


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

 <p>1181</p> <p>Accredited to ISO/IEC 17025:2005</p>	Northumbrian Water Ltd (trading as Northumbrian Water Scientific Services)	
	Issue No: 065 Issue date: 05 April 2012	
	Northumberland Dock Road Howdon Wallsend Tyne and Wear NE28 0QD	Contact: Mr M Kilburn Tel: +44 (0)870 320 4567 Fax: +44 (0)191 296 8560 E-Mail: mark.kilburn@nwl.co.uk Website: www.nw-ss.co.uk
Testing performed by the Organisation at the locations specified below		

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details		Activity	Location code
Address Northumberland Dock Road Wallsend Tyne and Wear NE28 0QD	Local contact Mr P Burton Tel: +44 (0)191-296 8500 Fax: +44 (0)191-296 8560 Email: paul.burton@nwl.co.uk	Support Functions: Quality System Quality Audit administration Sampling and Testing: Environmental Analysis Water Sampling Stack Emissions Testing Sound monitoring	Howdon
Address Levenmouth Laboratory Levenmouth Waste Water Treatment Works Methilhaven Fife KY8 3LA	Local contact Mr P Burton Tel: +44 (0)191-296 8500 Fax: +44 (0)191-296 8560 Email: paul.burton@nwl.co.uk	Environmental Analysis	Levenmouth
Address Cork Laboratory Carrigrennan WWTW Courttown Industrial Estate Little Island Cork Eire	Local contact Mr P Burton Tel: +44 (0)191-296 8500 Fax: +44 (0)191-296 8560 Email: paul.burton@nwl.co.uk	Environmental Analysis	Cork
Address Chelmsford Laboratory Hanningfield Treatment Works South Hanningfield Chelmsford Essex CM3 8HS	Local contact Dr I Barnabas Tel: +44 (0)1661 855600 Fax: +44 (0)1661 855610 Email: ian.barnabas@nwl.co.uk	Environmental Analysis	Chelmsford



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<p>Address Horsley Laboratory Water Lane Horsley Newcastle-upon-Tyne NE15 0PA</p>	<p>Local contact Dr I Barnabas Tel: +44 (0)1661 855600 Fax: +44 (0)1661 855610 Email: ian.barnabas@nwl.co.uk</p>	<p>Environmental Analysis</p>	<p>Horsley</p>
<p>Address 40 Court Road Industrial Estate Cwmbran Torfaen NP44 3AS</p>	<p>Local contact Mr M Elliott Tel: +44 (0)191-296 8500 Fax: +44 (0)191-296 8560 Email: mark.elliott@nwl.co.uk</p>	<p>Sampling and Testing: Stack emissions Testing</p>	<p>Cwmbran</p>
<p>Address Leat House Pattinson Road District 15 Washington NE38 8LB</p>	<p>Local contact Mr D Waites Tel: +44 (0)191-296 8500 Fax: +44 (0)191-296 8560 Email:</p>	<p>Trade effluent sampling</p>	<p>Site - Trade effluents</p>
<p>Address Leat House Pattinson Road District 15 Washington NE38 8LB</p>	<p>Local contact Mr A Brown Tel: +44 (0)191-296 8500 Fax: +44 (0)191-296 8560 Email:</p>	<p>Raw and potable water sampling</p>	<p>Site - Water clean</p>



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Site activities performed away from the locations listed above:

Location details	Activity	Location code
Customer Sites requiring Stack emissions Testing	Sampling and on site testing of atmospheric pollutants (Teams from Howdon and Cwmbran offices)	Site - Stacks
Waste water treatment works	Sampling (teams from Thornaby and Howdon)	Site - Water waste
Customer premises - Trade effluents	Sampling (teams from Thornaby and Howdon)	Site - Trade effluent
Water treatment works (to include trade effluent to controlled water), service reservoirs and commercial, industrial and domestic premises	Sampling (teams from Horsley and Chelmsford)	Site - Water clean
Any suitable customer premises	Sound insulation tests including pre-completion testing for building regulations approved document E:2003 (teams from Howdon)	Site - Noise



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DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
LAND SOILS/SEDIMENTS/ SLUDGES (soils only)	<u>Chemical Tests</u>	Documented In-House Methods	
	Chloride (water soluble 2:1)	H120 using Ion Chromatography	Howdon
	Chloride (water soluble 5:1)	H182 based on Second Site Properties Method	Howdon
	Conductivity	H143 Conductivity meter	Howdon
	Cyanide (easily liberatable)	H202 using segmented flow colorimetry	Howdon
	Cyanide (Total)	H201 using segmented flow colorimetry	Howdon
	Chromium (hexavalent)	H125 using Colorimetry	Howdon
	Loss on ignition	H181 based on Second Site Properties Method	Howdon
	pH	H058 using pH meter	Howdon
	Sulphate (water soluble)	H120 using Ion Chromatography	Howdon
	Sulphate (water soluble 5:1)	H182 based on Second Site Properties Method	Howdon
	Sulphate (total)	H119 using ICP-OES	Howdon
	(soils only)	Sulphide	H122 using Distillation and Colorimetry
(soils only)	Thiocyanate	H151 using colorimetry	Howdon
(soils only)	Boron (water soluble)	H207 using ICP-OES	Howdon



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
LAND SOILS/SEDIMENTS/ SLUDGES (cont'd)	<u>Chemical Tests</u> (cont'd)		
(soils and sludges)	Antimony, Arsenic, Barium, Beryllium, Bismuth, Cadmium, Calcium, Cobalt, Copper, Chromium, Gallium, Indium, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Selenium, Silver, Sodium, Strontium, Sulphur, Thallium, Tin, Titanium, Vanadium, Zinc	H198 using Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	Howdon
(sludges only)	Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth, Cadmium, Calcium, Chromium, Cobalt, Copper, Gallium, Indium, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Selenium, Silver, Sodium, Strontium, Sulphur, Thallium, Tin, Titanium, Vanadium, Zinc	H198 using Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	Howdon
(and other non biological solid materials)	Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans	Method O36 using solvent extraction followed by HRGC/HRMS	Howdon
(and other non biological solid materials)	Polychlorinated biphenyls: Congener 77 Congener 81 Congener 105 Congener 114 Congener 118 Congener 123 Congener 126 Congener 156 Congener 157 Congener 167 Congener 169 Congener 189	Method O84 using HRGC/HRMS	Howdon



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<p>LAND SOILS/SEDIMENTS/ SLUDGES (cont'd)</p> <p>(soils only)</p>	<p><u>Chemical Tests</u> (cont'd)</p> <p>Organochlorine Pesticides and Polychlorinated biphenyls: Aldrin BHC-alpha BHC-beta BHC-gamma DDE-op DDT-op DDT-pp DDE-pp Dieldrin Endosulphan-alpha Endosulphan-beta Endrin Hexachlorobenzene Isodrin TDE-op TDE-pp Trifluralin Congener 28/31 Congener 52 Congener 101 Congener 118 Congener 138 Congener 153 Congener 180</p>	<p>Method O80 using GC-MS</p>	<p>Howdon</p>
<p>(soils only)</p>	<p>Volatile Organic Compounds: chloromethane vinyl chloride trichlorofluoromethane 1,1-dichloroethene trans-1,2-dichloroethene MTBE 1,1-dichloroethane cis-1,2-dichloroethene 2,2-dichloropropane bromochloromethane chloroform 1,1,1-trichloroethane 1,1-dichloropropene 1,2-dichloroethane benzene</p>	<p>Method O85 using headspace GC-MS</p>	<p>Howdon</p>



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LAND SOILS/SEDIMENTS/ SLUDGES (cont'd) (soils only) (cont'd)	<u>Chemical Tests</u> (cont'd) Volatile Organic Compounds: (cont'd) trichloroethene 1,2-dichloropropane dibromomethane trans-1,3-dichloropropene toluene cis-1,3-dichloropropene 1,1,2-trichloroethane 1,3-dichloropropane tetrachloroethene 1,2-dibromoethane chlorobenzene 1,1,1,2-tetrachloroethane ethylbenzene m+p- xylene o-xylene styrene isopropylbenzene 1,1,2,2-tetrachloroethane 1,2,3-trichloropropane bromobenzene n-propylbenzene 2-chlorotoluene 1,3,5-trimethylbenzene 4-chlorotoluene tert-butylbenzene 1,2,4-trimethylbenzene sec-butylbenzene 4-isopropyltoluene 1,3-dichlorobenzene 1,4-dichlorobenzene n-butylbenzene 1,2-dichlorobenzene 1,3,5-trichlorobenzene 1,2,4-trichlorobenzene hexachlorobutadiene naphthalene dichlorodifluoromethane dichloromethane carbon tetrachloride 1,2-dibromo-3-chloropropane 1,2,3-trichlorobenzene		



