Andrew Williamson
Cardiff City Council
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Certificate of Analysis Number: 4662

Project/Site name:	Ferry Road		Samples Taken:	05-05-2021 to 06-05-2021
Quotation Number:	DS210501		Samples Received:	06-05-2021
Order Number:	-		Date Instructed:	07-05-2021
Sample Matrix:	Surface water, Groundwater, Treated Effluent		Analysis Complete:	19-05-2021
			Report Issued:	20-05-2021
			Sampled By:	Client

Amendment Records:

None

Approved by: Adam Whitehouse
Signature:
Title: Laboratory Manager

4303

Client: Cardiff City Council
FAO: Andrew Williamson

CERTIFICATE OF ANALYSIS 4662

Results of analysis of 13 samples received on the 06/05/21

Report Date
20th May 2021

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				**070521001**	**070521002**	**070521003**	**070521004**
Client Sample Reference:				Pumping Station C	Pumping Station D	River sample under Bypass	River Sample Mid A
Sample Date:				05/05/21	05/05/21	05/05/21	05/05/21
Sample Matrix:				Effluent	Effluent	Surface Water	Surface Water
INORG-L12	Ammonia	mg.l^{-1} as NH_4	A	117	367	0.94	0.35
INORG-L11	Nitrate	mg.l^{-1} as NO_3	A	13.3	5.4	12.4	12.7
INORG-L14	Nitrite	mg.l^{-1} as NO_3	A	4.4	0.72	0.19	0.19
1450	Arsenic	µg.l^{-1}	S-A	0.69	2.6	0.53	0.56
1450	Mercury	µg.l^{-1}	S-A	<0.05	<0.05	<0.05	<0.05
METALS-L	Barium	µg.l^{-1}	A	299	45.7	72.3	67.0
METALS-L	Boron	µg.l^{-1}	A	8,510	7,390	142	73.0
METALS-L	Cadmium	µg.l^{-1}	A	<0.9	1.3	<0.9	<0.9
METALS-L	Chromium	µg.l^{-1}	A	4.9	8.6	1.9	1.7
METALS-L	Copper	µg.l^{-1}	A	2.1	3.4	2.8	3.2
METALS-L	Iron	µg.l^{-1}	A	84.5	192	51.2	59.9
METALS-L	Lead	µg.l^{-1}	A	5.8	<4.1	5.4	<4.1
METALS-L	Manganese	µg.l^{-1}	A	379	80.7	4.0	3.0
METALS-L	Nickel	µg.l^{-1}	A	4.3	11.6	1.9	1.9
METALS-L	Zinc	µg.l^{-1}	A	4.0	6.7	<1.1	<1.1
METALS-L	Potassium	mg.l^{-1}	A	71.2	156	4.9	4.4
INORG-L37	Hexavalent Chromium	mg.l^{-1}	N	<0.1	<0.1	<0.1	<0.1
1300	Free Cyanide	mg.l^{-1}	S-A	<0.050	<0.050	<0.050	<0.050
1300	Total Cyanide	mg.l^{-1}	S-A	<0.050	<0.050	<0.050	<0.050
INORG-L01	pH	pH units	A	7.4	8.0	7.9	7.8
INORG-L13	Chloride	mg.l^{-1}	A	906	454	34.3	27.7
INORG-L18	TOC	mg.l^{-1}	A	229	391	22.2	24.2
INORG-L20	Total Phenol	mg.l^{-1}	A	0.18	0.19	<0.01	0.06
METALS-L	Sulphate	mg.l^{-1}	A	28.6	11.0	21.0	18.1
ORG-L17	Mecoprop	µg.l^{-1}	A	<0.1	6.0	<0.1	<0.1
ORG-L01	TPH	mg.l^{-1}	N	<0.2	<0.2	<0.2	<0.2
1790	Dimethylphthalate	µg.l^{-1}	S-N	<0.50	<0.50	<0.50	<0.50
1790	Diethyl Phthalate	µg.l^{-1}	S-N	<0.50	<0.50	<0.50	<0.50
1790	Di-N-Bytul Phthalate	µg.l^{-1}	S-N	<0.50	<0.50	<0.50	<0.50
1790	Butylbenzyl Phthalate	µg.l^{-1}	S-N	<0.50	<0.50	<0.50	<0.50
1790	Bis(2-Ethylhexyl) Phthalate	µg.l^{-1}	S-N	<0.50	<0.50	<0.50	<0.50

