020	28 Days
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Nitrate & Nitrite (as N)	Melbourne	Sep 15, 2020	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrate (as N)	Melbourne	Sep 15, 2020	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Nitrite (as N)	Melbourne	Sep 15, 2020	2 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Phosphate total (as P)	Melbourne	Sep 15, 2020	28 Days
- Method: APHA 4500-P E. Phosphorus			
Total Kjeldahl Nitrogen (as N)	Melbourne	Sep 15, 2020	7 Days
- Method: LTM-INO-4310 TKN in Waters & Soils by FIA			
Biochemical Oxygen Demand (BOD-5 Day)	Melbourne	Sep 15, 2020	2 Days
- Method: LTM-INO-4010 Biochemical Oxygen Demand (BOD5) in Water			
Chemical Oxygen Demand (COD)	Melbourne	Sep 15, 2020	28 Days
- Method: LTM-INO-4220 Determination of COD in Water			
pH (at 25 °C)	Sydney	Sep 14, 2020	1 Days
- Method: LTM-GEN-7090 pH in water by ISE			
Total Suspended Solids Dried at 103–105°C	Sydney	Sep 14, 2020	7 Days
- Method: LTM-INO-4070 Analysis of Suspended Solids in Water by Gravimetry			
Heavy Metals (filtered)	Sydney	Sep 14, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins Suite B11E: Cl/SO4/Alkalinity			

Description	Testing Site	Extracted	Holding Time
Chloride	Sydney	Sep 14, 2020	28 Days
- Method: E045 /E047 Chloride			
Sulphate (as SO4)	Sydney	Sep 14, 2020	28 Days
- Method: E045 Anions by Ion Chromatography			
Alkalinity (speciated)	Melbourne	Sep 15, 2020	14 Days
- Method: LTM-INO-4250 Alkalinity by Electrometric Titration			
Total Dissolved Solids Dried at 180°C ± 2°C	Sydney	Sep 14, 2020	7 Days
- Method: LTM-INO-4170 Total Dissolved Solids in Water			
Eurofins Suite B11D: Na/K/Ca/Mg and Hardness			
Hardness mg equivalent CaCO3/L	Sydney	Sep 15, 2020	28 Days
- Method: E020.1 Hardness in water			
Alkali Metals	Sydney	Sep 15, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

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Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: KURNELL
Project ID: 12529041

Order No.: 12529041
Report #: 743790
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Sep 11, 2020 10:58 PM
Due: Sep 21, 2020
Priority: 5 Day
Contact Name: Andre Smit

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Aluminium (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	Iron (filtered)	Manganese (filtered)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Vic EPA Short Screen	BTEXN and Volatile TRH	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P	Eurofins Suite B11E: Cl/SO4/Alkalinity	BTEXN and Volatile TRH	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X					X			X	X		X
Sydney Laboratory - NATA Site # 18217						X			X	X	X	X	X	X	X		X	X	X
Brisbane Laboratory - NATA Site # 20794																			
Perth Laboratory - NATA Site # 23736																			
Newcastle Laboratory																			
External Laboratory																			
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**														
1	PW01	Sep 11, 2020		Water	S20-Se22519	X	X	X	X	X	X	X	X		X	X	X		X
2	PW02	Sep 11, 2020		Water	S20-Se22520	X	X	X	X	X	X	X	X		X	X	X		X
3	PW03	Sep 11, 2020		Water	S20-Se22521	X	X	X	X	X	X	X	X		X	X	X		X
4	PW04	Sep 11, 2020		Water	S20-Se22522	X	X	X	X	X	X	X	X		X	X	X		X
5	PW07	Sep 11, 2020		Water	S20-Se22523	X	X	X	X	X	X	X	X		X	X	X		X
6	SW7	Sep 11, 2020		Water	S20-Se22524	X	X	X	X	X	X	X	X		X	X	X		X
7	SW8	Sep 11, 2020		Water	S20-Se22525	X	X	X	X	X	X	X	X		X	X	X		X
8	QC04	Sep 11, 2020		Water	S20-Se22526	X			X	X			X			X			
9	TRIP BLANK	Sep 11, 2020		Water	S20-Se22527									X					

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Company Name:	GHD Pty Ltd NSW	**Order No.:**	12529041	**Received:**	Sep 11, 2020 10:58 PM
Address:	Level 15, 133 Castlereagh Street Sydney NSW 2000	**Report #:**	743790	**Due:**	Sep 21, 2020
		Phone:	02 9239 7100	**Priority:**	5 Day
		Fax:	02 9239 7199	**Contact Name:**	Andre Smit
Project Name:	KURNELL				
Project ID:	12529041				

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Aluminium (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	Iron (filtered)	Manganese (filtered)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Vic EPA Short Screen	BTEXN and Volatile TRH	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P	Eurofins Suite B11E: Cl/SO4/Alkalinity	BTEXN and Volatile TRH	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X					X			X	X		X
Sydney Laboratory - NATA Site # 18217						X			X	X	X	X	X	X	X		X	X	X
Brisbane Laboratory - NATA Site # 20794																			
Perth Laboratory - NATA Site # 23736																			
10	TRIP SPIKE	Sep 11, 2020		Water	S20-Se22528													X	
Test Counts						8	7	7	8	8	7	7	8	1	7	8	7	1	7