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LAND SOILS/SEDIMENTS/ SLUDGES (cont'd)	<u>Chemical Tests</u> (cont'd)		
(soils only)	Phenol Cresols Naphthols Dimethylphenols Ethylphenols Trimethylphenols Isopropylphenols	Method O24 using HPLC	Howdon
(soils only)	Polynuclear Aromatic Hydrocarbons: Acenaphthene Acenaphthylene Anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Fluorene Benzo(a)anthracene Benzo(ghi)perylene Chrysene Dibenz(a,h)anthracene Fluoranthene Indeno(1,2,3,c.d)pyrene Naphthalene Phenanthrene Pyrene Total PAH	Method O27 using GCMS	Howdon



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LAND SOILS/SEDIMENTS/ SLUDGES (cont'd) (soils only)	<u>Chemical Tests</u> (cont'd)		
	Petroleum Range Organics (C5-C10 and C5-C12) Also fractionation and banding: C5-C6 >C6-C7 >C7-C8 >C6-C8 >C8-C10 EC5-EC7 aromatics (benzene) EC>7-EC8 aromatics (toluene) EC>8-EC10 aromatics C6-C8 aromatics C5-C6 aliphatics >C6-C7 aliphatics >C6-C8 aliphatics >C8-C10 aliphatics C5-C10 aliphatics	Method O87 using headspace GC-MS	Howdon
	Semivolatile Organic Compounds: 2-Picoline Aniline Phenol Bis(2-chloroethyl)ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzyl Alcohol 1,2-Dichlorobenzene 2-Methylphenol bis(2-Chloroisopropyl)ether N-Nitrosodipropylamine 4-Methylphenol Hexachloroethane Nitrobenzene Acetophenone Isophorone 2-Nitrophenol 2,4-Dimethylphenol Bis(2-chloroethoxy)methane Benzoic Acid 2,4-Dichlorophenol 1,2,4-Trichlorobenzene	Method O34 Solvent extraction followed by GCMS	Howdon



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LAND SOILS/SEDIMENTS/ SLUDGES (cont'd)	<u>Chemical Tests</u> (cont'd) Semivolatile Organic Compounds: (cont'd) 2,6-Dichlorophenol 4-Chloroaniline Hexachlorobutadiene N-Nitrosopiperidine N-Nitroso-di-n-butylamine 4-Chloro-3-Methylphenol 2-Methylnaphthalene Hexachlorocyclopentadiene 2,4,6-Trichlorophenol 2,4,5 Trichlorophenol 2-Chloronaphthalene 1,2,4,5-Tetrachlorobenzene 1-Chloronaphthalene 2-Nitroaniline 2,6-Dinitrotoluene 3-Nitroaniline 2,4-Dinitrophenol Dibenzofuran Pentachlorobenzene 1-Naphthylamine 4-Nitrophenol 2,4-Dinitrotoluene 2-Naphthylamine 2,3,4,6-Tetrachlorophenol Dimethylphthalate Diethylphthalate 4-Chlorophenyl-phenylether 4-Nitroaniline 4,6-Dinitro-2-methylphenol N-Nitrosodiphenylamine 1,2-Diphenylhydrazine Diphenylamine 4-Bromophenyl-phenylether Phenacetin Hexachlorobenzene 4-Aminobiphenyl Pentachlorophenol Pentachloronitrobenzene Pronamide Di-n-Butylphthalate p-Dimethylaminoazobenzene Butylbenzylphthalate		



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LAND SOILS/SEDIMENTS/ SLUDGES (cont'd)	<u>Chemical Tests</u> (cont'd)		
	Semivolatile Organic Compounds: (cont'd)		
	3,3'-Dichlorobenzidine bis(2-ethylhexyl)phthalate 7,12-Dimethylbenz(a) anthracene Di-n-octylphthalate 3-Methylcholanthrene Dibenz(a,j)acridine Naphthalene Acenaphthylene Acenaphthene Fluorene Phenanthrene Anthracene Fluoranthene Pyrene Benzo(a)anthracene Chrysene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Benzo(g,h,i)perylene Tentatively Identified Compounds		
	Confirmation of uron herbicides, organophosphorus pesticides	Method O7 using GCMS	Howdon
Plus sorbent tubes	Identification of Organic Compounds	Method O8 using GCMS with reference to library data	Howdon
	Total Petroleum Hydrocarbons Hydrocarbons quantified according to carbon banding C10-C40, C15-C20 etc	Method O81 using solvent extraction GC-FID	Howdon
	Identification of Oil Pollutants Animal fat Mineral oil Vegetable oil	Method O13 using GC-FID Method O12 using GC-FID Method O13 using GC-FID	Howdon



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LAND SOILS/SEDIMENTS/ SLUDGES (cont'd)	<u>Chemical Tests</u> (cont'd) Aliphatic (Mineral Oil) and Aromatic fractionation of Total Petroleum Hydrocarbons	Method O81 using solvent extraction GC-FID	Howdon
LAND SOILS	<u>Chemical Tests</u>	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - chemical testing of soil	
	Chloride (water soluble 5:1)	H182 based on Second Site Properties Method	Howdon
	Sulphate (water soluble 5:1)	H182 based on Second Site Properties Method	Howdon
	Total Sulphate	H119 using ICP-OES	Howdon
	Thiocyanate	H151 using colorimetry	Howdon
	Cyanide (easily liberatable)	H202 using segmented flow colorimetry	Howdon
	Cyanide (Total)	H201 using segmented flow colorimetry	Howdon
	Sulphur	Method O28 using HPLC	Howdon
	pH	Method H058	Howdon
	Loss on ignition	H181 based on Second Site Properties Method	Howdon
	Boron (water soluble)	H207 using ICP-OES	Howdon



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LAND SOILS (cont'd)	<u>Chemical Tests</u> (cont'd)		
	Antimony Arsenic Beryllium Cadmium Cobalt Copper Chromium Lead Manganese Molybdenum Nickel Selenium Thallium Vanadium Zinc	Method H198 using ICP-MS	Howdon
	Mercury	Method H186 by CVAFS	Howdon
	Polynuclear Aromatic Hydrocarbons: Benzo(a)anthracene Benzo(ghi)perylene Chrysene Dibenz(a,h)anthracene Fluoranthene Indeno(1,2,3,c.d)pyrene Naphthalene Phenanthrene Pyrene Acenaphthene Anthracene Benzo(b)fluoranthene Benzo(a)pyrene	Method O27 using GCMS	Howdon



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LAND SOILS (cont'd)	<u>Chemical Tests</u> (cont'd)		
	Petroleum Range Organics (C5-C10 and C5-C12) Also fractionation and banding: C5-C6 >C6-C7 >C7-C8 >C6-C8 >C8-C10 EC5-EC7 aromatics (benzene) EC>7-EC8 aromatics (toluene) EC>8-EC10 aromatics C6-C8 aromatics C5-C6 aliphatics >C6-C7 aliphatics >C6-C8 aliphatics >C8-C10 aliphatics C5-C10 aliphatics	Method O87 using headspace GC-MS	Howdon
	Total Petroleum Hydrocarbons	Method O81 using solvent extraction GC-FID	Howdon
	Phenol Cresols Dimethylphenols Ethylphenols Trimethylphenols Isopropylphenols	Method O24 using HPLC	Howdon
	Volatile Organic Compounds: chloromethane vinyl chloride trichlorofluoromethane 1,1-dichloroethene trans-1,2-dichloroethene MTBE 1,1-dichloroethane cis-1,2-dichloroethene 2,2-dichloropropane bromochloromethane chloroform 1,1,1-trichloroethane 1,1-dichloropropene 1,2-dichloroethane benzene trichloroethene	Method O85 using headspace GC-MS	Howdon



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<p>LAND SOILS (cont'd)</p>	<p><u>Chemical Tests</u> (cont'd)</p> <p>Volatile Organic Compounds: (cont'd)</p> <p>1,2-dichloropropane dibromomethane toluene 1,1,2-trichloroethane 1,3-dichloropropane tetrachloroethane 1,2-dibromoethane chlorobenzene 1,1,1,2-tetrachloroethane ethylbenzene m+p- xylene o-xylene styrene isopropylbenzene 1,1,2,2-tetrachloroethane 1,2,3-trichloropropane bromobenzene n-propylbenzene 2-chlorotoluene 1,3,5-trimethylbenzene 4-chlorotoluene tert-butylbenzene 1,2,4-trimethylbenzene sec-butylbenzene 4-isopropyltoluene n-butylbenzene 1,4-dichlorobenzene 1,3,5-trichlorobenzene 1,2,4-trichlorobenzene hexachlorobutadiene Naphthalene 1,2,3-trichlorobenzene</p>		