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FAO: Andrew Williamson

CERTIFICATE OF ANALYSIS 4662

Results of analysis of 13 samples received on the 06/05/21

Report Date
20th May 2021

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				**070521001**	**070521002**	**070521003**	**070521004**
Client Sample Reference:				Pumping Station C	Pumping Station D	River sample under Bypass	River Sample Mid A
Sample Date:				05/05/21	05/05/21	05/05/21	05/05/21
Sample Matrix:				Effluent	Effluent	Surface Water	Surface Water
1790	Di-N-Octyl Phthalate	µg.l^{-1}	S-N	<0.50	<0.50	<0.50	<0.50
ORG-L02	Naphthalene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Acenaphthene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	4-nitrophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,3,4,6-tetrachlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	Fluorene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Pentachlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	Phenanthrene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Anthracene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Fluoranthene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Pyrene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Benza(a)anthracene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Chrysene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Benzo(b)fluoranthene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Benzo(a)pyrene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Indeno(123-cd)pyrene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Dibenza(ah)anthracene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Benzo(ghi)perylene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	2-chlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2-methylphenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	4-methylphenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2 nitrophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,4-dimethylphenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,4-dichlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,6-dichlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	4-chloro,3-methylphenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,4,6-trichlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,4,5-trichlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L19	Alpha-BHC	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Beta-BHC	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Gamma-BHC	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Delta-BHC	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20

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Report Date
20th May 2021

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				**070521001**	**070521002**	**070521003**	**070521004**
Client Sample Reference:				Pumping Station C	Pumping Station D	River sample under Bypass	River Sample Mid A
Sample Date:				05/05/21	05/05/21	05/05/21	05/05/21
Sample Matrix:				Effluent	Effluent	Surface Water	Surface Water
ORG-L19	Heptachlor	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Aldrin	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Heptachlor Epoxide	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Endosulphan	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	*pp*-DDE	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Dieidrin	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Endosulphan-I	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	*pp*-DDD	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Endrin Aldehyde	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Endosulphan Sulphate	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
1820	Demeton-O	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Phorate	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Demeton-S	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Disulfoton	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Fenthion	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Trichloronate	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Prothiofos	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Fensulphothion	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Sulprofos	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Azinphos-Methyl	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Coumaphos	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Atraton	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Prometon	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Simazine	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Atrazine	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Propazine	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Terbuthylazine	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Secbumeton	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Simetryn	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Ametryn	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Prometryn	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Terbutryn	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20

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UKAS TESTING
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CERTIFICATE OF ANALYSIS 4662