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid 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. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. 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	US Department of Defense Quality Systems Manual Version 5.3
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 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 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							
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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
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	
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							
Polychlorinated Biphenyls							
Aroclor-1016	mg/L	< 0.005			0.005	Pass	
Aroclor-1221	mg/L	< 0.001			0.001	Pass	
Aroclor-1232	mg/L	< 0.005			0.005	Pass	
Aroclor-1242	mg/L	< 0.005			0.005	Pass	
Aroclor-1248	mg/L	< 0.005			0.005	Pass	
Aroclor-1254	mg/L	< 0.005			0.005	Pass	
Aroclor-1260	mg/L	< 0.005			0.005	Pass	
Total PCB*	mg/L	< 0.001			0.001	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2.4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.4.5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.4.6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Tetrachlorophenols - Total	mg/L	< 0.03			0.03	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/L	< 0.1			0.1	Pass	
2-Methyl-4.6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2.4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2.4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
Dinoseb	mg/L	< 0.1			0.1	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Method Blank							
Ammonia (as N)	mg/L	0.01			0.01	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	mg/L	< 5			5	Pass	
Chemical Oxygen Demand (COD)	mg/L	< 25			25	Pass	
Chloride	mg/L	< 1			1	Pass	
Cyanide (total)	mg/L	< 0.005			0.005	Pass	
Fluoride (Total)	mg/L	< 0.5			0.5	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as SO4)	mg/L	< 2			2	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Dissolved Solids Dried at 180°C ± 2°C	mg/L	< 5			5	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Total Suspended Solids Dried at 103–105°C	mg/L	< 5			5	Pass	
Method Blank							
Alkalinity (speciated)							
Bicarbonate Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Carbonate Alkalinity (as CaCO3)	mg/L	< 10			10	Pass	
Hydroxide Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Total Alkalinity (as CaCO3)	mg/L	< 20			20	Pass	
Method Blank							
Alkali Metals							
Calcium	mg/L	< 0.5			0.5	Pass	
Magnesium	mg/L	< 0.5			0.5	Pass	
Potassium	mg/L	< 0.5			0.5	Pass	
Sodium	mg/L	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
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	
Iron (filtered)	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Molybdenum	mg/L	< 0.005			0.005	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Selenium	mg/L	< 0.001			0.001	Pass	
Silver	mg/L	< 0.005			0.005	Pass	
Tin	mg/L	< 0.005			0.005	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	89			70-130	Pass	
TRH C10-C14	%	75			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	95			70-130	Pass	
Toluene	%	100			70-130	Pass	
Ethylbenzene	%	100			70-130	Pass	
m&p-Xylenes	%	101			70-130	Pass	
o-Xylene	%	97			70-130	Pass	
Xylenes - Total*	%	99			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	110			70-130	Pass	
TRH C6-C10	%	88			70-130	Pass	
TRH >C10-C16	%	74			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	104			70-130	Pass	
Acenaphthylene	%	91			70-130	Pass	
Anthracene	%	96			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benz(a)anthracene	%	103			70-130	Pass	
Benzo(a)pyrene	%	107			70-130	Pass	
Benzo(b&j)fluoranthene	%	111			70-130	Pass	
Benzo(g.h.i)perylene	%	126			70-130	Pass	
Benzo(k)fluoranthene	%	114			70-130	Pass	
Chrysene	%	120			70-130	Pass	
Dibenz(a.h)anthracene	%	107			70-130	Pass	
Fluoranthene	%	103			70-130	Pass	
Fluorene	%	98			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	111			70-130	Pass	
Naphthalene	%	85			70-130	Pass	
Phenanthrene	%	102			70-130	Pass	
Pyrene	%	106			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	89			70-130	Pass	
4.4'-DDD	%	80			70-130	Pass	
4.4'-DDE	%	87			70-130	Pass	
4.4'-DDT	%	79			70-130	Pass	
a-BHC	%	77			70-130	Pass	
Aldrin	%	77			70-130	Pass	
b-BHC	%	74			70-130	Pass	
d-BHC	%	88			70-130	Pass	
Dieldrin	%	115			70-130	Pass	
Endosulfan I	%	100			70-130	Pass	
Endosulfan II	%	104			70-130	Pass	
Endosulfan sulphate	%	75			70-130	Pass	
Endrin	%	95			70-130	Pass	
Endrin aldehyde	%	107			70-130	Pass	
Endrin ketone	%	104			70-130	Pass	
g-BHC (Lindane)	%	88			70-130	Pass	
Heptachlor	%	72			70-130	Pass	
Heptachlor epoxide	%	82			70-130	Pass	
Hexachlorobenzene	%	86			70-130	Pass	
Methoxychlor	%	73			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	86			70-130	Pass	
Aroclor-1260	%	92			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	90			30-130	Pass	
2.4-Dichlorophenol	%	97			30-130	Pass	
2.6-Dichlorophenol	%	96			30-130	Pass	
4-Chloro-3-methylphenol	%	76			30-130	Pass	
Pentachlorophenol	%	70			30-130	Pass	
Tetrachlorophenols - Total	%	62			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	122			30-130	Pass	
2-Methylphenol (o-Cresol)	%	53			30-130	Pass	
2-Nitrophenol	%	123			30-130	Pass	
2.4-Dimethylphenol	%	90			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	46			30-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dinoseb	%	81			30-130	Pass	
LCS - % Recovery							
Ammonia (as N)	%	99			70-130	Pass	
Biochemical Oxygen Demand (BOD-5 Day)	%	100			70-130	Pass	
Chemical Oxygen Demand (COD)	%	89			70-130	Pass	
Chloride	%	110			70-130	Pass	
Cyanide (total)	%	93			70-130	Pass	
Fluoride (Total)	%	95			70-130	Pass	
Nitrate & Nitrite (as N)	%	107			70-130	Pass	
Nitrate (as N)	%	107			70-130	Pass	
Nitrite (as N)	%	104			70-130	Pass	
Phosphate total (as P)	%	106			70-130	Pass	
Sulphate (as SO4)	%	114			70-130	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	%	99			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	98			70-130	Pass	
Total Suspended Solids Dried at 103–105°C	%	90			70-130	Pass	
LCS - % Recovery							
Alkalinity (speciated)							
Carbonate Alkalinity (as CaCO3)	%	71			70-130	Pass	
Total Alkalinity (as CaCO3)	%	75			70-130	Pass	
LCS - % Recovery							
Alkali Metals							
Calcium	%	104			80-120	Pass	
Magnesium	%	103			80-120	Pass	
Potassium	%	102			80-120	Pass	
Sodium	%	105			80-120	Pass	
LCS - % Recovery							
Heavy Metals							
Aluminium (filtered)	%	102			80-120	Pass	
Arsenic	%	98			80-120	Pass	
Cadmium	%	99			80-120	Pass	
Chromium	%	102			80-120	Pass	
Copper	%	101			80-120	Pass	
Iron (filtered)	%	113			80-120	Pass	
Lead	%	106			80-120	Pass	
Manganese (filtered)	%	106			80-120	Pass	
Mercury	%	101			80-120	Pass	
Molybdenum	%	106			80-120	Pass	
Nickel	%	102			80-120	Pass	
Selenium	%	92			80-120	Pass	
Silver	%	101			80-120	Pass	
Tin	%	100			80-120	Pass	
Zinc	%	100			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	S20-Se23673	NCP	%	87			70-130	Pass	
TRH C10-C14	S20-Se17671	NCP	%	85			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-Se23673	NCP	%	90			70-130	Pass	
Toluene	S20-Se23673	NCP	%	95			70-130	Pass	
Ethylbenzene	S20-Se23673	NCP	%	94			70-130	Pass	
o-Xylene	S20-Se23673	NCP	%	93			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total*	S20-Se23673	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-Se23673	NCP	%	99			70-130	Pass	
TRH C6-C10	S20-Se23673	NCP	%	86			70-130	Pass	
TRH >C10-C16	S20-Se17671	NCP	%	78			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	S20-Se22539	NCP	%	101			70-130	Pass	
Chemical Oxygen Demand (COD)	B20-Se20296	NCP	%	83			70-130	Pass	
Cyanide (total)	S20-Se17541	NCP	%	80			70-130	Pass	
Nitrate & Nitrite (as N)	S20-Se22539	NCP	%	102			70-130	Pass	
Nitrate (as N)	S20-Se22539	NCP	%	102			70-130	Pass	
Nitrite (as N)	S20-Se22539	NCP	%	106			70-130	Pass	
Phosphate total (as P)	P20-Se23985	NCP	%	115			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M20-Se23329	NCP	%	108			70-130	Pass	
Total Suspended Solids Dried at 103–105°C	S20-Se26085	NCP	%	88			70-130	Pass	
Spike - % Recovery									
Alkalinity (speciated)				Result 1					
Carbonate Alkalinity (as CaCO3)	B20-Se22545	NCP	%	110			70-130	Pass	
Total Alkalinity (as CaCO3)	B20-Se22545	NCP	%	110			70-130	Pass	
Spike - % Recovery									
Alkali Metals				Result 1					
Calcium	S20-Se22736	NCP	%	103			75-125	Pass	
Magnesium	S20-Se22736	NCP	%	102			75-125	Pass	
Potassium	S20-Se22736	NCP	%	103			75-125	Pass	
Sodium	S20-Se22736	NCP	%	108			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Aluminium (filtered)	S20-Se22540	NCP	%	91			75-125	Pass	
Arsenic	S20-Se22736	NCP	%	99			75-125	Pass	
Cadmium	S20-Se22736	NCP	%	101			75-125	Pass	
Chromium	S20-Se22736	NCP	%	101			75-125	Pass	
Copper	S20-Se22736	NCP	%	98			75-125	Pass	
Iron (filtered)	S20-Se22609	NCP	%	103			75-125	Pass	
Lead	S20-Se22736	NCP	%	103			75-125	Pass	
Manganese (filtered)	S20-Se22609	NCP	%	97			75-125	Pass	
Mercury	S20-Se22736	NCP	%	117			75-125	Pass	
Molybdenum	S20-Se22736	NCP	%	106			75-125	Pass	
Nickel	S20-Se22736	NCP	%	101			75-125	Pass	
Selenium	S20-Se22736	NCP	%	99			75-125	Pass	
Silver	S20-Se22736	NCP	%	101			75-125	Pass	
Zinc	S20-Se22736	NCP	%	97			75-125	Pass	
Spike - % Recovery									
BTEX				Result 1					
m&p-Xylenes	S20-Se23673	NCP	%	96			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S20-Se22135	NCP	%	85			70-130	Pass	
Acenaphthylene	S20-Se22135	NCP	%	76			70-130	Pass	
Benz(a)anthracene	S20-Se22135	NCP	%	126			70-130	Pass	
Benzo(a)pyrene	S20-Se22135	NCP	%	128			70-130	Pass	
Benzo(b&j)fluoranthene	S20-Se22135	NCP	%	125			70-130	Pass	
Benzo(k)fluoranthene	S20-Se22135	NCP	%	130			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chrysene	S20-Se22135	NCP	%	121			70-130	Pass	
Dibenz(a.h)anthracene	S20-Se22135	NCP	%	117			70-130	Pass	
Fluoranthene	S20-Se22135	NCP	%	130			70-130	Pass	
Fluorene	S20-Se22135	NCP	%	110			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Se22135	NCP	%	116			70-130	Pass	
Naphthalene	S20-Se22135	NCP	%	75			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	S20-Se22135	NCP	%	98			30-130	Pass	
2.4-Dichlorophenol	S20-Se22135	NCP	%	104			30-130	Pass	
2.6-Dichlorophenol	S20-Se22135	NCP	%	106			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Cyclohexyl-4.6-dinitrophenol	S20-Se22135	NCP	%	101			30-130	Pass	
2-Methyl-4.6-dinitrophenol	S20-Se22135	NCP	%	83			30-130	Pass	
2-Methylphenol (o-Cresol)	S20-Se22135	NCP	%	61			30-130	Pass	
2-Nitrophenol	S20-Se22135	NCP	%	127			30-130	Pass	
2.4-Dimethylphenol	S20-Se22135	NCP	%	70			30-130	Pass	
2.4-Dinitrophenol	S20-Se22135	NCP	%	95			70-130	Pass	
3&4-Methylphenol (m&p-Cresol)	S20-Se22135	NCP	%	99			30-130	Pass	
Dinoseb	S20-Se22135	NCP	%	83			30-130	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	S20-Se16447	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S20-Se17602	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S20-Se17602	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S20-Se17602	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Se16447	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S20-Se16447	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S20-Se16447	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S20-Se16447	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S20-Se16447	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	S20-Se16447	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Se16447	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S20-Se16447	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	S20-Se17602	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S20-Se17602	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S20-Se17602	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	S20-Se22539	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Chemical Oxygen Demand (COD)	S20-Se22519	CP	mg/L	450	370	18	30%	Pass	
Cyanide (total)	S20-Se17542	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Fluoride (Total)	S20-Se22519	CP	mg/L	1.7	1.8	6.6	30%	Pass	
Nitrate & Nitrite (as N)	S20-Se22539	NCP	mg/L	1.9	1.9	3.0	30%	Pass	
Nitrate (as N)	S20-Se22539	NCP	mg/L	1.9	1.9	3.0	30%	Pass	
Nitrite (as N)	S20-Se22539	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Total Dissolved Solids Dried at 180°C ± 2°C	S20-Se25419	NCP	mg/L	930	960	3.0	30%	Pass	