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ATMOSPHERIC POLLUTANTS AND EFFLUENTS - STACK GAS SAMPLES	<u>Chemical Tests</u>	Documented In-House Methods based on the following national, international and other recognised standards	
Sorbent tubes (silica gel)	Amines: Methylamine Dimethylamine Trimethylamine Morpholine Triethylamine	In-house procedures validated to NIOSH 2002 using GC-MS analysis (SOP H157) NIOSH 2010 using IC analysis (SOP H157)	Howdon
Sorbent tubes (silica gel)	Carboxylic acids Acetic acid Butyric acid Formic acid Propionic acid	In-house procedure using IC (SOP H167)	Howdon
Sorbent tubes (XAD 7)	Phenols and cresols: Phenol m-cresol p-cresol o-cresol m-chlorophenol o-chlorophenol p-chlorophenol p-chloro-o-cresol	In-house procedure validated to OSHA 32 using HPLC UV (SOP O70)	Howdon
Sorbent tubes	Volatile Organic Compounds	BS EN 13649:2002 and MDHS96 using solvent extraction and GC FID analysis (SOP O59)	Howdon
Sorbent tubes	Volatile Organic Compounds: Dichlorodifluoromethane Vinyl Chloride 1,1-Dichloroethene Dichloromethane (methylene chloride) trans-1,2-Dichloroethene 1,1-Dichloroethane 2,2-Dichloropropane cis-1,2-Dichloroethene	In-house method using thermal desorption and GC-MS Based on BS EN ISO 16017 - 1 and 2 (2001) (SOP O60)	Howdon



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<p>ATMOSPHERIC POLLUTANTS AND EFFLUENTS - STACK GAS SAMPLES (cont'd)</p> <p>Sorbent tubes (cont'd)</p>	<p><u>Chemical Tests</u> (cont'd)</p> <p>VOCs (cont'd)</p> <p>Bromochloromethane Chloroform 1,1,1-Trichloroethane Carbon tetrachloride 1,1-Dichloropropene Benzene 1,2-Dichloroethane Trichloroethene 1,2-Dichloropropane Dibromomethane Bromodichloromethane trans-1,3-Dichloropropene Toluene cis-1,3-Dichloropropene 1,1,2-Trichloroethane Tetrachloroethene 1,3-Dichloropropane Dibromochloromethane trans-1,3-Dichloropropene Toluene cis-1,3-Dichloropropene 1,1,2-Trichloroethane Tetrachloroethene 1,3-Dichloropropane Dibromochloromethane Chlorobenzene 1,1,1,2-Tetrachloroethane Ethyl Benzene m + p-Xylene o-Xylene Styrene Bromoform Isopropyl Benzene Bromobenzene 1,1,2,2-Tetrachloroethane 1,2,3-Trichloropropane n-Propylbenzene 2-Chlorotoluene 4-Chlorotoluene</p>	<p>Documented In-House Methods based on the following national, international and other recognised standards</p>	



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ATMOSPHERIC POLLUTANTS AND EFFLUENTS - STACK GAS SAMPLES (cont'd)	<u>Chemical Tests</u> (cont'd)	Documented In-House Methods based on the following national, international and other recognised standards	
Sorbent (cont'd)	VOCs (cont'd) 1,3,5-Trimethylbenzene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 4-Isopropyltoluene 1,2-Dichlorobenzene n-Butyl benzene 1,2-Dibromo-3-Chloropropane 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene Tentatively Identified Compounds		
Sorbent tubes (carbon)	Volatile Organic Compounds: Dichloromethane Chloroform Ethyl acetate 1,1,1-trichloroethane Benzene Trichloroethene Propyl acetate Toluene Tetrachloroethene Butyl acetate Ethylbenzene m/p-xylene o-xylene 2-chlorotoluene Benzyl chloride Acetone 1,1-dichloroethane Cyclohexane Tetrahydrofuran 2-butanone 1,2-dichloroethane Isopropyl acetate	In-house method using solvent desorption and GC-FID Based on MDHS 96 (SOP O96)	Howdon



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ATMOSPHERIC POLLUTANTS AND EFFLUENTS - STACK GAS SAMPLES (cont'd)	<u>Chemical Tests</u> (cont'd)	Documented In-House Methods based on the following national, international and other recognised standards	
Sorbent tubes (cont'd)	VOCs (cont'd)		
	2-pentanone 4-methyl-2-pentanone 2-hexanone Chlorobenzene 1,1,2,2-tetrachloroethane		
Sorbent tubes (silica gel)	Methanol		
Sorbent tubes (carbon)	Epichlorohydrin Styrene Divinylbenzene	In-house method using GCMS (SOP O73)	Howdon
Polyurethane foam plugs	Polychlorinated Dibenzo-p-Dioxins and polychlorinated dibenzofurans	In-house method using High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS) based on CEN 1948-1:1997 (SOP O55)	Howdon



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ATMOSPHERIC POLLUTANTS AND EFFLUENTS - STACK GAS SAMPLES (cont'd)	<u>Chemical Tests</u> (cont'd)	Documented In-House Methods based on the following national, international and other recognised standards	
Polyurethane foam plugs	Polychlorinated Biphenyls: Congener 77 Congener 81 Congener 105 Congener 114 Congener 118 Congener 123 Congener 126 Congener 156 Congener 157 Congener 167 Congener 169 Congener 189	In-house method using High Resolution Gas Chromatography/High Resolution Mass Spectrometry (GCHRMS) based on CEN 1948-1:1997 (SOP O84)	Howdon
Impinger solutions (sulphuric acid)	Ammonia	In-house method using continuous flow autoanalysis (SOP H027)	Howdon
Impinger solution (sulphuric acid)	Ammonia	In-house method using Ion Chromatography (SOP H152)	Howdon
Impinger solutions (hydrogen peroxide)	Bromide Sulphate	In-house procedure using IC (SOP H153)	Howdon
Impinger solutions (hydrogen peroxide)	Chloride	In-house procedure using IC based on BS EN 1911-3:1998 (SOP H153)	Howdon
Impinger solutions (sodium hydroxide)	Fluoride Bromide Sulphate Iodide Chloride	In-house procedure validated to US EPA Method 26 using IC (SOP H164)	Howdon
Impinger solutions (sodium hydroxide)	Hydrogen fluoride	BS ISO 15713:2006 (EA MID 15173) (modified) using IC analysis (SOP 164)	Howdon



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ATMOSPHERIC POLLUTANTS AND EFFLUENTS - STACK GAS SAMPLES (cont'd)	<u>Chemical Tests</u> (cont'd)	Documented In-House Methods based on the following national, international and other recognised standards	
Impinger solutions (sulphuric acid)	Fluoride Chloride Bromide	In-house procedure validated to US EPA Method 26 using IC analysis (SOP H165)	Howdon
Impinger solution (water)	Aldehydes: Formaldehyde (free and total)	In-house procedure using spectrophotometric analysis (SOP H040 and H039)	Howdon
Impinger solution (water)	Hydrogen Chloride	BS EN 1911-3:using IC analysis (SOP H090)	Howdon
Impinger solution (water)	Bromide Fluoride Sulphate	BS EN 1911-3:using IC analysis (SOP H090)	Howdon
Impinger solutions (carboxymethyl cellulose)	Sulphide	In-house method using spectrophotometry (SOP H041)	Howdon
Impinger solutions (sodium hydroxide)	Free and Total Cyanide	In-house method using Segmented Flow Colorimetry (SOP H127)	Howdon
Impinger solutions (sodium hydroxide)	Phenolic compounds	In-house method using Segmented Flow Colorimetry (SOP H128)	Howdon
Impinger solutions (sulphuric acid)	Phenolic compounds	In-house method using Segmented Flow Colorimetry (SOP H128)	Howdon
Impinger solutions (water)	Amines: Methylamine Dimethylamine Trimethylamine Morpholine Triethylamine	In-house procedures validated to NIOSH 2002 using GC-MS analysis (SOP H157) NIOSH 2010 using IC analysis (SOP H157)	Howdon



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Impinger solutions (water)	Carboxylic acids Acetic acid Butyric acid Formic acid Propionic acid	In-house procedure using IC (SOP H167)	Howdon
Impinger solutions	Acetic anhydride	In-house method using spectrophotometry (SOP H156)	Howdon
Filters Probe rinses (nitric acid) Impinger solutions (nitric acid/hydrogen peroxide)	Trace elements (heavy metals) Aluminium Antimony Arsenic Barium Beryllium Bismuth Cadmium Calcium Cobalt Chromium Copper Gallium Iron Indium Lead Lithium Magnesium Manganese Molybdenum Nickel Phosphorus Potassium Selenium Sodium (impingers only) Strontium Tin Titanium Thallium Vanadium Zinc	BS EN 14385:2004 using microwave and HF digestion followed by: ICP-MS analysis (SOP H191)	Howdon