Results of analysis of 13 samples received on the 06/05/21

Report Date
20th May 2021

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				**070521005**	**070521006**	**070521007**	**070521008**
Client Sample Reference:				River Sample – Outfall A	River sample Rail Bridge	Chamber 3	FR1
Sample Date:				05/05/21	05/05/21	05/05/21	05/05/21
Sample Matrix:				Surface Water	Surface Water	Groundwater	Groundwater
INORG-L12	Ammonia	$mg.l^{-1}$ as NH_4	A	0.40	0.46	0.03	0.07
INORG-L11	Nitrate	$mg.l^{-1}$ as NO_3	A	10.1	10.9	12.8	13.9
INORG-L14	Nitrite	$mg.l^{-1}$ as NO_3	A	0.29	0.17	<0.003	0.003
1450	Arsenic	$\mu g.l^{-1}$	S-A	0.46	0.45	2.0	0.91
1450	Mercury	$\mu g.l^{-1}$	S-A	<0.05	<0.05	<0.05	<0.05
METALS-L	Barium	$\mu g.l^{-1}$	A	73.0	61.5	74.1	13.5
METALS-L	Boron	$\mu g.l^{-1}$	A	48.2	28.4	44.3	538
METALS-L	Cadmium	$\mu g.l^{-1}$	A	<0.9	<0.9	<0.9	<0.9
METALS-L	Chromium	$\mu g.l^{-1}$	A	1.9	1.9	1.5	3.3
METALS-L	Copper	$\mu g.l^{-1}$	A	17.4	3.2	3.8	2.2
METALS-L	Iron	$\mu g.l^{-1}$	A	66.6	65.7	11.4	70.0
METALS-L	Lead	$\mu g.l^{-1}$	A	5.2	<4.1	4.6	<4.1
METALS-L	Manganese	$\mu g.l^{-1}$	A	4.4	5.3	2.4	6.8
METALS-L	Nickel	$\mu g.l^{-1}$	A	1.9	1.8	6.0	2.0
METALS-L	Zinc	$\mu g.l^{-1}$	A	2.1	<1.1	150	<1.1
METALS-L	Potassium	$mg.l^{-1}$	A	4.3	4.0	22.4	23.3
INORG-L37	Hexavalent Chromium	$mg.l^{-1}$	N	<0.1	<0.1	<0.1	<0.1
1300	Free Cyanide	$mg.l^{-1}$	S-A	<0.050	<0.050	<0.050	<0.050
1300	Total Cyanide	$mg.l^{-1}$	S-A	<0.050	<0.050	<0.050	<0.050
INORG-L01	pH	pH units	A	7.6	7.7	7.9	7.1
INORG-L13	Chloride	$mg.l^{-1}$	A	27.4	30.8	14.5	126
INORG-L18	TOC	$mg.l^{-1}$	A	22.2	20.8	26.5	50.2
INORG-L20	Total Phenol	$mg.l^{-1}$	A	<0.01	<0.01	0.02	<0.01
METALS-L	Sulphate	$mg.l^{-1}$	A	17.6	16.1	160	43.4
ORG-L17	Mecoprop	$\mu g.l^{-1}$	A	<0.1	<0.1	<0.1	<0.1
ORG-L01	TPH	$mg.l^{-1}$	N	<0.2	<0.2	<0.2	<0.2
1790	Dimethylphthalate	$\mu g.l^{-1}$	S-N	<0.50	<0.50	<0.50	<0.50
1790	Diethyl Phthalate	$\mu g.l^{-1}$	S-N	<0.50	<0.50	<0.50	<0.50
1790	Di-N-Bytul Phthalate	$\mu g.l^{-1}$	S-N	<0.50	<0.50	<0.50	<0.50
1790	Butylbenzyl Phthalate	$\mu g.l^{-1}$	S-N	<0.50	<0.50	<0.50	<0.50
1790	Bis(2-Ethylhexyl) Phthalate	$\mu g.l^{-1}$	S-N	<0.50	<0.50	<0.50	<0.50

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Laboratory Sample Number:				**070521005**	**070521006**	**070521007**	**070521008**
Client Sample Reference:				River Sample – Outfall A	River sample Rail Bridge	Chamber 3	FR1
Sample Date:				05/05/21	05/05/21	05/05/21	05/05/21
Sample Matrix:				Surface Water	Surface Water	Groundwater	Groundwater
1790	Di-N-Octyl Phthalate	µg.l^{-1}	S-N	<0.50	<0.50	<0.50	<0.50
ORG-L02	Naphthalene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Acenaphthene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	4-nitrophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,3,4,6-tetrachlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	Fluorene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Pentachlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	Phenanthrene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Anthracene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Fluoranthene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Pyrene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Benza(a)anthracene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Chrysene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Benzo(b)fluoranthene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Benzo(a)pyrene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Indeno(123-cd)pyrene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Dibenza(ah)anthracene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Benzo(ghi)perylene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	2-chlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2-methylphenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	4-methylphenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2 nitrophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,4-dimethylphenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,4-dichlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,6-dichlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	4-chloro,3-methylphenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,4,6-trichlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,4,5-trichlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L19	Alpha-BHC	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Beta-BHC	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Gamma-BHC	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Delta-BHC	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20

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Client: Cardiff City Council
FAO: Andrew Williamson