Duplicate									
Alkalinity (speciated)				Result 1	Result 2	RPD			
Bicarbonate Alkalinity (as CaCO3)	P20-Se23985	NCP	mg/L	100	130	23	30%	Pass	
Carbonate Alkalinity (as CaCO3)	P20-Se23985	NCP	mg/L	< 10	< 10	<1	30%	Pass	
Hydroxide Alkalinity (as CaCO3)	P20-Se23985	NCP	mg/L	< 20	< 20	<1	30%	Pass	
Total Alkalinity (as CaCO3)	P20-Se23985	NCP	mg/L	100	130	23	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Calcium	S20-Se22519	CP	mg/L	490	460	5.0	30%	Pass	
Magnesium	S20-Se22519	CP	mg/L	1400	1300	5.0	30%	Pass	
Potassium	S20-Se22519	CP	mg/L	420	400	6.0	30%	Pass	
Sodium	S20-Se22519	CP	mg/L	12000	11000	6.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium (filtered)	S20-Se22519	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Arsenic	S20-Se22519	CP	mg/L	0.003	0.003	6.0	30%	Pass	
Cadmium	S20-Se22519	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S20-Se22519	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	S20-Se22519	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron (filtered)	S20-Se22519	CP	mg/L	0.22	0.19	18	30%	Pass	
Lead	S20-Se22519	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Manganese (filtered)	S20-Se22519	CP	mg/L	0.024	0.024	1.0	30%	Pass	
Mercury	S20-Se22519	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Molybdenum	S20-Se22519	CP	mg/L	0.012	0.010	18	30%	Pass	
Nickel	S20-Se22519	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium	S20-Se22519	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Silver	S20-Se22519	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Tin	S20-Se22519	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Zinc	S20-Se22519	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chemical Oxygen Demand (COD)	S20-Se22520	CP	mg/L	4000	3100	25	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	S20-Se22134	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	S20-Se22134	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2.4-Dichlorophenol	S20-Se22134	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2.4.5-Trichlorophenol	S20-Se22134	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
2.4.6-Trichlorophenol	S20-Se22134	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	

Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2.6-Dichlorophenol	S20-Se22134	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
4-Chloro-3-methylphenol	S20-Se22134	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Pentachlorophenol	S20-Se22134	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Tetrachlorophenols - Total	S20-Se22134	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	S20-Se22134	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	S20-Se22134	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
2-Methylphenol (o-Cresol)	S20-Se22134	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2-Nitrophenol	S20-Se22134	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
2.4-Dimethylphenol	S20-Se22134	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
2.4-Dinitrophenol	S20-Se22134	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	S20-Se22134	NCP	mg/L	< 0.006	< 0.006	<1	30%	Pass	
4-Nitrophenol	S20-Se22134	NCP	mg/L	< 0.03	< 0.03	<1	30%	Pass	
Dinoseb	S20-Se22134	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Phenol	S20-Se22134	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Phosphate total (as P)	S20-Se22522	CP	mg/L	0.33	0.32	2.0	30%	Pass	
Total Kjeldahl Nitrogen (as N)	S20-Se22522	CP	mg/L	16	16	4.4	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	S20-Se22525	CP	mg/L	26000	25000	4.0	30%	Pass	
Sulphate (as SO4)	S20-Se22525	CP	mg/L	3600	3500	3.0	30%	Pass	
Total Suspended Solids Dried at 103–105°C	S20-Se22525	CP	mg/L	68	78	14	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

Authorised By

Alena Bounkeua	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Inorganic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Scott Beddoes	Senior Analyst-Inorganic (VIC)

Glenn Jackson

General 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 | Environment Testing

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IANZ # 1290

Sample Receipt Advice

Company name:	GHD Pty Ltd NSW
Contact name:	Andre Smit
Project name:	KURNELL
Project ID:	12529041
Turnaround time:	5 Day
Date/Time received	Sep 11, 2020 10:58 PM
Eurofins reference	743790

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 2.9 degrees Celsius.
✓	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.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Samples received by the laboratory after 5.30pm are deemed to have been received the following working day.

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Alena Bounkeua on phone : or by email: AlenaBounkeua@eurofins.com

Results will be delivered electronically via email to Andre Smit - andre.smit@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.

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IANZ # 1290

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: KURNELL
Project ID: 12529041

Order No.: 12529041
Report #: 743790
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Sep 11, 2020 10:58 PM
Due: Sep 21, 2020
Priority: 5 Day
Contact Name: Andre Smit

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Aluminium (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	Iron (filtered)	Manganese (filtered)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Vic EPA Short Screen	BTEXN and Volatile TRH	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P	Eurofins Suite B11E: Cl/SO4/Alkalinity	BTEXN and Volatile TRH	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X					X			X	X		X
Sydney Laboratory - NATA Site # 18217						X			X	X	X	X	X	X	X		X	X	X
Brisbane Laboratory - NATA Site # 20794																			
Perth Laboratory - NATA Site # 23736																			
Newcastle Laboratory																			
External Laboratory																			
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**														
1	PW01	Sep 11, 2020		Water	S20-Se22519	X	X	X	X	X	X	X	X		X	X	X		X
2	PW02	Sep 11, 2020		Water	S20-Se22520	X	X	X	X	X	X	X	X		X	X	X		X
3	PW03	Sep 11, 2020		Water	S20-Se22521	X	X	X	X	X	X	X	X		X	X	X		X
4	PW04	Sep 11, 2020		Water	S20-Se22522	X	X	X	X	X	X	X	X		X	X	X		X
5	PW07	Sep 11, 2020		Water	S20-Se22523	X	X	X	X	X	X	X	X		X	X	X		X
6	SW7	Sep 11, 2020		Water	S20-Se22524	X	X	X	X	X	X	X	X		X	X	X		X
7	SW8	Sep 11, 2020		Water	S20-Se22525	X	X	X	X	X	X	X	X		X	X	X		X
8	QC04	Sep 11, 2020		Water	S20-Se22526	X			X	X			X			X			
9	TRIP BLANK	Sep 11, 2020		Water	S20-Se22527									X					

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IANZ # 1290

Company Name:	GHD Pty Ltd NSW	**Order No.:**	12529041	**Received:**	Sep 11, 2020 10:58 PM
Address:	Level 15, 133 Castlereagh Street Sydney NSW 2000	**Report #:**	743790	**Due:**	Sep 21, 2020
		Phone:	02 9239 7100	**Priority:**	5 Day
		Fax:	02 9239 7199	**Contact Name:**	Andre Smit
Project Name:	KURNELL				
Project ID:	12529041				