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Filters Probe rinses (nitric acid) Impinger solutions (nitric acid/hydrogen peroxide, sulphuric acid/potassium permanganate, nitric acid/potassium dichromate)	Trace elements (heavy metals): Mercury	BS EN 13211:2001 (BS EN 1483:2007) using microwave and HF digestion followed by: ICP-MS analysis (SOP H191) AFS analysis (SOP H108)	Howdon
Filters Probe and impinger rinses (toluene, acetone and water) XAD-2 resin trap	Poly Chlorinated Dibenzo-p-Dioxins (PCDD): 2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,6,7,8-HxCDD 1,2,3,4,7,8-HxCDD 1,2,3,7,8,9-HxCDD 1,2,3,4,6,7,8-HpCDD OCDD Poly Chlorinated Dibenzo Furans (PCDF): 2,3,7,8-TCDF 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF 1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF OCDF	BS EN 1948-2:2006 and BS EN 1948-3:2006. Extraction followed by High Resolution Gas Chromatography/High Resolution Mass Spectrometry (GCHRMS) (SOP O55)	Howdon
Filters Probe and impinger rinses (toluene, acetone and water) XAD-2 resin trap	Polycyclic Aromatic Hydrocarbons (PAHs): Acenaphthene Acenaphthylene Anthracene Benz(a)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene	ISO 11338:2003 by GC-MS (SOP O49)	Howdon



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<p>ATMOSPHERIC POLLUTANTS AND EFFLUENTS - STACK GAS SAMPLES (cont'd)</p> <p>Filters Probe and impinger rinses (toluene, acetone and water) XAD-2 resin trap (cont'd)</p>	<p><u>Chemical Tests</u> (cont'd)</p> <p>Polycyclic Aromatic Hydrocarbons (PAHs) (cont'd)</p> <p>Benzo(ghi)perylene Chrysene Dibenz(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3,c,d)pyrene Naphthalene Phenanthrene Pyrene Total PAH (sum of 16 above)</p> <p>Also: Benzo(b)naphtha(2,1)thiophene Benzo(c)phenanthrene Cyclopenta(c,d)pyrene Cholanthrene Benzo(e)pyrene Anthranthene Dibenz(a,i)pyrene</p>	<p>Documented In-House Methods based on the following national, international and other recognised standards</p>	
<p>Filters Probe and impinger rinses (toluene, acetone and water) XAD-2 resin trap</p>	<p>Polychlorinated Biphenyls(PCBs): Congener 77 Congener 81 Congener 105 Congener 114 Congener 118 Congener 123 Congener 126 Congener 156 Congener 157 Congener 167 Congener 169 Congener 189</p>	<p>BS EN 1948-2:2006 and BS EN 1948-3:2006. Extraction followed by GCHRMS (SOP O84)</p>	<p>Howdon</p>



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POLLUTANTS AND EFFLUENTS	<u>Chemical Tests</u>		
Filters	Chloride Fluoride Sulphate	In-house method using Ion Chromatography (SOP H130)	Howdon
Filters	Chloride (collected on filters)	BS EN 1911-3:using IC analysis (SOP H130)	Howdon
Filters	Trace Elements Boron	In-house method using aqua regia digestion followed by ICP-OES (SOP H129)	Howdon
Filters	Sodium	In-house method using aqua regia digestion followed by ICP-OES (SOP H065)	Howdon
	<u>Physical Tests</u>		
Filter Papers and Rinse solutions	Weighing of particulate matter	BS EN 13284-1:2002 (SOP H174)	Howdon
	Weighing of Particulate Matter <10 micron (PM ₁₀ and PM _{2.5})	In-house method based on US EPA 40 (SOP H112) US EPA Method 201A (SOP H174) BS EN ISO 23210:2009 (SOP H174)	Howdon
WATERS	<u>Chemical Tests</u>		
Waters and effluents		Documented In-House Methods based on 'Methods for the Examination of Water and Associated Materials', Department of the Environment Standing Committee of Analysts, Methods developed by instrument manufacturers	
	Alkalinity	H109 using autotitrator	Howdon



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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
(Ground water, untreated sewage, treated sewage effluent, and trade effluent)	Bromide	H090 using Ion Chromatography	Howdon
	Chloride	H090 using Ion Chromatography	Howdon
	Formaldehyde - free - total	H040 using Spectrophotometry H039 using Spectrophotometry	Howdon
	Fluoride	H090 using Ion Chromatography	Howdon
	pH	H031 by pH meter	Howdon
	Sulphate	H090 using Ion Chromatography	Howdon
	Total organic carbon	H154 using combustion/NDIR	Howdon
	Boron	H141	Howdon
	Mercury	H108 using Cold Vapour Atomic Fluorescence Spectrometry	Howdon
	Phosphates	H045 using continuous flow autoanalysis	Howdon
	Settleable solids	H036 using Gravimetry	Howdon
	Surfactants - anionic	H104 using Manual Extraction and Colorimetry	Howdon
- non-ionic	H052 using Colorimetry	Howdon	
Suspended solids	H035 using Gravimetry	Howdon Levenmouth Cork	



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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Waters and effluents (cont'd)	Calcium Magnesium Potassium Sodium	H206 using ICP-OES	Howdon
	Hardness - total	H096 by Calculation from Calcium and Magnesium (by H206)	Howdon
	Elements: Aluminium Antimony Arsenic Barium Beryllium Bismuth Boron Cadmium Chromium Cobalt Copper Gallium Indium Iron Lead Lithium Manganese Molybdenum Nickel Phosphorus Selenium Strontium Thallium Tin Titanium Vanadium Zinc	H205 using ICP-MS	Howdon
	Elements: Tellurium Uranium	H211 using ICP-MS	Howdon



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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Waters and effluents (cont'd)			
Including groundwater	Phosphorus	H168 using ICP-OES	Howdon
	Ammonia	H027 using continuous flow autoanalysis	Howdon
	Free and Total Cyanide	H127 using Segmented Flow Colorimetry	Howdon
	Thiocyanate	H162 using colorimetry	Howdon
	Nitrate Nitrite	H027 using continuous flow autoanalysis	
	Sulphides	H041 using Spectrophotometry	Howdon
	Biochemical oxygen demand	H042 using oxygen meter	Howdon Levenmouth Cork
	Chemical oxygen demand	H171 using colorimetry	Howdon Levenmouth Cork
	Conductivity	H032 using meter/autotitrator	Howdon
Untreated sewage, treated sewage effluent and trade effluent	Silver	H217 using ICPOES	Howdon
Groundwater and potable water (non regulatory) only	Phenols: Phenol Cresols Naphthols Dimethylphenols Ethylphenols Trimethylphenols Isopropylphenols	O9 using HPLC	Howdon



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WATERS (cont'd) Waters and effluents (cont'd) (Groundwater only)	<u>Chemical Tests</u> (cont'd)		
	Phenolic compounds	H128 using Segmented Flow Colorimetry	Howdon
	Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans	Method O36 using solvent extraction followed by HRGC/HRMS	Howdon
	Total Nitrogen Kjeldahl Nitrogen by calculation	H172 using Chemilumiscence	Howdon
	Organochlorine Pesticides and Polychlorinated biphenyls: Aldrin BHC-alpha BHC-beta BHC-gamma DDE-op DDE-pp DDT-op DDT-pp Dieldrin Endosulphan-alpha Endosulphan-beta Endrin Hexachlorobenzene Isodrin TDE-op TDE-pp Tecnazene Trifluralin Congener 28/31 Congener 52 Congener 101 Congener 118 Congener 138 Congener 153 Congener 180	Method O52 using GCMS	Howdon



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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Waters and effluents (cont'd)	Polychlorinated Biphenyls: Congener 77 Congener 81 Congener 105 Congener 114 Congener 118 Congener 123 Congener 126 Congener 156 Congener 157 Congener 167 Congener 169 Congener 189	Method O84 using HRGC/HRMS	Howdon
	Triazines: Atrazine Trietazine Propazine Simazine	Method O53 by GC-MS	Howdon
	Volatile Organic Compounds: Dichlorodifluoromethane Chloromethane Vinyl Chloride Trichlorofluoromethane 1,1-Dichloroethene Dichloromethane (methylene chloride) trans-1,2-Dichloroethene 1,1-Dichloroethane 2,2-Dichloropropane cis-1,2-Dichloroethene Bromochloromethane Chloroform 1,1,1-Trichloroethane Carbon tetrachloride 1,1-Dichloropropene Benzene 1,2-Dichloroethane Trichloroethene 1,2-Dichloropropane Dibromomethane Bromodichloromethane trans-1,3-Dichloropropene Toluene	Method O26 Purge and trap GCMS	Howdon



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WATERS (cont'd) Waters and effluents (cont'd)	<u>Chemical Tests</u> (cont'd) Volatile Organic Compounds: (cont'd) cis-1,3-Dichloropropene 1,1,2-Trichloroethane Tetrachloroethene 1,3-Dichloropropane Dibromochloromethane 1,2-Dibromoethane Chlorobenzene 1,1,1,2-Tetrachloroethane Ethyl Benzene m + p-Xylene o-Xylene Styrene Bromoform Isopropyl Benzene Bromobenzene 1,1,2,2-Tetrachloroethane 1,2,3-Trichloropropane n-Propylbenzene 2-Chlorotoluene 4-Chlorotoluene 1,3,5-Trimethylbenzene tert-Butylbenzene 1,2,4-Trimethylbenzene sec-Butylbenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 4-Isopropyltoluene 1,2-Dichlorobenzene n-Butyl benzene 1,2-Dibromo-3-Chloropropane 1,2,4-Trichlorobenzene Hexachlorobutadiene Naphthalene 1,2,3-Trichlorobenzene 1,3,5-Trichlorobenzene		