CERTIFICATE OF ANALYSIS 4662

Results of analysis of 13 samples received on the 06/05/21

Report Date
20th May 2021

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				**070521005**	**070521006**	**070521007**	**070521008**
Client Sample Reference:				River Sample – Outfall A	River sample Rail Bridge	Chamber 3	FR1
Sample Date:				05/05/21	05/05/21	05/05/21	05/05/21
Sample Matrix:				Surface Water	Surface Water	Groundwater	Groundwater
ORG-L19	Heptachlor	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Aldrin	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Heptachlor Epoxide	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Endosulphan	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	*pp*-DDE	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Dieidrin	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Endosulphan-I	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	*pp*-DDD	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Endrin Aldehyde	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Endosulphan Sulphate	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
1820	Demeton-O	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Phorate	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Demeton-S	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Disulfoton	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Fenthion	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Trichloronate	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Prothiofos	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Fensulphothion	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Sulprofos	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Azinphos-Methyl	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Coumaphos	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Atraton	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Prometon	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Simazine	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Atrazine	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Propazine	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Terbuthylazine	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Secbumeton	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Simetryn	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Ametryn	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Prometryn	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Terbutryn	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20

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UKAS TESTING
4303

Client: Cardiff City Council
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CERTIFICATE OF ANALYSIS 4662

Results of analysis of 13 samples received on the 06/05/21

Report Date
20th May 2021

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				**070521009**	**070521010**	**070521011**	**070521012**
Client Sample Reference:				OW02	OW07	OW14	OW18
Sample Date:				05/05/21	06/05/21	06/05/21	05/05/21
Sample Matrix:				Groundwater	Groundwater	Groundwater	Groundwater
INORG-L12	Ammonia	$mg.l^{-1}$ as NH_4	A	70.1	0.17	1.3	0.88
INORG-L11	Nitrate	$mg.l^{-1}$ as NO_3	A	<0.3	6.1	<0.3	6.0
INORG-L14	Nitrite	$mg.l^{-1}$ as NO_3	A	<0.003	<0.003	0.97	<0.003
1450	Arsenic	$\mu g.l^{-1}$	S-A	1.2	0.56	3.9	0.84
1450	Mercury	$\mu g.l^{-1}$	S-A	<0.05	<0.05	<0.05	<0.05
METALS-L	Barium	$\mu g.l^{-1}$	A	816	42.5	361	138
METALS-L	Boron	$\mu g.l^{-1}$	A	3,280	41.0	3,840	<6.5
METALS-L	Cadmium	$\mu g.l^{-1}$	A	1.1	<0.9	<0.9	<0.9
METALS-L	Chromium	$\mu g.l^{-1}$	A	4.6	3.5	7.9	1.5
METALS-L	Copper	$\mu g.l^{-1}$	A	2.1	1.9	<0.8	2.2
METALS-L	Iron	$\mu g.l^{-1}$	A	116	8.2	186	11.6
METALS-L	Lead	$\mu g.l^{-1}$	A	4.9	5.1	6.6	<4.1
METALS-L	Manganese	$\mu g.l^{-1}$	A	993	2.8	324	4.2
METALS-L	Nickel	$\mu g.l^{-1}$	A	2.9	1.5	7.2	1.8
METALS-L	Zinc	$\mu g.l^{-1}$	A	<1.1	438	<1.1	293
METALS-L	Potassium	$mg.l^{-1}$	A	41.0	7.3	147	3.7
INORG-L37	Hexavalent Chromium	$mg.l^{-1}$	N	<0.1	<0.1	<0.1	<0.1
1300	Free Cyanide	$mg.l^{-1}$	S-A	<0.050	<0.050	<0.050	<0.050
1300	Total Cyanide	$mg.l^{-1}$	S-A	<0.050	<0.050	<0.050	<0.050
INORG-L01	pH	pH units	A	7.1	7.8	7.4	8.0
INORG-L13	Chloride	$mg.l^{-1}$	A	162	6.6	450	15.7
INORG-L18	TOC	$mg.l^{-1}$	A	208	9.2	492	35.4
INORG-L20	Total Phenol	$mg.l^{-1}$	A	0.12	0.03	0.24	0.02
METALS-L	Sulphate	$mg.l^{-1}$	A	3.1	5.4	4.8	1.5
ORG-L17	Mecoprop	$\mu g.l^{-1}$	A	<0.1	<0.1	<0.1	<0.1
ORG-L01	TPH	$mg.l^{-1}$	N	<0.2	<0.2	<0.2	<0.2
1790	Dimethylphthalate	$\mu g.l^{-1}$	S-N	<0.50	<0.50	<0.50	<0.50
1790	Diethyl Phthalate	$\mu g.l^{-1}$	S-N	<0.50	<0.50	<0.50	<0.50
1790	Di-N-Bytul Phthalate	$\mu g.l^{-1}$	S-N	<0.50	<0.50	<0.50	<0.50
1790	Butylbenzyl Phthalate	$\mu g.l^{-1}$	S-N	<0.50	<0.50	<0.50	<0.50
1790	Bis(2-Ethylhexyl) Phthalate	$\mu g.l^{-1}$	S-N	<0.50	<0.50	<0.50	<0.50