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Aluminium (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Chemical Oxygen Demand (COD)	Iron (filtered)	Manganese (filtered)	pH (at 25 °C)	Total Suspended Solids Dried at 103–105°C	Vic EPA Short Screen	BTEXN and Volatile TRH	Eurofins Suite B11D: Na/K/Ca/Mg and Hardness	Eurofins Suite B19D: Total N, TKN, NOx, NO2, NO3, Total P	Eurofins Suite B11E: Cl/SO4/Alkalinity	BTEXN and Volatile TRH	Total Dissolved Solids Dried at 180°C ± 2°C
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X					X			X	X		X
Sydney Laboratory - NATA Site # 18217						X			X	X	X	X	X	X	X		X	X	X
Brisbane Laboratory - NATA Site # 20794																			
Perth Laboratory - NATA Site # 23736																			
10	TRIP SPIKE	Sep 11, 2020		Water	S20-Se22528													X	
Test Counts						8	7	7	8	8	7	7	8	1	7	8	7	1	7

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CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD Pty Ltd, Sydney	**Contact Name :** Terry Nham / Nicole Rosen	**Purchase Order :** 12529041	**COC Number :**
Office Address : Level 15, 133 Castlereagh Street, Sydney NSW 2000	**Project Manager :** Andre Smit / Stefan Charteris	**PROJECT Number :** 12529041	**Eurofins | mgt quote ID :** GHD Rates 2020/2021
Email for results : terry.nham@ghd.com nicole.rosen@ghd.com stefan.charteris@ghd.com andre.smit@ghd.com		**PROJECT Name :** Kurnell	**Data output format:** ESDAT

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Suite R6: Vic EPA Short Screen (Dissolved Metals)	Suite B11D: Cation Suite	Suite B11E: Anion Suite	Suite 19D: Nutrients	BOD	COD	pH	TDS	TSS		Iron (Dissolved)	Manganese (Dissolved)	Aluminium (Dissolved)		TRH C6-C10 / BTEXN							
1	PW01	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
2	PW02	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
3	PW03	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
4	PW04	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
5	PW07	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
6	SW7	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
7	SW8	11/09/20	Water	X	X	X	X	X	X	X	X	X		X	X	X									
8	QC04	11/09/20	Water	X			X							X	X	X									
9	Trip Blank	11/09/20	Water															X							
10	Trip Spike	11/09/20	Water															X							
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:

1LP	500P	60P	200mL A	40mL vial	125mL A	Jar	Bag	Sample comments:
	2	3	2	2	1			
	2	3	2	2	1			
	2	3	2	2	1			
	2	3	2	2	1			
	2	3	2	2	1			
	2	3	2	2	1			
	2	3	2	2	1			
	2	3	2	2	1			
				2				
				2				

Relinquished By: Terry Nham - GHD
Date & Time : 11/09/2020
Signature: TN

Laboratory Staff
Received By: Kathy A
Date & Time : 11/9/20
Signature:

Turn around time
1 DAY ☐ 2 DAY ☑ 3 DAY ☐
5 DAY ☐ 10 DAY ☐
2 DAY TAT

Method Of Shipment
☐ Courier
☑ Hand Delivered
☐ Postal
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Appendix I – QA/QC assessment

Appendix I - Quality Assurance/Quality Control assessment

1 Laboratory and data set

All samples collected during the surface water investigation were submitted to Eurofins Environment Australia Pty Ltd (Eurofins – primary laboratory), and Australian Laboratory Services Pty Ltd (ALS – secondary laboratory) which are two National Association of Testing Authorities (NATA) accredited laboratories, accredited to perform the required analysis.

The selected laboratories conducted all the requested analyses in accordance with the guidelines outlined in ASC NEPM.

1.2 Data quality indicators

Table 1 sets out the quality assurance and quality control (QA/QC) data quality indicators (DQIs) used in the surface water investigation and whether or not they were achieved.

Table 1 Summary of QAQC compliance for surface water analyses

Item	Objective	Outcome	Reference
GHD Internal Procedures			
Comparison of field and analytical data	Agreement between visual and olfactory evidence with laboratory results	Completed	Analytical Results Tables (**Appendix F)** Eurofins certificates of analysis (**Appendix H**)
Calibration of field instruments	Meet calibration specifications	Completed	AS4482.1-2005 Calibration Certificates (**Appendix E)**
Chain of custody documentation	Supply chain of custody documentation with all samples	Completed	Copies of Chain of Custody Documentation (**Appendix H**)
Sample analysis and extraction holding times	Comply with holding times.	Completed	AS4482.1-2005 Eurofins Laboratory Quality Control Reports. (**Appendix H**)
Analysis of inter-laboratory duplicate samples	Analysis of at least one duplicate sample in 10% of primary samples	Completed	AS4482.1-2005 and US EPA **Appendix I** – At the end of this appendix – Tables I1 and I3 The NEPM and Eurofins certificates of analysis (**Appendix H**)
Analysis of rinsate samples	Analysis of one rinsate sample per sampling equipment and one trip blank sample for surface water. Reported	Completed	AS4482.1-2005 ASC NEPM **Appendix I** – At the end of this appendix – Table I2

Item	Objective	Outcome	Reference
	concentrations to be below the laboratory LOR		Eurofins Certificates of Analysis (**Appendix H**)
External Laboratory Procedures			
Analysis of laboratory method blanks	No contamination of blanks.	Completed	Eurofins Laboratory Quality Control Reports (**Appendix H**)
Analysis of laboratory spike recoveries	Recoveries within the laboratory specified recovery limits.	Completed	Eurofins Laboratory Quality Control Reports (**Appendix H**)
Analysis of laboratory internal duplicates	Frequencies and RPDs within guideline and internal laboratory limits (RPD of 0-30%)	Completed (see outliers in section 3.1)	ASC NEPM Eurofins Laboratory Quality Control Reports (**Appendix H**)

1.3 QA/QC assessment method

Established quality assurance/quality control (QA/QC) procedures to assess data quality were maintained throughout the project. The QA/QC program undertaken as part of the assessment by GHD included the following:

- Use of appropriately qualified and trained staff.
- Calibration of field instruments.
- Preservation of samples with ice during transport from the field to the laboratory.
- Transportation of samples with accompanying chain-of-custody documentation.
- Compliance with sample holding times.
- Review of results of blind duplicate samples.
- Review of results of rinsate and trip blank.
- Review of internal analysis of laboratory duplicates, spikes and blanks.