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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Waters and effluents (cont'd)	Alcohols: Methanol Ethanol Acetone Propan-2-ol Butan-2-ol Methyl ethyl ketone Butan-1-ol Isobutanol Propan-1-ol Methylisobutylketone	Method O15 using Headspace-GC	Howdon
	Semivolatile Organic Compounds: 2-Picoline Aniline Phenol bis(2-chloroethyl)ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzyl Alcohol 1,2-Dichlorobenzene 2-Methylphenol bis(2-Chloroisopropyl)ether N-Nitrosodipropylamine 4 methyl phenol Hexachloroethane Nitrobenzene Acetophenone Isophorone 2-Nitrophenol 2,4 Dimethylphenol bis(2-chloroethoxy)methane Benzoic acid 2,4-Dichlorophenol 1,2,4-Trichlorobenzene 2,6-Dichlorophenol 4-Chloroaniline Hexachlorobutadiene N-Nitrosopiperidine N-Nitroso-di-n-butylamine 4-Chloro-3-Methylphenol 2-Methylnaphthalene Hexachlorocyclopentadiene	Method O34 Solvent extraction followed by GCMS	Howdon



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WATERS (cont'd) Waters and effluents (cont'd)	<u>Chemical Tests</u> (cont'd) Semivolatile Organic Compounds: (cont'd) 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 2-Chloronaphthalene 1,2,4,5-Tetrachlorobenzene 1-Chloronaphthalene 2-Nitroaniline 2,6-Dinitrotoluene 3-Nitroaniline 2,4-Dinitrophenol Dibenzofuran Pentachlorobenzene 1-Naphthylamine 4-Nitrophenol 2,4-Dinitrotoluene 2-Naphthylamine 2,3,4,6-Tetrachlorophenol Dimethylphthalate Diethylphthalate 4-Chlorophenyl-phenylether 4-Nitroaniline 4,6-Dinitro-2-methylphenol N-Nitrosodiphenylamine 1,2-Diphenylhydrazine Diphenylamine 4 bromophenyl-phenylether Phenacetin Hexachlorobenzene 4-Aminobiphenyl Pentachlorophenol Pentachloronitrobenzene Pronamide Di-n-Butylphthalate p-Dimethylaminoazobenzene Butylbenzylphthalate 3,3'-Dichlorobenzidine bis(2-ethylhexyl)phthalate 7,12-Dimethylbenz(a) anthracene Di-n-octylphthalate 3-Methylcholanthrene Dibenz(a,j)acridine Naphthalene		



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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Waters and effluents (cont'd)	Phenolic Compounds: Pentachlorophenol 2,4,6-trichlorophenol	Method O18 using GCMS	Howdon
	Organophosphorus Pesticides: Azinphos methyl Chlorfenvinphos Diazinon Dichlorvos Dimethoate Fenitrothion Malathion Propetamphos	Method O6 using GC-TSD/NPD	Howdon
	Dinitrocaprylphenol (DNCP) Parachlorometaxlenol (PCMX)	Method O48 using HPLC-UV	Howdon
(not effluents)	Polynuclear Aromatic Hydrocarbons: Acenaphthene Acenaphthylene Anthracene Benz(a)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(a)pyrene Benzo(ghi)perylene Chrysene Dibenz(a,h)anthracene Fluoranthene Fluorene Indeno(1,2,3,c,d)pyrene Naphthalene Phenanthrene Pyrene Total PAH	Method O44 using GCMS	Howdon
(effluents only)	Organotin Compounds: Dibutyl tin Tributyl tin Triphenyl tin	Method O83 using GC-MS	Howdon



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<p>WATERS (cont'd)</p> <p>Waters and effluents (cont'd)</p> <p>(Surface water, ground water, treated sewage effluent and trade effluent)</p> <p>Groundwater, surface water, raw and potable water (non regulatory), treated sewage effluent and trade effluent</p> <p>Raw water, groundwater, surface water and treated sewage effluent</p>	<p><u>Chemical Tests</u> (cont'd)</p> <p>Methane</p> <p>Polybrominated Diphenyl Ethers: BDE 28 (2,4,4'-tribromodiphenyl ether) BDE 47 (2,2',4,4'-tetrabromodiphenyl ether) BDE 99 (2,2',4,4',5-pentabromodiphenyl ether) BDE 100 (2,2',4,4',6-pentabromodiphenyl ether) BDE 153 (2,2',4,4',5,5'-hexabromodiphenyl ether) BDE 154 (2,2',4,4',5',6-hexabromodiphenyl ether)</p> <p>Phthalates: Dimethylphthalate Diethylphthalate Butyl benzylphthalate Di-n-butylphthalate Diisobutylphthalate di-n-octylphthalate di-(2-ethylhexyl)phthalate di-(2-ethylhexyl)adipate</p>	<p>Method O100 by GC-FID</p> <p>Method 094 based on EPA Method 1614 using high resolution GC-MS</p> <p>Method 095 by GC-MS</p>	<p>Howdon</p> <p>Howdon</p> <p>Howdon</p>



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WASTE WATERS	<u>Chemical Tests</u>	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - sampling and chemical testing of untreated sewage, sewage effluent and trade effluent	
Untreated sewage, treated sewage effluent and trade effluent	Total nitrogen	In-house method H172 by chemiluminescence	Howdon
Untreated sewage, treated sewage effluent and trade effluent	Aluminium Iron Manganese	In-house method H205 by ICP-MS	Howdon
Untreated sewage, treated sewage effluent and trade effluent	Biochemical Oxygen Demand	In-house method H042	Howdon
Untreated sewage, treated sewage effluent and trade effluent	Chemical Oxygen Demand	In-house method H171	Howdon
Untreated sewage, treated sewage effluent and trade effluent	pH	In-house method H031	Howdon
Untreated sewage, treated sewage effluent and trade effluent	Suspended solids	In-house method H035	Howdon
Untreated sewage and treated sewage effluent	Cadmium Copper Total Phosphorus	In-house method H205 by ICP-MS	Howdon
Untreated sewage and treated sewage effluent	Phosphorus	In-house method H168 by ICP-OES	Howdon
Treated sewage effluent only	Ammonia Nitrate Nitrite	In-house method H027	Howdon
Untreated sewage, treated sewage effluent and trade effluent	Mercury	In-house method H108	Howdon



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WASTE WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - sampling and chemical testing of untreated sewage, sewage effluent and trade effluent (cont'd)	
Treated sewage effluent and trade effluent	2,4,6-Trinitrophenol 4-Nitrophenol 2,4-Dinitrophenol 2,6-Dinitrophenol 2-Nitrophenol Nitrobenzene	In house method O042 by HPLC-UV	Howdon
WATERS, potable, surface and groundwaters	Sampling and Analysis for the purpose of enforcement of The Water Supply (Water Quality) Regulations 2000 (SI 2000/3184)	Methodology meeting the requirements of The Drinking Water Testing Specification (Chelmsford and Horsley only)	
Distribution samples including:-			
Consumer taps Standpipes Commercial and industrial premises Service reservoirs Water treatment works	<u>Sampling</u> For: Chemical and Microbiological testing (including cryptosporidium)	Documented In-House Methods for sampling based on: a) Standing Committee of Analysts Methods b) "The Microbiology of Drinking Water 2002" c) DWI SOP for the monitoring of Cryptosporidium oocysts to satisfy water supply (water quality) regulations 2000: Part 1	Site-Water Clean
Raw waters including: Impounding reservoirs Spring supplies Boreholes			



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WATERS, potable, surface and groundwaters (cont'd)			
Consumer taps	<u>Physical and Chemical Tests</u>	Documented In-House Methods using:	
Standpipes	Free Residual Chlorine	Method L13 using a Colorimeter	Site-Water Clean
Commercial and industrial premises	Total Residual Chlorine		
Raw waters including:	Temperature Measurements	Method L7 using Digital Thermometers	Site-Water Clean
Impounding reservoirs			
Spring supplies			
Boreholes			
WASTE WATERS	<u>Physical Tests</u>		
Boreholes	Volume of Water in Boreholes	Method L15 using Electrochemical Water Detector	Site-Water Waste
	<u>Chemical Tests</u>	Documented In-House Methods:	
Effluents	Dissolved Oxygen	Method L10 using Electrochemical Sensor	Site-Water Waste
	<u>Sampling</u>	Documented In-House Methods for sampling	
	For:		
	Chemical testing		
	Temperature measurements	Method L7 using Calibrated thermometer	Site-Water Waste