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UKAS TESTING
4303

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CERTIFICATE OF ANALYSIS 4662

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Report Date
20th May 2021

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Laboratory Sample Number:				**070521009**	**070521010**	**070521011**	**070521012**
Client Sample Reference:				OW02	OW07	OW14	OW18
Sample Date:				05/05/21	06/05/21	06/05/21	05/05/21
Sample Matrix:				Groundwater	Groundwater	Groundwater	Groundwater
1790	Di-N-Octyl Phthalate	µg.l^{-1}	S-N	<0.50	<0.50	<0.50	<0.50
ORG-L02	Naphthalene	µg.l^{-1}	A	<0.05	<0.05	2.7	<0.05
ORG-L02	Acenaphthene	µg.l^{-1}	A	0.97	<0.05	4.8	1.1
ORG-L02	4-nitrophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,3,4,6-tetrachlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	Fluorene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Pentachlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	Phenanthrene	µg.l^{-1}	A	<0.05	<0.05	1.7	<0.05
ORG-L02	Anthracene	µg.l^{-1}	A	<0.05	<0.05	0.62	<0.05
ORG-L02	Fluoranthene	µg.l^{-1}	A	<0.05	<0.05	1.0	<0.05
ORG-L02	Pyrene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Benza(a)anthracene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Chrysene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Benzo(b)fluoranthene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Benzo(a)pyrene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Indeno(123-cd)pyrene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Dibenza(ah)anthracene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	Benzo(ghi)perylene	µg.l^{-1}	A	<0.05	<0.05	<0.05	<0.05
ORG-L02	2-chlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2-methylphenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	4-methylphenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2 nitrophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,4-dimethylphenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,4-dichlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,6-dichlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	4-chloro,3-methylphenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,4,6-trichlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L02	2,4,5-trichlorophenol	µg.l^{-1}	A	<0.5	<0.5	<0.5	<0.5
ORG-L19	Alpha-BHC	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Beta-BHC	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Gamma-BHC	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Delta-BHC	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20

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Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				**070521009**	**070521010**	**070521011**	**070521012**
Client Sample Reference:				OW02	OW07	OW14	OW18
Sample Date:				05/05/21	06/05/21	06/05/21	05/05/21
Sample Matrix:				Groundwater	Groundwater	Groundwater	Groundwater
ORG-L19	Heptachlor	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Aldrin	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Heptachlor Epoxide	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Endosulphan	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	*pp*-DDE	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Dieidrin	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Endosulphan-I	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	*pp*-DDD	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Endrin Aldehyde	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
ORG-L19	Endosulphan Sulphate	µg.l^{-1}	N	<0.20	<0.20	<0.20	<0.20
1820	Demeton-O	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Phorate	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Demeton-S	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Disulfoton	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Fenthion	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Trichloronate	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Prothiofos	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Fensulphothion	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Sulprofos	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Azinphos-Methyl	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1820	Coumaphos	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Atraton	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Prometon	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Simazine	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Atrazine	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Propazine	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Terbuthylazine	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Secbumeton	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Simetryn	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Ametryn	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Prometryn	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20
1830	Terbutryn	µg.l^{-1}	S-N	<0.20	<0.20	<0.20	<0.20