The QC program employed during this investigation was in accordance with the general requirements set out in the Australian Standard AS4482.1 (2005). QC samples provide information that discounts or potentially identifies errors due to possible sources of cross contamination, inconsistencies in sampling and analytical techniques used. The QC program completed included the collection and analysis of one inter-laboratory duplicate, one rinsate blank and one trip blank samples, these are described below:

- **Blind duplicate sample:** This is an intra-laboratory duplicate sample split in the field with both samples submitted to the primary laboratory for analysis as individual samples without any indication to the laboratory that they have been duplicated. The same parameters are analysed and results are compared.
- **Rinsate blank:** A sample of deionised water collected from equipment used during sampling to indicate whether cross contamination occurred from equipment.

- **Trip blank:** A sample is prepared by the testing laboratory, containing deionised water. The trip blank accompanies the samples between the site and laboratory. The trip blank is analysed for BTEX and results are used to provide an indication of contamination introduced during sample transport and handling, and ensure that the testing laboratory is not reporting “false positives”.
- **Trip spike:** A sample is prepared by the testing laboratory, containing deionised water and a known mass of specific analytes (spike). The trip spike accompanies the samples between the site and laboratory. The trip spike is analysed for BTEX and volatile TRH, and results are used to provide an indication of The objective of variation in matrix concentration during transport and handling.

1.3.1 Relative percentage difference

QA/QC sample results were made using calculated relative percentage difference (RPD) values. The RPD values were calculated using the following equation.

$$RPD(\%) = \frac{\langle Co - Cs \rangle}{\left\langle \frac{Co + Cs}{2} \right\rangle} \times 100$$

Where *Co* = concentration obtained from the original sample

Cs = concentration obtained from the duplicate sample

2 GHD QA/QC – Surface water results

2.1 Duplicate sample results

Results are presented in Tables I1 and I3 at the end of this appendix.

Eight primary surface water samples and five sediment pore water samples were submitted for analysis. Three blind intra-laboratory duplicate samples and one inter-laboratory duplicate sample were collected.

Of the 19 RPD values calculated for surface water samples collected, one was found to exceed adopted acceptance criteria. One RPD value (33%) calculated for total suspended solid exceeded the adopted acceptance criteria of 30%. The exceedance was due to low concentrations (14 mg/L and 11 mg/L), which were approximately one order of magnitude higher than the limit of reporting (1 mg/L).

Of the 23 RPDs calculated for the pore water and surface water samples collected in September 2020, nine exceeded the 30% criteria, all for the pore water primary-duplicate pair. Exceedance ranged from 47% and 83%. Given the nature of pore water, it is GHD’s opinion that exceedances are related to natural variation. The above mentioned RPD results are unlikely to affect the conclusions of this report.

GHD considers the data set to be of an acceptable quality on which to base the assessment.

2.2 Rinsate blank samples

Results are presented in Table I2 at the end of this appendix.

All reported concentrations for the rinsate blank sample were below the laboratory limit of reporting (LOR).

2.3 Trip blank

Results are presented in Tables I2 and I4 at the end of this appendix.

The trip blanks reported BTEX and volatile TRH concentrations below limit of reporting, indicating that there was no significant cross contamination by volatile compounds during sample handling.

2.4 Trip spike

Results are presented in Table I2 and I4 at the end of this appendix.

The trip spike reported BTEX and volatile TRH spike recoveries comprised between 74% and 130%. This indicates that variation in matrix concentration during transport and handling was acceptable.

2.5 Compliance with holding times

All samples were analysed within the recommended holding times.

3 Laboratory QAQC

3.1 Internal duplicates

RPD values for laboratory internal duplicates were within the acceptable range of 0% to 30%.

3.2 Matrix spikes

Matrix spike results were within an acceptable range.

3.3 Laboratory control spike

Laboratory control spikes were reported within the acceptable range as defined by the laboratory.

3.4 Method blanks

All reported method blank concentrations were less than the laboratory reporting limit.

3.5 Surrogate spikes

Laboratory surrogate spikes were reported within the acceptable range as defined by the laboratory.

3.6 Laboratory control sample frequency outliers

Laboratory control sample frequencies were reported within the acceptable range as defined by the laboratory.

4 Discussion

The data produced by GHD is considered to be valid and of sufficient quality to rely on for the purpose and objectives of this assessment.

5 Third party QA/QC

GHD has relied on data produced by third parties such as other consultants (e.g. URS and CES). Data were only collated by GHD. While some reports show evidence of QA/QC and comments on data integrity, others did not. For example, groundwater quarterly, leachate yearly and ground gas quarterly monitoring report provided by CES between 2017 and 2020 do not report QA/QC data nor comments on data integrity. Where provided, QA/QC data are considered to be valid and of sufficient quality to rely on for the purpose and objectives of this assessment. GHD has also considered data provided without QA/QC.

				Inorganics					TRH - NEPM 2013						BTEXN								
				pH (Lab)	Total Dissolved Solids	Total Suspended Solids	COD	Cyanide (Total)	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	Acenaphthene	Acenaphthylene
				pH Units	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.1	10	1	25	0.005	20	20	50	50	100	100	1	1	1	1	2	3	10	1	1
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																				
SW1	11/06/2020	725302	water	8.0	170	14	<25	<0.005	<20	<20	<50	<50	<100	<100	<1	<1	<1	<1	<2	<3	<10	<1	<1
FD01	11/06/2020	725302	water	7.9	150	10	<25	<0.005	<20	<20	<50	<50	<100	<100	<1	<1	<1	<1	<2	<3	<10	<1	<1
RPD				1	12	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC01	26/08/2020	740259	water						<20	<20	<50	<50	<100	<100	<1	<1	<1	<1	<2	<3	<1	<1	<1
SW6	26/08/2020	747800	water	8.0	270	<1	<25	<0.005	<20	<20	<50	<50	<100	<100	<1	<1	<1	<1	<2	<3	<1	<1	<1
				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

				PAHs - standard 16																		
				Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo[b+j]fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.001	0.0002	0.001	0.001	0.001
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																				
SW1	11/06/2020	725302	water	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.0002	0.002	0.007	<0.001
FD01	11/06/2020	725302	water	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.001	<0.0002	0.002	0.008	<0.001
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0
QC01	26/08/2020	740259	water	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	0.007	<0.0002	<0.001	0.013	<0.001
SW6	26/08/2020	747800	water	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	0.008	<0.0002	<0.001	<0.001	<0.001
				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0