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<p>WASTE WATERS</p> <p>Untreated sewage Treated sewage effluent Trade effluent (to controlled water)</p>	<p><u>Sampling</u></p> <p>For:</p> <p>Chemical testing</p>	<p>Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - sampling and chemical testing of untreated sewage, sewage effluent and trade effluent</p> <p>Documented In-House Methods for sampling (Manual and Automatic Methods)</p> <p>Method L4 using manual spot Sampling</p> <p>Method L5 using automatic Sampling equipment</p> <p>Method L18 using refrigerated automatic sampling equipment</p>	<p>Site-Water Waste Site-Water Clean</p> <p>Site-Water Waste</p> <p>Site-Water Waste</p>
<p>Treated sewage effluent Trade effluent (to controlled water)</p>	<p>On-site measurement of pH</p>	<p>Method L23</p>	<p>Site-water clean</p>
<p>Trade effluent (to controlled water)</p>	<p>On-site measurement of free and total residual chlorine</p>	<p>Method L13</p>	<p>Site-water clean</p>



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
Testing of Stack emissions to Atmosphere	<u>Sampling with subsequent analysis by an ISO/IEC 17025 Accredited laboratory</u>	National, International and other recognised standards using documented in-house methods to meet the requirements of DD CEN/TS 15675:2007/ BS EN 15259:2007	
	Organic Compounds including: Organic Acids Aromatic and Aliphatic Amines Aromatic and Cyclic Solvents Anhydrides Chlorinated Solvents Esters Ketones Phenols and Cresols Alcohols Selected other Organic Compounds	Non isokinetic Methods based on NIOSH/OSHA/ MDHS series (Method A7 using sorbent tubes and filter media)	Site-Stacks
	Halides and Halogens: Halides Hydrogen Cyanide Phenol Phosphates	Isokinetic Sampling (Method A52)	Site-Stacks
	Hydrogen Cyanide Hydrogen Sulphide Hydrogen Halides Hydrogen Halides & Halogens Nitrogen Oxides Phosphates Acetic Acid Formic Acid Propionic Acid Butyric Acid 4-Chlorophenol Isocyanate Isocyanates (Total) Acetic Anhydride Maleic Anhydride Mercaptoacetic Acid Phenols (Non speciated) Phenols (Speciated) Thionylchloride	Non Isokinetic Sampling (Method A53)	Site-Stacks
	Particulate matter < 10 micron (PM ₁₀ and PM _{2.5})	US EPA Method 201A (Method A54)	Site-Stacks



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Testing of Stack emissions to Atmosphere (cont'd)	<p><u>Sampling with subsequent analysis by an ISO/IEC 17025 Accredited laboratory</u> (cont'd)</p> <p><u>Sampling and On-Line analysis</u></p> <p>Halides and Halogens Speciated VOCs Inorganic gases</p> <p>The organisation holds a flexible scope of accreditation for these tests. Please contact the organisation for details of the individual gaseous compounds they can sample and analyse using this method.</p>	<p>National, International and other recognised standards using documented in-house methods to meet the requirements of DD CEN/TS 15675:2007/ BS EN 15259:2007 (cont'd)</p> <p>ASTM D-6348-03 (Method A56 - FTIR analyser)</p>	Site-Stacks
Testing of Stack emissions to Atmosphere	<p><u>Sampling with subsequent analysis by an ISO/IEC 17025 Accredited laboratory</u></p> <p>Ammonia</p> <p>Total Particulate matter (0 to 50 mg/m³)</p> <p>Total Particulate matter (20 to 1000 mg/m³)</p>	<p>National, European, International and Environment Agency specified standards including MIDs and Documented In-House work instructions to meet the requirements of the Environment Agency (MCERTS) Performance Standard and to meet the requirements of DD CEN/TS 15675:2007/ BS EN 15259:2007</p> <p>BS EN 14791:2005 (Method A65)</p> <p>BS EN 13284-1:2002 (Method A55)</p> <p>BS ISO 9096:2003 (Method A60)</p>	<p>Site-Stacks</p> <p>Site-Stacks</p> <p>Site-Stacks</p>



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Testing of Stack emissions to Atmosphere (cont'd)	<u>Sampling with subsequent analysis by an ISO/IEC 17025 Accredited laboratory (cont'd)</u>	National, European, International and Environment Agency specified standards including MIDs and Documented In-House work instructions to meet the requirements of the Environment Agency (MCERTS) Performance Standard and to meet the requirements of DD CEN/TS 15675:2007/ BS EN 15259:2007 (cont'd)	
	Particulate matter < 10 micron (PM ₁₀ and PM _{2.5})	BS EN ISO 23210:2009 (Method A67)	Site-Stacks
	Hydrogen Chloride	BS EN 1911:2010 (Method A48)	Site-Stacks
	Hydrogen Fluoride	BS ISO 15713:2006 (Method A64)	Site-Stacks
	Hydrogen Sulphide	US EPA Method 11 (Method A68)	Site Stacks
	Halides and Halogens: Hydrogen Bromide Hydrogen Iodide Chlorine Bromine	USEPA Method 26 and 26A (Method A53 and Method A52)	Site-Stacks
	Dioxins and furans	BS EN 1948-1:2006 (Method A47)	Site-Stacks
	Dioxin-like Polychlorinated Biphenyls (PCBs)	BS EN 1948-4:2010 (Method A47)	Site-Stacks
	Hexachlorobenzene DDT Pentachlorophenol Hexachlorocyclohexane	BS EN 1948-1:2006 (Method A47)	Site-Stacks
	Metals	BS EN 14385:2004 (Method A61)	Site-Stacks



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
Testing of Stack emissions to Atmosphere (cont'd)	<u>Sampling with subsequent analysis by an ISO/IEC 17025 Accredited laboratory</u> (cont'd)	National, European, International and Environment Agency specified standards including MIDs and Documented In-House work instructions to meet the requirements of the Environment Agency (MCERTS) Performance Standard and to meet the requirements of DD CEN/TS 15675:2007/ BS EN 15259:2007 (cont'd)	
	Mercury	BS EN 13211:2001 (Method A59)	Site-Stacks
	Polycyclic Aromatic Hydrocarbons (PAHs)	BS ISO 11338-1:2003 (Method A46)	Site-Stacks
	Hexachlorobenzene DDT Pentachlorophenol Hexachlorocyclohexane	BS ISO 11338-1:2003 (Method A46)	Site-Stacks
	Speciated VOC's (carbon and other suitable tubes) (direct sampling of dry stacks and dynamic dilution sampling of hot wet stacks) Amines and Amides Phenols Cresols Carboxylic Acids Aldehydes Formaldehyde	BS EN 13649:2002 (Method A7)	Site-Stacks
	Formaldehyde	US EPA Method 316 (Method A52)	Site-Stacks
	Sulphur Dioxide	BS EN 14791:2005 (Method A62)	Site-Stacks
	<u>Sampling and On-Site analysis</u>		
	Water Vapour	BS EN 14790:2005 (Method A63)	Site-Stacks



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
Testing of Stack emissions to Atmosphere (cont'd)	<u>Sampling and On-Line analysis</u> (cont'd)	National, European, International and Environment Agency specified standards including MIDs and Documented In-House work instructions to meet the requirements of the Environment Agency (MCERTS) Performance Standard and to meet the requirements of DD CEN/TS 15675:2007/ BS EN 15259:2007 (cont'd)	
	<u>Sampling and On-Line analysis</u> Water Vapour*	EA TGN M22 (Method A56 - Validated FTIR analyser)	Site-Stacks
	Pressure, Temperature and Velocity	BS EN 13284-1:2002 (Method A55)	Site-Stacks
	Total Gaseous Organic Carbon* (TOC/VOC) (20 to 500 mg/m ³)	BS EN 13526:2002 (Method A58 - FID analyser)	Site-Stacks
	Total Gaseous Organic Carbon* (TOC/VOC) (0 to 20 mg/m ³)	BS EN 12619:1999 (Method A57 - FID analyser)	Site-Stacks
	Carbon Dioxide*	ISO 12039:2001 (Method A44 - NDIR analyser) EA TGN M22 (Method A56 - FTIR analyser)	Site-Stacks
	Oxygen*	BS EN 14789:2005 (Method A44 - Paramagnetic analyser) (Method A44 - Validated Zirconium cell analyser)	Site-Stacks



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Testing of Stack emissions to Atmosphere (cont'd)	<u>Sampling and On-Line analysis</u> (cont'd)	National, European, International and Environment Agency specified standards including MIDs and Documented In-House work instructions to meet the requirements of the Environment Agency (MCERTS) Performance Standard and to meet the requirements of DD CEN/TS 15675:2007/ BS EN 15259:2007 (cont'd)	
	Carbon Monoxide*	BS EN 15058:2006 (Method A44 - NDIR Analyser) EA TGN M22 (Method A56 - Validated FTIR analyser)	Site-Stacks
	Nitrogen Monoxide (NO)*	BS EN 14792:2005 (Method A44 - Chemiluminescent analyser) EA TGN M22 (Method A56 - Validated FTIR analyser)	Site-Stacks
	Nitrogen Dioxide (NO ₂)*	BS EN 14792:2005 (Method A44 - Chemiluminescent analyser) EA TGN M22 (Method A56 - Validated FTIR analyser)	Site-Stacks
	Sulphur Dioxide*	EA TGN M21 (Method A44) EA TGN M22 (Method A56 - FTIR analyser)	Site-Stacks