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CERTIFICATE OF ANALYSIS 4662

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Report Date
20th May 2021

Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				**070521013**	-	-	-
Client Sample Reference:				Outfall A – Ferry Court	-	-	-
Sample Date:				05/05/21	-	-	-
Sample Matrix:				Surface Water	-	-	-
INORG-L12	Ammonia	$mg.l^{-1}$ as NH_4	A	58.4	-	-	-
INORG-L11	Nitrate	$mg.l^{-1}$ as NO_3	A	2.7	-	-	-
INORG-L14	Nitrite	$mg.l^{-1}$ as NO_3	A	0.066	-	-	-
1450	Arsenic	$\mu g.l^{-1}$	S-A	1.0	-	-	-
1450	Mercury	$\mu g.l^{-1}$	S-A	<0.05	-	-	-
METALS-L	Barium	$\mu g.l^{-1}$	A	907	-	-	-
METALS-L	Boron	$\mu g.l^{-1}$	A	2,240	-	-	-
METALS-L	Cadmium	$\mu g.l^{-1}$	A	<0.9	-	-	-
METALS-L	Chromium	$\mu g.l^{-1}$	A	3.2	-	-	-
METALS-L	Copper	$\mu g.l^{-1}$	A	2.3	-	-	-
METALS-L	Iron	$\mu g.l^{-1}$	A	419	-	-	-
METALS-L	Lead	$\mu g.l^{-1}$	A	<4.1	-	-	-
METALS-L	Manganese	$\mu g.l^{-1}$	A	182	-	-	-
METALS-L	Nickel	$\mu g.l^{-1}$	A	3.4	-	-	-
METALS-L	Zinc	$\mu g.l^{-1}$	A	<1.1	-	-	-
METALS-L	Potassium	$mg.l^{-1}$	A	37.2	-	-	-
INORG-L37	Hexavalent Chromium	$mg.l^{-1}$	N	<0.1	-	-	-
1300	Free Cyanide	$mg.l^{-1}$	S-A	<0.050	-	-	-
1300	Total Cyanide	$mg.l^{-1}$	S-A	<0.050	-	-	-
INORG-L01	pH	pH units	A	7.4	-	-	-
INORG-L13	Chloride	$mg.l^{-1}$	A	522	-	-	-
INORG-L18	TOC	$mg.l^{-1}$	A	157	-	-	-
INORG-L20	Total Phenol	$mg.l^{-1}$	A	0.09	-	-	-
METALS-L	Sulphate	$mg.l^{-1}$	A	13.3	-	-	-
ORG-L17	Mecoprop	$\mu g.l^{-1}$	A	<0.1	-	-	-
ORG-L01	TPH	$mg.l^{-1}$	N	<0.2	-	-	-
1790	Dimethylphthalate	$\mu g.l^{-1}$	S-N	<0.50	-	-	-
1790	Diethyl Phthalate	$\mu g.l^{-1}$	S-N	<0.50	-	-	-
1790	Di-N-Bytul Phthalate	$\mu g.l^{-1}$	S-N	<0.50	-	-	-
1790	Butylbenzyl Phthalate	$\mu g.l^{-1}$	S-N	<0.50	-	-	-
1790	Bis(2-Ethylhexyl) Phthalate	$\mu g.l^{-1}$	S-N	<0.50	-	-	-

