

Appendix 8.3 Water Monitoring Analysis

Test	Units	RP01	RP02	RP04	RP05	RP06	RP07	RP09	GW Source	Surface Water		Units	Atrisksoil WSV	WHO DWS	Private Water Supply Regs NI 2009	UK DWS	Freshwater EQS AA	Freshwater EQS Max	UK Salmonid / Cyprinid Waters
Ammonia as N	mg/l	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11	<0.11		mg/l							
Sulphate	mg/l	16	9.87	8.91	9.67	7.99	6.92	5.86	15.7	10.2		mg/l			250	250			
pH	units	6.85	7.24	8.56	8.33	8.13	6.97	6.81	6.94	7.44		ph units							6 to 9
Chloride	mg/l	18.1	8.05	7.71	8.08	8.09	5.86	<0.35	6.41	6.23		mg/l			250	250	250		
Orthophosphate	mg/l	<0.07	0.45	0.18	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07		mg/l							
Alkalinity	mg/l	140	159	111	168	140	120	<5	126	113		mg/l							
COD	mg/l	<25	<25	33	<25	<25	<25	<25	<25	<25		mg/l							
Ammoniacal Nitrogen as NH4	mg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3		mg/l			0.5				
Cyanide, Total	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		mg/l				50	1	5	
Nitrate as NO3	mg/l	7.26	10.5	1.04	4.69	2.33	3.46	<0.3	4.3	2.14		mg/l		50		50			
Sulphide	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		mg/l							
Sulphur, Free	mg/l	<0.0545	<0.06	<0.0545	<0.05	<0.06	<0.0545	<0.0545	<0.05	<0.0545		n/a							
Arsenic (diss.filt)	µg/l	0.164	0.205	2.27	1.09	2.3	0.135	<0.12	0.221	0.273		µg/l		10	10	10	50		
Cadmium (diss.filt)	µg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		µg/l		3	5	5			
Chromium (diss.filt)	µg/l	2.21	2.67	0.897	1.83	1.58	1.32	0.258	1.75	1.48		µg/l		50	50	50			
Chromium, Hexavalent	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03		mg/l							
Copper (diss.filt)	µg/l	0.851	1.08	1.59	0.858	0.979	<0.85	<0.85	66.9	<0.85		µg/l		2000	2000	2000			
Lead (diss.filt)	µg/l	0.041	0.021	0.052	0.034	<0.02	0.199	0.024	0.285	0.021		µg/l		10	25	25	7.2		
Magnesium (diss.filt)	mg/l	12.8	10.5	1.71	8.26	3.07	7.75	<0.036	9.75	5.47		mg/l				50			
Mercury (diss.filt)	µg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01		µg/l	428	6	1	1	0.05	0.07	
Nickel (diss.filt)	µg/l	0.536	0.511	1.3	0.431	0.402	0.364	<0.15	0.443	0.587		µg/l		70	20	20	20		
Selenium (diss.filt)	µg/l	<0.39	<0.39	0.863	0.729	5.39	0.445	<0.39	0.582	0.409		µg/l		40	10	10			
Sodium (diss.filt)	mg/l	11.2	13.5	41.1	20.1	31.5	16.2	<0.076	19.5	18.8		mg/l			200	200			
Zinc (diss.filt)	µg/l	<0.41	0.673	<0.41	<0.41	1.32	1.62	<0.41	15.1	2.82		µg/l				5000			
Calcium (tot.unfilt)	mg/l	49.5	59.7	13.9	55.5	43.1	30.8	<0.057	39.1	33.9		mg/l				250			
Phenols, Total Detected monohydric	mg/l	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016		mg/l							
Mineral oil >C10-C40 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l							
Aliphatics >C10-C12	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l	2230	300					
Aliphatics >C12-C16 (aq)	µg/l	<10	<10	15	<10	<10	<10	<10	<10	<10		µg/l	no wsv	300					
Aliphatics >C16-C21 (aq)	µg/l	<10	<10	55	<10	<10	<10	<10	<10	<10		µg/l		300* (no guideline value C8-C16 used)					
Aliphatics >C21-C35 (aq)	µg/l	<10	<10	135	<10	<10	<10	<10	<10	<10		µg/l		300* (no guideline value C8-C16 used)					
Aliphatics >C5-C6	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l	198000	15000					
Aliphatics >C6-C8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l	144000	15000					