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
Testing of Stack emissions to Atmosphere (cont'd)	<u>Sampling and On-Line analysis</u> (cont'd) Halides and Halogens* Speciated VOCs* Other inorganic gases* The organisation holds a flexible scope of accreditation for these tests. Please contact the organisation for details of the individual gaseous compounds they can sample and analyse using this method.	National, European, International and Environment Agency specified standards including MIDs and Documented In-House work instructions to meet the requirements of the Environment Agency (MCERTS) Performance Standard and to meet the requirements of DD CEN/TS 15675:2007/ BS EN 15259:2007 (cont'd) EA TGN M22 (Method A56 - FTIR analyser)	Site-Stacks
Stack Emissions - Continuous Emissions Monitoring Systems (CEMS)	QAL 2 and the Annual Surveillance Test (AST) for CEMS	Documented in house procedure TI265 to meet the requirements of BS EN 14181:2004, Environment Agency MID 14181 and other requirements of the Environment Agency (MCERTS) Performance Standard and DD CEN/TS 15675:2007/ BS EN 15259:2007	Howdon Site-Stacks

*- The scale range of the analyser used for this test must be that detailed on its current MCERTS certificate or a range validated by the organisation to meet MCERTS requirements.



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WATERS Waste Waters and Effluents	<u>Chemical and Physical Tests</u>	Documented In-House Methods based on "Methods for the Examination of Water and Associated Materials" Department of the Environment Standing Committee of Analysts	
	pH	Methods LEV003 using pH meter	Levenmouth
	Total Nitrogen	Method H213 by Dr Lange	Cork
	Total Phosphorus	Method H215 by Dr Lange	Cork
SLUDGES	<u>Chemical Tests</u>		
Sewage Sludges	Dry solids and volatile matter	Method C006	Cork
	pH	Methods C003 using pH meter	Cork
WATERS	<u>Chemical Tests</u>		
	<u>Organic Testing</u>		
Trade Effluent	<u>Uron herbicides, conazoles and pesticides:</u> Carbetamide Carbofuran Metoxuron Monuron Tebuthiuron Chlortoluron Methabenzthiazuron Isoproturon Diuron Linuron Epoconazole Tebuconazole Propiconazole	Method HY124 using LC-MS-MS	Horsley



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WATERS	<u>Chemical Tests</u>	Documented In-House Methods	
Raw, Ground and Potable Waters	Inorganic Testing:	Methodology meeting the requirements of The Drinking Water Testing Specification (DWTS)	
Analysis for the purpose of the enforcement of The Water Supply (Water Quality) Regulations 2000	Alkalinity	Method HY208 using automated colorimetry	Horsley
	Alkalinity	Method 80 using auto-titrator	Chelmsford
	Alkalinity	Method 9	Chelmsford
	Ammonia	Method HY207 using automated colorimetry	Horsley
	Ammonia	Method 68 using Automated Colorimetry	Chelmsford
	Colour	Method HY201 using automated water analyser or using Spectrophotometry	Horsley
Also recreational waters	Colour (filtered)	Method 92 by spectrophotometry	Chelmsford
	Conductivity	Method HY201 using automated water analyser or using conductivity Meter	Horsley
	Conductivity	Method 7	Chelmsford
	Calcium	Method 91 using automated colorimetry	Chelmsford
	Magnesium	Method 91 using automated colorimetry	Chelmsford
	Conductivity	Method 79 using auto-titrator	Chelmsford
	Dry Residues	Method HY212 using gravimetry	Horsley



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Raw, Ground and Potable Waters (cont'd)	Inorganic Testing: (cont'd)		
	Suspended solids	Method HY217 using gravimetry	Horsley
	Total dissolved solids	Method HY225 using gravimetry	Horsley
	Permanganate Index	Method HY216 using oxidation and titration	Horsley
	pH	Method HY201 using automated water analyser or using pH meter	Horsley
	pH	Method 78 using auto-titrator	Chelmsford
	pH	Method 8	Chelmsford
	Phosphorus	Method HY207 using automated colorimetry	Horsley
	Total hardness	Method HY208, calculation using magnesium, calcium values	Horsley
	Total hardness	Method 10 based on SCA, Method A, 1981 using EDTA titration	Chelmsford
	Total hardness	Method 91 using automated colorimetry	Chelmsford
	Total organic carbon Dissolved organic carbon	Method HY210 using chemical oxidation followed by Infra-red detection	Horsley
	Bromate Bromide Chlorate	Method HY 228 using Ion Chromatography	Horsley



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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Raw, Ground and Potable Waters (cont'd)	Inorganic Testing: (cont'd)		
	Turbidity	Method HY201 using automated water analyser or using turbidity Meter	Horsley
	Turbidity	Method 73 based on SCA, Method B2, 1981	Chelmsford
	Surfactants	Method HY215 using Solvent extraction followed by colorimetry	Horsley
	Chloride	Method HY207 using automated colorimetry	Horsley
	Chloride	Method 68 using Automated Colorimetry	Chelmsford
	Total cyanide	Method HY243 using colorimetry	Horsley
	Fluoride	Method HY209 using automated Ion selective electrode	Horsley
	Nitrate (calculated)	Method HY207	Horsley
	Nitrate (calculated)	Method 68 using Automated Colorimetry	Chelmsford
	Nitrite	Method HY207 using automated colorimetry	Horsley
	Nitrite	Method 68 using Automated Colorimetry	Chelmsford
	Total Oxidised Nitrogen	Method HY207 using automated colorimetry	Horsley
	Total oxidised nitrogen	Method 68 using Automated Colorimetry	Chelmsford
	Soluble reactive phosphate	Method 68 using Automated Colorimetry	Chelmsford



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Raw, Ground and Potable Waters (cont'd)	Inorganic Testing: (cont'd)		
	Silica	Method HY211 using automated colorimetry	Horsley
	Sulphate	Method HY211 using automated colorimetry	Horsley
	Boron	Method HY214 using colorimetry	Horsley
	Calcium	Method HY208 using automated colorimetry	Horsley
	Magnesium	Method HY208 using automated colorimetry	Horsley
	Metals: Aluminium Barium Iron Manganese Phosphorous Potassium Sodium	Method HY251 using ICP-Optical Emission Spectrometry	Horsley
	Metals: Cadmium Chromium Copper Lead Nickel Silver Zinc	Method HY256 using ICP-Mass Spectrometry	Horsley
	Metals: Antimony Arsenic Mercury Selenium	Method HY258 using ICP-MS	Horsley



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WATERS (cont'd) Raw, Ground and Potable Waters (cont'd)	<u>Chemical Tests</u> (cont'd) Organic Testing: Trichloromethane Trichloroethene Tribromomethane Tetrachloroethene Tetrachloromethane Dichlorobromomethane Dibromochloromethane Benzene 1,2 Dichloroethane Total THMs Total Ethenes (total of those measured)	Method HY 114 using Purge and Trap Gas Chromatography with Mass Spectroscopy Detection Method HY114 by Calculation	Horsley Horsley
Raw, ground and potable waters	<u>Polyaromatic Hydrocarbons:</u> Anthracene Fluoranthene Benzo(b)fluoranthene* Benzo(k)fluoranthene* Benzo(a)pyrene Indeno(1,2,3-cd)pyrene* Benzo(ghi)perylene*	Method HY123 using GC-MS	Horsley
Raw, ground and potable waters	Total PAH (total of those marked *)	Method HY123 by calculation	Horsley



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Raw, Ground and Potable Waters (cont'd)	Organic Testing: (cont'd)		
Raw, ground and potable waters	<u>Uron herbicides, conazoles and pesticides:</u> Carbetamide Carbofuran Metamitron Metoxuron Monuron Tebuthiuron Chlortoluron Methabenzthiazuron Isoproturon Diuron Linuron Epoconazole Tebuconazole Propiconazole Prothioconazole	Method HY124 using LC-MS-MS	Horsley
Raw, ground and potable waters	Metaldehyde	Method 240 using solid phase extraction and GC-MS	Chelmsford
Raw, ground and potable waters	Metazachlor Diflufenican	Method 235 using solid phase extraction and GC-ECD	Chelmsford
(Raw and Potable waters only)	Alkylphenols: 4-tert-octylphenol, nonylphenol, 4-n-octylphenol 4-n-nonylphenol	Method 239 using solid phase extraction and GC-MS	Chelmsford
(Raw and Potable waters only)	Organochlorine pesticides: Dichlobenil Pentachlorobenzene Tecnazene Trifluralin alpha-HCH Hexachlorobenzene beta-HCH gamma-HCH Chlorthalonil Alachlor Heptachlor	Method 241 using solid phase extraction and GC-MS	Chelmsford