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Code	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				**070521013**	-	-	-
Client Sample Reference:				Outfall A – Ferry Court	-	-	-
Sample Date:				05/05/21	-	-	-
Sample Matrix:				Surface Water	-	-	-
1790	Di-N-Octyl Phthalate	µg.l^{-1}	S-N	<0.50	-	-	-
ORG-L02	Naphthalene	µg.l^{-1}	A	<0.05			
ORG-L02	Acenaphthene	µg.l^{-1}	A	1.6	-	-	-
ORG-L02	4-nitrophenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L02	2,3,4,6-tetrachlorophenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L02	Fluorene	µg.l^{-1}	A	<0.05	-	-	-
ORG-L02	Pentachlorophenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L02	Phenanthrene	µg.l^{-1}	A	<0.05	-	-	-
ORG-L02	Anthracene	µg.l^{-1}	A	<0.05	-	-	-
ORG-L02	Fluoranthene	µg.l^{-1}	A	<0.05	-	-	-
ORG-L02	Pyrene	µg.l^{-1}	A	<0.05	-	-	-
ORG-L02	Benza(a)anthracene	µg.l^{-1}	A	<0.05	-	-	-
ORG-L02	Chrysene	µg.l^{-1}	A	<0.05	-	-	-
ORG-L02	Benzo(b)fluoranthene	µg.l^{-1}	A	<0.05	-	-	-
ORG-L02	Benzo(a)pyrene	µg.l^{-1}	A	<0.05	-	-	-
ORG-L02	Indeno(123-cd)pyrene	µg.l^{-1}	A	<0.05	-	-	-
ORG-L02	Dibenza(ah)anthracene	µg.l^{-1}	A	<0.05	-	-	-
ORG-L02	Benzo(ghi)perylene	µg.l^{-1}	A	<0.05	-	-	-
ORG-L02	2-chlorophenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L02	2-methylphenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L02	4-methylphenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L02	2 nitrophenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L02	2,4-dimethylphenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L02	2,4-dichlorophenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L02	2,6-dichlorophenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L02	4-chloro,3-methylphenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L02	2,4,6-trichlorophenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L02	2,4,5-trichlorophenol	µg.l^{-1}	A	<0.5	-	-	-
ORG-L19	Alpha-BHC	µg.l^{-1}	N	<0.20	-	-	-
ORG-L19	Beta-BHC	µg.l^{-1}	N	<0.20	-	-	-
ORG-L19	Gamma-BHC	µg.l^{-1}	N	<0.20	-	-	-
ORG-L19	Delta-BHC	µg.l^{-1}	N	<0.20	-	-	-

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Client: Cardiff City Council
FAO: Andrew Williamson

CERTIFICATE OF ANALYSIS 4662

Results of analysis of 13 samples received on the 06/05/21

Report Date
20th May 2021

de	Determinand	Units	*	Sample Identification			
Laboratory Sample Number:				**070521013**	-	-	-
Client Sample Reference:				Outfall A – Ferry Court	-	-	-
Sample Date:				05/05/21	-	-	-
Sample Matrix:				Surface Water	-	-	-
ORG-L19	Heptachlor	µg.l^{-1}	N	<0.20	-	-	-
ORG-L19	Aldrin	µg.l^{-1}	N	<0.20	-	-	-
ORG-L19	Heptachlor Epoxide	µg.l^{-1}	N	<0.20	-	-	-
ORG-L19	Endosulphan	µg.l^{-1}	N	<0.20	-	-	-
ORG-L19	*pp*-DDE	µg.l^{-1}	N	<0.20	-	-	-
ORG-L19	Dieidrin	µg.l^{-1}	N	<0.20	-	-	-
ORG-L19	Endosulphan-I	µg.l^{-1}	N	<0.20	-	-	-
ORG-L19	*pp*-DDD	µg.l^{-1}	N	<0.20	-	-	-
ORG-L19	Endrin Aldehyde	µg.l^{-1}	N	<0.20	-	-	-
ORG-L19	Endosulphan Sulphate	µg.l^{-1}	N	<0.20	-	-	-
1820	Demeton-O	µg.l^{-1}	S-N	<0.20	-	-	-
1820	Phorate	µg.l^{-1}	S-N	<0.20	-	-	-
1820	Demeton-S	µg.l^{-1}	S-N	<0.20	-	-	-
1820	Disulfoton	µg.l^{-1}	S-N	<0.20	-	-	-
1820	Fenthion	µg.l^{-1}	S-N	<0.20	-	-	-
1820	Trichloronate	µg.l^{-1}	S-N	<0.20	-	-	-
1820	Prothiofos	µg.l^{-1}	S-N	<0.20	-	-	-
1820	Fensulphothion	µg.l^{-1}	S-N	<0.20	-	-	-
1820	Sulprofos	µg.l^{-1}	S-N	<0.20	-	-	-
1820	Azinphos-Methyl	µg.l^{-1}	S-N	<0.20	-	-	-
1820	Coumaphos	µg.l^{-1}	S-N	<0.20	-	-	-
1830	Atraton	µg.l^{-1}	S-N	<0.20	-	-	-
1830	Prometon	µg.l^{-1}	S-N	<0.20	-	-	-
1830	Simazine	µg.l^{-1}	S-N	<0.20	-	-	-
1830	Atrazine	µg.l^{-1}	S-N	<0.20	-	-	-
1830	Propazine	µg.l^{-1}	S-N	<0.20	-	-	-
1830	Terbuthylazine	µg.l^{-1}	S-N	<0.20	-	-	-
1830	Secbumeton	µg.l^{-1}	S-N	<0.20	-	-	-
1830	Simetryn	µg.l^{-1}	S-N	<0.20	-	-	-
1830	Ametryn	µg.l^{-1}	S-N	<0.20	-	-	-
1830	Prometryn	µg.l^{-1}	S-N	<0.20	-	-	-
1830	Terbutryn	µg.l^{-1}	S-N	<0.20	-	-	-