Aliphatics >C8-C10	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l	2900	300					
Aromatics >EC10-EC12	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l	380000	100					
Aromatics >EC12-EC16 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l	no wsv	100					
Aromatics >EC16-EC21 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l		90					
Aromatics >EC21-EC35 (aq)	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l		90					
Aromatics >EC5-EC7	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l	8460						
Aromatics >EC7-EC8	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l	9090000	**10 (benzene proxy)					
Aromatics >EC8-EC10	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l	96500	**300 (ethylbenzene proxy)					
Benzene	µg/l	<7	<7	<7	<7	<7	<7	<7	<7	<7		µg/l	8460	10		1	10	50	
Ethylbenzene	µg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5		µg/l	1250000	300			20	200	
GRO >C5-C12	µg/l	<50	<50	<50	<50	<50	<50	<50	<50	<50		µg/l							
GRO Surrogate %	%	105	108	110	107	107	107	107	107	103									
m,p-Xylene	µg/l	<8	<8	<8	<8	<8	<8	<8	<8	<8		µg/l	413000/432000	500				30	
Methyl tertiary butyl ether	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3		µg/l							
o-Xylene	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3		µg/l	503000	500				30	
Sum of detected BTEX	µg/l	<28	<28	<28	<28	<28	<28	<28	<28	<28		µg/l							
Sum of detected Xylenes	µg/l	<11	<11	<11	<11	<11	<11	<11	<11	<11		µg/l		500					
Toluene	µg/l	<4	<4	<4	<4	<4	<4	<4	<4	<4		µg/l		700					
Total Aliphatics & Aromatics >C5-35 (aq)	µg/l	<10	<10	205	<10	<10	<10	<10	<10	<10		µg/l							
Total Aliphatics >C12-C35 (aq)	µg/l	<10	<10	205	<10	<10	<10	<10	<10	<10		µg/l							
Total Aromatics >EC12-	µg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10		µg/l							
Acenaphthene (aq)	µg/l	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015		µg/l	no wsv						
Acenaphthylene (aq)	µg/l	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011		µg/l					0.1	0.4	
Anthracene (aq)	µg/l	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015		µg/l	no wsv				0.1	0.4	
Benzo(a)anthracene (aq)	µg/l	<0.017	<0.017	0.0596	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017		µg/l	no wsv						
Benzo(a)pyrene (aq)	µg/l	<0.009	<0.009	0.126	0.0217	0.0426	<0.009	<0.009	<0.009	<0.009		µg/l	no wsv	0.7		0.01	0.05	0.1	
Benzo(b)fluoranthene (aq)	µg/l	<0.023	<0.023	0.0818	<0.023	0.0352	<0.023	<0.023	<0.023	<0.023		µg/l	no wsv						
Benzo(g,h,i)perylene (aq)	µg/l	<0.016	<0.016	0.0888	<0.016	0.033	<0.016	<0.016	<0.016	<0.016		µg/l	no wsv						
Benzo(k)fluoranthene (aq)	µg/l	<0.027	<0.027	0.0898	<0.027	0.0319	<0.027	<0.027	<0.027	<0.027		µg/l	no wsv						
Chrysene (aq)	µg/l	<0.013	<0.013	0.1	0.0187	0.0316	<0.013	<0.013	<0.013	<0.013		µg/l	no wsv						
Dibenzo(a,h)anthracene (aq)	µg/l	<0.016	<0.016	0.0172	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016		µg/l	no wsv						
Fluoranthene (aq)	µg/l	<0.017	<0.017	0.141	0.0217	0.0491	<0.017	<0.017	<0.017	<0.017		µg/l	no wsv				0.1	1	
Fluorene (aq)	µg/l	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014		µg/l	no wsv						
Indeno(1,2,3-cd)pyrene (aq)	µg/l	<0.014	<0.014	0.0443	<0.014	0.0274	<0.014	<0.014	<0.014										