*****Interlab Duplicates are matched on a per compound basis as metho**

				Metals								PCBs												
				Mercury	Molybdenum	Nickel	Selenium	Silver	Tin	Zinc	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)	Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4'-DDE	a-BHC	Aldrin
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.0001	0.005	0.001	0.001	0.005	0.005	0.005	1	1	1	1	1	1	1	1	1	1	0.1	0.1	0.1
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																				
SW1	11/06/2020	725302	water	<0.0001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1
FD01	11/06/2020	725302	water	<0.0001	<0.005	0.001	<0.001	<0.005	<0.005	<0.005	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC01	26/08/2020	740259	water	<0.0001	<0.005	<0.001	<0.001	<0.005	<0.005	0.007	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1
SW6	26/08/2020	747800	water	<0.0001	<0.005	<0.001	<0.001	<0.005	<0.005	<0.005	<1	<1	<1	<1	<1	<1	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1
				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*****Interlab Duplicates are matched on a per compound basis as metho**

				OC Pesticides																	
				Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																				
SW1	11/06/2020	725302	water	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10
FD01	11/06/2020	725302	water	<0.1	<0.1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QC01	26/08/2020	740259	water	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10
SW6	26/08/2020	747800	water	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<0.1	<10
				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*****Interlab Duplicates are matched on a per compound basis as metho**

				Acidity & Alkalinity	Major Ions							Nutrients							Organic Indicators
				Hardness as CaCO3	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)	Nitrogen (Total)	Kjeldahl Nitrogen Total	Phosphorus (Total)	BOD
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				5	0.5	0.5	0.5	0.5	1	5	0.5	0.01	0.02	0.02	0.05	0.2	0.2	0.01	5
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																
SW1	11/06/2020	725302	water	77	22	5.7	1.3	22	20	36	<0.5	0.05	2.1	0.03	2.2	2.6	0.4	0.03	<5
FD01	11/06/2020	725302	water	79	22	6.0	1.3	22	21	35	<0.5	0.06	2.1	0.03	2.1	2.4	0.3	<0.01	<5
RPD				3	0	5	0	0	5	3	0	18	0	0	5	8	29	100	0
QC01	26/08/2020	740259	water								<0.5								
SW6	26/08/2020	747800	water	220	30	16	<5	28	57	13	<0.5	<0.01	<0.02	<0.02	<0.05	0.5	0.5	0.01	<5
				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*****Interlab Duplicates are matched on a per compound basis as metho**

				TRH - NEPM 2013						BTEXN							Metals							
				F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene (BTEXN)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				20	20	50	50	100	100	1	1	1	1	2	3	10	0.001	0.0002	0.001	0.001	0.001	0.0001	0.001	0.005
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																					
RB01	11/06/2020	725302	water	<20	<20	<50	<50	<100	<100	<1	<1	<1	<1	<2	<3	<10	<0.001	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005
TB	11/06/2020	725302	water	<20	<20					<1	<1	<1	<1	<2	<3	<10								
TRIP BLANK	26/08/2020	740259	water	<20	<20					<1	<1	<1	<1	<2	<3	<10								

				BTEXN						TRH - NEPM 2013
				Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Naphthalene	C6-C10 Fraction
				% recovery	% recovery	% recovery	% recovery	% recovery	% recovery	% recovery
Field ID	**Date**	**Lab Report Number**	**Matrix Type**							
TRIP SPIKE	26/08/2020	740259	water	92	100	90	83	89	94	83

				Inorganics					Acidity & Alkalinity					Major Ions							Nutrients			
				pH (Lab)	Total Dissolved Solids	Total Suspended Solids	COD	Cyanide (Total)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Hydroxide as CaCO3)	Alkalinity (total as CaCO3)	Hardness as CaCO3	Calcium	Magnesium	Potassium	Sodium	Chloride	Sulfate	Fluoride	Ammonia as N	Nitrate (as N)	Nitrite (as N)	Nitrogen (Total Oxidised) (as N)
				pH Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				0.1	5	5	25	0.004	10	20	20	20	1	0.5	0.5	0.5	0.5	1	2	0.1	0.01	0.01	0.01	0.01
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																					
PW04	11/09/2020	743790	water	6.6	31,000	380	620	<0.005	<10	200	<20	200	4,300	300	870	290	7,500	16,000	2,400	2.1	<0.01	<0.02	<0.02	<0.05
QC02	11/09/2020	ES2032276	water	-	-	-	-	<0.004	-	-	-	-	-	-	-	-	-	-	-	1.3	0.07	0.02	<0.01	0.02
RPD				-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	47	150	0	0	0
SW8	11/09/2020	743790	water	7.8	48,000	68	400	<0.005	<10	140	<20	140	7,600	500	1,500	460	13,000	26,000	3,600	1.9	0.05	<0.02	<0.02	<0.05
QC04	11/09/2020	743790	water	-	-	-	-	<0.005	-	-	-	-	-	-	-	-	-	-	-	1.9	0.05	<0.02	<0.02	<0.05
RPD				-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**
****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 30 (10 - 30 x EQL); 30 (> 30 x EQL))**
*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

								Metals															
				Nitrogen (Total)	Kjeldahl Nitrogen Total	Phosphorus (Total)	Aluminium (filtered)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Copper	Copper (filtered)	Iron (filtered)	Lead	Lead (filtered)	Manganese (filtered)	Mercury	Mercury (filtered)	Molybdenum	Molybdenum (filtered)	Nickel
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL				0.1	0.1	0.01	0.01	0.001	0.001	0.0002	0.0001	0.001	0.001	0.001	0.001	0.05	0.001	0.001	0.001	0.0001	0.0001	0.005	0.001	0.001
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																					
PW04	11/09/2020	743790	water	16	16	0.33	0.05	0.030	-	0.0007	-	0.022	-	0.011	-	0.32	0.020	-	0.016	0.0002	-	0.047	-	0.011
QC02	11/09/2020	ES2032276	water	7.9	7.9	0.55	<0.10	-	<0.010	-	<0.0010	-	<0.010	-	0.015	0.21	-	<0.010	0.010	-	<0.0001	-	0.016	-
RPD				68	68	50	0	-	-	-	-	-	-	-	-	42	-	-	46	-	-	-	-	-
SW8	11/09/2020	743790	water	0.3	0.3	0.02	<0.05	0.003	-	<0.0002	-	0.002	-	0.005	-	0.06	0.003	-	0.010	<0.0001	-	0.013	-	<0.001
QC04	11/09/2020	743790	water	<0.2	<0.2	0.02	<0.05	0.003	-	<0.0002	-	<0.001	-	0.001	-	<0.05	0.001	-	0.006	<0.0001	-	0.014	-	<0.001
RPD				40	40	0	0	0	-	0	-	67	-	133	-	18	100	-	50	0	-	7	-	0