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Analytical Method	Method Code	Accreditation Status
Determination of pH in waters by discrete analyser ECM unit (In-house method)	INORG-L01	ISO 17025
Determination of ammonia in waters by discrete analyser (In-house method)	INORG-L12	ISO 17025
Determination of chloride by discrete analyser (In-house method)	INORG-L13	ISO 17025
Determination of metals in waters by ICP-OES (In-house method)	METALS-L	ISO 17025
Determination of mecoprop in waters by GS-MS (In-house method)	ORG-L17	ISO 17025
Determination of total organic carbon in waters by photometer (In-house method)	INORG-L18	ISO 17025
Determination of PAHs in water by GC-MS (In-house method)	ORG-L02	ISO 17025
Determination of Mineral Oil in Water by GC-MS (In-house method)	ORG-L01	None
Determination of Cyanide in water by discrete analyser (Sub-contracted method)	1300	ISO 17025
Determination of Phenol in water by discrete analyser (In-house method)	INORG-L20	ISO 17025
Determination of metals in waters by ICP-MS (Sub-Contracted method)	1450	None
Determination of Phenol(SVOC) in water by GC-MS (In-house method)	ORG-L02	ISO 17025
Determination of TPH in Water by GC-MS (In-house method)	ORG-L01	None
Determination of nitrate in water by discrete analyser (In-house method)	INORG-L11	None
Determination of nitrite in water by discrete analyser (In-house method)	INORG-L14	ISO 17025
Determination of VOCs in waters by GC-MS (Sub-Contracted method)	1760	None

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Analytical Method	Method Code	Accreditation Status
Determination of Organochlorine Pesticides in Water by GC-MS (In-house method)	ORG-L19	None
Determination of Organo-N,P-Pesticides in Water by GC-MS (Sub-contracted method)	ORG-L20	None

Disposal Times:
All water samples will be retained for a period of two weeks and all soil samples retained for a period of one month following the date of the issued certificate.
All results only relate to the items tested.
This report supersedes any previous versions issued by the laboratory.
A full list of determinants relating to abbreviations such as PAHs, VOCs, SVOCs, PCBs etc. is available upon request.
Where results have been labelled as deviating for any reason, the data may not be representative of the sample at the point of sampling:

[I/S]: Insufficient Sample
[U/S]: Unsuitable Sample
[A]: Date of Sampling not supplied
[B]: Sample age exceeds recommended storage time
[C]: Samples not received in appropriate containers
[D]: Broken Container
< "Less Than"
> "Greater Than"

Where any sub-contracted results have been noted as deviating by the laboratory in question, their deviations codes will be applied and detailed.
Accreditation statements are correct at the time of issue.
This report shall not be reproduced in part without the approval of Decus Research Ltd, nor used in any way as to lead to misrepresentation of the results or their implications.

**********END OF REPORT**********

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