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
<p>WATERS (cont'd)</p> <p>Raw, Ground and Potable Waters (cont'd)</p> <p>(Raw and Potable waters only) (cont'd)</p>	<p><u>Chemical Tests</u> (cont'd)</p> <p>Organic Testing: (cont'd)</p> <p>Organochlorine pesticides: (cont'd)</p> <p>Chlorthal-Dimethyl (DCPA) Isodrin Pendamethalin Aldrin alpha-Endosulfan beta-Endosulfan Endrin Dieldrin Heptachlor-EXO-Epoxide Heptachlor-ENDO-Epoxide 2,4-DDT 4,4-DDT</p>		
<p>Raw, Ground and Potable Waters</p>	<p><u>Acid Herbicides:</u> MCPP (Mecoprop) MCPA 2,4,-D Dichlorprop MCPB Dicamba Fenoprop 2,4.5-T Triclopyr Bromoxynil Pentachlorophenol Propyzamide 2, 4-DB loxynil Clopyralid Fluoroxypyr Bentazone Benazolin</p>	<p>Method HY105 using solid phase extraction/GC-MS</p>	<p>Horsley</p>



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WATERS (cont'd) Raw, Ground and Potable Waters (cont'd)	<u>Chemical Tests</u> (cont'd)		
	Organic Testing: (cont'd)		
	<u>Triazine, organophosphorus, and other pesticides:</u> Simazine Atrazine Propazine Trietazine Terbutylazine Pirimicarb Prometryn Terbutryn Chlorfenvinphos Chlorpyrifos Phorate Propachlor	Method HY109 using solid phase extraction/GC-MS	Horsley
	<u>Organophosphorus and other Pesticides:</u> Dichlorvos Diazinon Fenpropidin Fenpropimorph Malathion Metalaxyl Pendamethalin Propetamphos	Method HY 109 using solid phase extraction GC-MS	Horsley
	Chlormequat	Method HY118 by LC-MS/MS	Horsley
	Asulam Carbendazim	Method HY120 by LC-MS/MS	Horsley
	Glyphosate	Method HY121 using solid phase extraction and LC-MS/MS	Horsley
Cypermethrin	Method HY122 using solid phase extraction and GC/MS	Horsley	



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WATERS (cont'd)	<u>Chemical Tests</u> (cont'd)		
Raw, Ground and Potable Waters (cont'd)	<u>Sensory Tests</u>		
Groundwater and potable water only	Quantitative Taste Quantitative Odour	Method HY220 based on SCA "The determination of taste and odour in drinking waters (2010)" using assessed panel	Horsley
	Quantitative Taste Quantitative Odour	Method 5 based on SCA "The determination of taste and odour in drinking waters (2010)" using assessed panel	Chelmsford
WATERS (cont'd)	<u>Microbiological Tests</u>		
	Enumeration:	Documented In-House Methods based on methods published in "The Microbiology of Drinking Water (MODW)"	
Potable water, bottled water, raw water	Total viable count at 22 °C and 37 °C	Method HY003 using pour plates based on MODW part 7 (2007)	Horsley Chelmsford
Potable water, bottled water, raw water	Coliforms (presumptive and confirmed)	Method HY001 using membrane filtration based on MODW part 4 (2009)	Horsley
Potable water, bottled water, raw water	Coliforms - faecal <i>Escherichia coli</i> (presumptive and confirmed)	Method HY002 using membrane filtration based on MODW part 4 (2009)	Horsley
Potable water, bottled water, raw water	Coliforms and <i>Escherichia coli</i> (presumptive and confirmed)	Method HY093 using MLGA based on MODW part 4 (2009)	Horsley
Potable water, bottled water	Coliforms and <i>E coli</i>	HY073 using Colilert based on MODW part 4 (2009)	Horsley Chelmsford
Potable water, bottled water, raw water	<i>Clostridium perfringens</i> (presumptive and confirmed)	Method HY019 using membrane filtration TSC Agar based on MODW part 6 (2010)	Horsley Chelmsford



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
WATERS (cont'd)	<u>Microbiological Tests</u> (cont'd)		
Potable water, bottled water, raw water, effluent	Enumeration of sulphite reducing clostridia	Method HY087 using membrane filtration based on based on MODW part 6 (2010)	Horsley
Potable water, bottled water, raw water	Faecal <i>streptococci</i> (enterococci) (presumptive and confirmed)	Method HY004 using membrane filtration based on MODW part 5 (2010)	Horsley Chelmsford
Potable water, bottled water, raw water	<i>Pseudomonas aeruginosa</i> (presumptive and confirmed)	Method HY072 using membrane filtration based on MODW part 8 (2010)	Horsley
Potable Waters	Total viable counts at 22 °C and 37 °C	Method HY011 using spread plate technique based on MODW part 7 (2007)	Horsley
Potable water, bottled water	Isolation and identification of <i>Salmonella</i> spp (other than <i>S typhi</i> and <i>S paratyphi</i>)	HY007 based on The Microbiology of Drinking Water part 9 (2006)	Horsley
Raw, final treated and recreational pool water	Isolation and enumeration of <i>Cryptosporidium</i> oocysts	CM001 using the Genera Filta-max™ Method based on 'the Microbiology of Drinking Water (2010) - Part 14 - Methods for the isolation, identification and enumeration of <i>Cryptosporidium</i> oocysts and <i>Giardia</i> cysts'	Horsley
Potable water	Bacteria identification: Gram negative rods Enterobacteriaceae	HY016 Documented In-House Method using API 20E Biochemical Diagnostic method API 20E using Method	Horsley
Potable water	Isolation and identification of <i>Legionella</i> spp and <i>Legionella pneumophila</i>	HY006 based on the Oxoid method (Edn 8) using membrane filtration	Horsley
Potable water	Isolation and enumeration of <i>Legionella</i> spp, including <i>Legionella pneumophila</i>	Method LEG 01 using membrane filtration and selective media	Chelmsford



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WATERS (cont'd)	<u>Microbiological Tests</u> (cont'd)		
	Enumeration and Identification:		
Wastewater - Effluent Purified water and swimming pool water	Coliforms (presumptive and confirmed)	Method HY001 using membrane filtration based on MODW part 4 (2009)	Horsley
Wastewater - Effluent Purified water and swimming pool water	Coliforms - faecal <i>Escherichia coli</i> (presumptive and confirmed)	Method HY002 using membrane filtration based on MODW part 4 (2009)	Horsley
Purified water and swimming pool water	Coliforms - faecal <i>Escherichia coli</i> (presumptive and confirmed)	Method HY093 using MLGA based on MODW part 4 (2009)	Horsley
Purified water and swimming pool water	<i>Pseudomonas aeruginosa</i> (presumptive and confirmed)	Method HY072 using membrane filtration based on MODW part 8 (2002)	Horsley
Wastewater - Effluent: swimming pool Water	Faecal <i>Streptococci</i> (enterococci) (presumptive and confirmed)	HY004 using membrane filtration based on MODW part 5 (2006)	Horsley Chelmsford
Wastewater - Effluent	Enumeration of sulphite reducing clostridia	Method HY087 using membrane filtration based on based on MODW part 6 (2009)	Horsley
Swimming pool water	Total viable count at 22 °C and 37 °C	Method HY003 using pour plates based on MODW part 7 (2007)	Horsley Chelmsford
Purified water	Total viable counts at 32.5 °C	HY013 using membrane Filtration based on Eu Pharma 2005	Horsley
		HY023 using membrane filtration and R2A agar based on Eu Pharma 2005	Horsley
Purified water	Isolation and identification of <i>Salmonella</i> spp (other than <i>S typhi</i> and <i>S paratyphi</i>)	HY007 based on "The Microbiology of Drinking Water 2006:Part 9"	Horsley
Purified water and water for injection	Detection of Endotoxins	CM008 using LAL Gel Clot Technique	Horsley



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WATERS (cont'd)	<u>Microbiological Tests</u> (cont'd)		
Raw, ground and potable waters	Enumeration and Identification: (cont'd)		
	Algal counts and identification of Algal spp	BIO 1 using sedimentation with Lugols iodine	Chelmsford
	Zooplankton - examination and enumeration	BIO 2 using nets	Chelmsford
ACOUSTIC TESTING	<u>Measurement of Noise</u>		
Buildings	Field Measurement of Airborne Sound Insulation, ie, level difference and related factors	BS EN ISO 140-4:1998 BS EN ISO 717-1:1997	Site-Noise
Buildings-floors	Field Measurement of Impact Sound Insulation of floors between rooms ie impact sound pressure level and related factors	BS EN ISO 140-7:1998 BS EN ISO 717-2:1997	Site-Noise
END			