***RPDs have only been considered where a concentration is greater tha**
****Elevated RPDs are highlighted as per QAQC Profile settings (Accepta**
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											BTEXN							TRH - NEPM 2013				
				Nickel (filtered)	Selenium	Selenium (filtered)	Silver	Silver (filtered)	Tin	Tin (filtered)	Zinc	Zinc (filtered)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	BTEX (Sum of Total) - Lab Calc	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.001	0.001	0.01	0.005	0.001	0.005	0.001	0.005	0.005	1	1	1	1	2	2	1	20	20	50	50	100
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																					
PW04	11/09/2020	743790	water	-	0.001	-	<0.005	-	<0.005	-	0.061	-	<1	<1	<1	<1	<2	<3	-	<20	<20	170	170	3,000
QC02	11/09/2020	ES2032276	water	<0.010	-	<0.10	-	<0.010	-	<0.010	-	<0.050	<1	<2	<2	<2	<2	<2	<1	<20	<20	<100	<100	1,320
RPD				-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	-	0	0	52	52	78
SW8	11/09/2020	743790	water	-	<0.001	-	<0.005	-	<0.005	-	0.009	-	<1	<1	<1	<1	<2	<3	-	<20	<20	<50	<50	100
QC04	11/09/2020	743790	water	-	<0.001	-	<0.005	-	<0.005	-	0.005	-	<1	<1	<1	<1	<2	<3	-	<20	<20	<50	<50	200
RPD				-	0	-	0	-	0	-	57	-	0	0	0	0	0	0	-	0	0	0	0	67

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						TRH - NEPM 1999						PAHs - standard 16														
				F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo[b+j]fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				100	100	20	50	100	50	50	1	1	1	1	0.5	1	1	1	1	1	1	1	1	1
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																					
PW04	11/09/2020	743790	water	1,000	4,170	<20	50	2,100	1,500	3,650	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<10
QC02	11/09/2020	ES2032276	water	410	1,730	<20	<50	900	670	1,570	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
RPD				84	83	0	0	80	76	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SW8	11/09/2020	743790	water	<100	100	<20	<50	<100	100	100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10
QC04	11/09/2020	743790	water	100	300	<20	<50	<100	200	200	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<10
RPD				0	100	0	0	0	67	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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							Phenols - Halogenated									Phenols - Non-Halogenated							
							Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	2-Chlorophenol	2,4-Dichlorophenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,6-Dichlorophenol	4-Chloro-3-methylphenol	Pentachlorophenol	tetrachlorophenols	Phenols (Total Halogenated)	Phenol	2-Nitrophenol	2-Methylphenol (o-Cresol)	3,4-Methylphenol (m,p-cresol)	2,4-Dimethylphenol	2,4-Dinitrophenol	4,6-Dinitro-2-methylphenol
							µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL							1	1	1	0.5	0.5	1	1	1	1	1	1	2	30	10	1	1	1	2	1	30	30
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																								
PW04	11/09/2020	743790	water				<1	<1	1	2	-	<3	<3	<10	<10	<3	<10	<10	<30	<10	<3	<10	<3	<6	<3	<30	<30
QC02	11/09/2020	ES2032276	water				-	<1.0	<1.0	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	-	-	<1.0	<1.0	<1.0	<2.0	<1.0	-	-
RPD							-	0	0	120	-	0	0	0	0	0	0	0	-	-	0	0	0	0	0	-	-
SW8	11/09/2020	743790	water				<1	<1	<1	<1	-	<3	<3	<10	<10	<3	<10	<10	<30	<10	<3	<10	<3	<6	<3	<30	<30
QC04	11/09/2020	743790	water				<1	<1	<1	<1	-	<3	<3	<10	<10	<3	<10	<10	<30	<10	<3	<10	<3	<6	<3	<30	<30
RPD							0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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																			OC Pesticides					
					4,6-Dinitro-o-cyclohexyl phenol	4-Nitrophenol	Phenols (Total Non Halogenated)	Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4'-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL					100	30	100	1	1	0.1	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																					
PW04	11/09/2020	743790	water		<100	<30	<100	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
QC02	11/09/2020	ES2032276	water		-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5
RPD					-	-	-	-	-	0	0	0	0	0	0	-	-	0	0	0	0	0	0	0	0
SW8	11/09/2020	743790	water		<100	<30	<100	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
QC04	11/09/2020	743790	water		<100	<30	<100	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1
RPD					0	0	0	0	0	0	0	0	0	0	0	-	-	0	0	0	0	0	0	0	0

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											PCBs									Herbicides
				Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)	Dinoseb
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	5	1	5	5	5	5	5	1	100
Field ID	**Date**	**Lab Report Number**	**Matrix Type**																		
PW04	11/09/2020	743790	water	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<5	<1	<5	<5	<5	<5	<5	<1	<100
QC02	11/09/2020	ES2032276	water	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	-	-	-	-	-	-	-	-	<1	-
RPD				0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	0	-
SW8	11/09/2020	743790	water	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<5	<1	<5	<5	<5	<5	<5	<1	<100
QC04	11/09/2020	743790	water	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<5	<1	<5	<5	<5	<5	<5	<1	<100
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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				BTEXN						TRH - NEPM 2013		TRH - NEPM 1999	PAHs - standard 16
				Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	C6-C9 Fraction	Naphthalene
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	1	1	1	2	3	20	20	20	10
Field ID	**Date**	**Lab Report Number**	**Matrix Type**										
TRIP BLANK	11/09/2020	743790	water	<1	<1	<1	<1	<2	<3	<20	<20	<20	<10

				BTEXN						TRH - NEPM 2013	TRH - NEPM 1999	PAHs - standard 16
				Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	C6-C10 Fraction	C6-C9 Fraction	Naphthalene
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL				1	1	1	1	2	3	20	20	10
Field ID	**Date**	**Lab Report Number**	**Matrix Type**									
TRIP SPIKE	11/09/2020	743790	water	100	100	98	96	99	97	74	77	130

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