Dibenzofuran (aq)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Diethyl phthalate (aq)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		no wsv	8						
Dimethyl phthalate (aq)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l				200	1000		
Hexachlorobenzene (aq)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Hexachlorobutadiene (aq)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1			0.6						
Hexachlorocyclopentadiene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Hexachloroethane (aq)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		50							
Indeno(1,2,3-cd)pyrene (aq)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l				0.1			
Isophorone (aq)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
n-Dibutyl phthalate (aq)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	no wsv				8	40	
n-Dioctyl phthalate (aq)	µg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5		µg/l	no wsv				20	40	
Nitrobenzene (aq)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
n-Nitroso-n-dipropylamine	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Pentachlorophenol (aq)	µg/l	<1	<1	<10	<1	<1	<1	<1	<1	<10		µg/l		9			0.4	1	
Phenol (aq)	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	269000000				7.7	4.6	
1,1,1,2-Tetrachloroethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		96700							
1,1,1-Trichloroethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	1270000				100		
1,1,2,2-Tetrachloroethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		650000							
1,1,2-Trichloroethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	208000				400		
1,1-Dichloroethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	1110000						
1,1-Dichloroethene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	65600						
1,1-Dichloropropene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
1,2,3-Trichlorobenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
1,2,3-Trichloropropane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
1,2,4-Trichlorobenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
1,2,4-Trimethylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		98300							
1,2-Dibromo-3-chloropropane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
1,2-Dibromoethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l		0.4					
1,2-Dichlorobenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l		1000			3	10	
1,2-Dichloroethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	3540		30				
1,2-Dichloropropane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	11100		40				
1,3,5-Trichlorobenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
1,3,5-Trimethylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
1,3-Dichlorobenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
1,3-Dichloropropane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
1,4-Dichlorobenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l		300					
2,2-Dichloropropane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
2-Chlorotoluene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
4-Bromofluorobenzene**	%	94.3	95.7	95.8	94.5	95.3	93.5	94.5	94.7	96.2									
4-Chlorotoluene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
4-iso-Propyltoluene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	389000						
Benzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l		10			1	10	50
Bromobenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		87700							
Bromochloromethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Bromodichloromethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	6820						
Bromoform	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	1770000						
Bromomethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Carbon disulphide	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Carbontetrachloride	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l		4			3	12	
Chlorobenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		1300000							
Chloroethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		4180000							
Chloroform	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	369000					2.5	
Chloromethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		5500							
cis-1,2-Dichloroethene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		54600							
cis-1,3-Dichloropropene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Dibromochloromethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		38700							
Dibromofluoromethane**	%	113	113	113	113	115	111	114	112	110									
Dibromomethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1				0.4					
Dichlorodifluoromethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Dichloromethane	µg/l	<3	<3	<3	<3	<3	<3	<3	<3	<3		µg/l	1500000		20			20	
Ethylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l		300			20	200	
Hexachlorobutadiene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l		0.6			0.1	0.6	
Isopropylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
m,p-Xylene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	413000/432000		500			30	
Methyl tertiary butyl ether	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		33800000							
Naphthalene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l					0.1	2.4	
n-Butylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
o-Xylene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	503000		500			30	
Propylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		1100000							
sec-Butylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Styrene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	3530000		20			50	500
tert-Amyl methyl ether	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
tert-Butylbenzene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Tetrachloroethene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	174000		40		10		
Toluene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	9090000		700			50	380
Toluene-d8**	%	99.4	99.7	99.4	98.4	99.4	97.9	99.7	99.4	98.7		n/a							
trans-1,2-Dichloroethene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1			65700		50				
trans-1,3-Dichloropropene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Trichloroethene	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	20700		20		10		10
Trichlorofluoromethane	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1									
Vinyl Chloride	µg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1		µg/l	249		0.3		0.5	0.5	

Sources of Information / Notes

UK DWS - The Water Supply (Water Quality) Regulations 2010.

DEFRA: Proposed Aquatic Environmental Quality Standards.

WHO Guidelines for Drinking Water Quality. Fourth edition (2011)

WHO Petroleum Products in Drinking Water 2005

*Limit within Private Water Supply Regs NI 2009 is 0.1µg/l for sum of 4 specified compounds

** - There are no WHO guideline values for aliphatic fractions C16 - C21 and C21-35, therefore the guideline values of C8-C16 applied.

Sample Date 15/01/13